

From Human to Posthuman

Christian Theology and Technology in a
Postmodern World

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Introduction

This is a book about theological ethics, specifically *Christian* theological ethics. As such, it draws upon and interprets the Christian tradition as a resource in pursuing the tasks of moral, social and political ordering. Although my intended audience is predominantly Christian, I hope I have written in a manner such that readers not sharing this faith will nonetheless find the book to be informative and beneficial.

Theological and moral inquiry, however, cannot be conducted in a historical and cultural vacuum. The task I undertake is to critically examine and assess the influence that technology is exerting on the formation of contemporary culture. This task is certainly not unprecedented. Many treatises either defaming or defending the emergence of modern technological civilization have already been written. Moreover, any reflection on cultural formation cannot avoid the question of technology. Any form of human association, however archaic or advanced, is dependent upon underlying technological foundations, however simple or complex they may be. As Victor Ferkiss has observed, 'Civilizations are based on the interplay of technology and human values' (Ferkiss, 1969, p. 49).

Although coming to terms with the relation between technology and culture is a perennial issue, the contemporary world is entering uncharted territory. This is due in part to rapid advances in such areas as information technology, biotechnology and nanotechnology that quicken the pace of cultural change while also magnifying the scope of human power. In this respect, the transition from an industrial to informational society, for instance, is simply another stage in cultural evolution in which humans exert greater mastery over nature and human nature.

What is unique about this transition, however, is the potential to move beyond mastery to transformation. The sheer ubiquity of technology is forming a technoculture populated by technosapiens, for in order to fully utilize the power of the technologies currently being developed and envisioned, humans must strive to transform themselves into posthumans. Herein lies the problem, for the consequences for good or ill of such radical transformation cannot be known in advance. Again, as Ferkiss warned, 'The synthesis of postmodern technology and industrial man could produce a new civilization, or it could mean the end of the human race' (Ferkiss, 1969, p. 56).

The threat is not solely a result of growing technological power. What is more troubling in many respects is the underlying intellectual, moral and religious presuppositions, often more implicit than explicit, shaping this radically transformative vision. As described in the following chapters, this vision may be characterized as cybernetic as opposed to organic or mechanistic. A cybernetic paradigm reduces material reality to underlying information that can, in principle, be infinitely manipulated and reconfigured.

If this is true, then the only thing preventing a radical transformation of nature and human nature is inadequate technology, a problem that can be remedied, again in principle, through research and development. There is no real boundary separating nature and artifice, only patterns or lines of information that can be erased and redrawn; no real limit that cannot be eventually overcome. Thus my principal contention is that when the *postmodern* emphasis on deconstruction and construction is joined with this cybernetic vision, there is no compelling reason why radically *posthuman* transformation should not be pursued. This does not imply that postmoderns inevitably aspire to become posthuman, only that there is nothing inherent to postmodernism that can effectively oppose this prospect other than to assert emotive preferences or objections.

The two words emphasized in the preceding paragraph require some further explanation for how they are used in this inquiry. The term 'postmodern' is invoked frequently in both academic and popular discourse. Yet it seemingly defies any precise or agreed-upon definition. In employing this term I am referring to the works of social theorists, philosophers and theologians who embrace (or who are accused by their critics of embracing) the historicist assumption that reality is an artifact of imaginative, social or political construction. Hence the affinity with the cybernetic vision described above. In addition, I am *not* using postmodern to refer to an emerging historical era or epoch displacing modernity, for to be a postmodernist requires rejecting any epochal notion of history. Moreover, I also use postmodern as a descriptive shorthand to identify a narrow range of themes and authors that are germane to this book as part of a series on science and religion.

The word 'posthuman' is also generating a growing body of literature, but it too resists any common definition. I use the term to refer to a loose confederation of writers and intellectuals who envision a day when humans will virtually merge with their technology, thereby creating a new and superior posthuman species. In this respect, posthuman rhetoric shares many similarities with and is dependent upon postmodern discourse, but is not synonymous with it. A postmodern, for instance, need not be committed to a posthuman future, but posthumanists are by necessity committed postmodernists.

I argue throughout the subsequent chapters that postmodern and posthuman discourse represent emerging dominant forces in contemporary cultural formation. Consequently, the purpose of this book is to help Christians engage an emerging technoculture in a manner that is both critical and constructive. As an initial step in this engagement, I have limited myself to examining and assessing a restricted range of prominent landmarks within the expansive postmodern and posthuman panoramic landscape. I anticipate that this approach will disappoint two groups of potential readers.

First, this book will disappoint readers who are expecting to find in its pages either a sweeping condemnation or defense of either modern or postmodern modes of thought. My reason for such reticence is that I find commendatory and condemnatory elements in both. I share with postmodernists, for instance, a suspicion of modern certainty based exclusively on empirical data, while rejecting their belief that reality is largely what we make of it. Conversely, I

share with modernists the conviction that reality is objective, but I part company when the objectively real is reduced to what is material. Moreover, my task as a theologian is not to recast religious beliefs and convictions in terms palatable to either a modern or postmodern audience. Rather, my task is to formulate a counter discourse to either option, one that is genuinely Christian and theological. In this respect, modernity and postmodernism are not forced options that must be either accepted or rejected, but phenomena to be engaged if Christians are to faithfully articulate and enact their faith within contemporary circumstances.

Second, this book will disappoint readers who are anticipating a detailed analysis of ethical issues related to various technologies and their proposed policy solutions. Admittedly, current and anticipated developments, for example, in information technology, biotechnology and nanotechnology require such painstaking attention if a host of troubling evils are to be avoided. But this is not what this book is about. Rather, pursuing the moral, social and political ordering of an emerging technoculture requires, at least initially, a coming to terms with the broad concepts empowering this cultural vision. In this respect, 'technology' does not refer to technical achievement and its accompanying ethical, social and political problems, but represents a late liberal proclivity toward mutating practical moral reasoning into a technological rationale (O'Donovan, 1996, pp. 271–4). Consequently, this book is interpretive rather than analytical; it is not so much a systematic and exhaustive study as a meditation on our present circumstances.

In short, my goal has been to write a book that will assist a process of Christian discourse, deliberation and discernment for living faithfully in an emerging technoculture.¹ Moreover, such a process should not be insular or uninformed, thereby requiring Christian theologians to know something about science and technology, and how these once separate endeavors are collapsing into a singular act. Yet such open and informed inquiry does not require that theology must be deconstructed and reconstructed as dictated by an ascendant technoscience. The challenge is instead to formulate a theological discourse that assists a Christian formation of good, true and faithful lives in light of the rising ascendancy of technoscience as *the* formative cultural factor. Hence the need for a counter discourse that is genuinely Christian and theological. This task need not be premised on the belief that Christians have a corner on truth and goodness, only that whatever they know about these qualities they know as Christians, however partial and imperfect that knowledge may be. Moreover, in telling this story with the vocabulary and grammar of this counter discourse, they may also endeavor to tell it in a way that enables, rather than disables, other quests for the good and the true undertaken by those who do not share their faith.

Note

- 1 This threefold process of discourse, deliberation and discernment is borrowed from Verhey, 2002.

The Late Modern Landscape

The word ‘postmodern’ is invoked frequently by many contemporary intellectuals, but a precise definition proves elusive. A cottage industry has emerged to debate when (or if) postmodernity began, and when (or if) it has supplanted modernity. This lack of precision is admittedly frustrating, but the very ambiguity associated with this term captures the character of our present circumstances. There is a general perception that the beginning of the twenty-first century marks a time of significant cultural change, but little consensus regarding its causes and direction; no agreement over whether we are riding the crest of a new age or caught in the undertow of a receding one. Such semantic imprecision should not be surprising, however, for any attempt to place contemporary events within a larger flow of history is bound to be tentative and speculative.

Although I have no desire to enter the formal disputes over mapping the borders of postmodernity, I argue in this chapter that some inexact placement of the postmodern divide can be achieved by examining two overlapping cultural shifts. The first shift, beginning roughly in the seventeenth century and extending into the twenty-first with diminished momentum, corresponds with science displacing religion as the culturally dominant and formative force. The second shift, beginning roughly in the late nineteenth century and extending into the twenty-first with gathering momentum, corresponds with technology replacing science as the culturally dominant and formative influence. For the purpose of this inquiry, we may conveniently label the first transition as a shift from providence to progress, and the second as the shift from progress to process.

Some clarification of what is meant by the phrase *culturally dominant and formative force* is in order. Following H. Richard Niebuhr, culture is a general phenomenon that ‘comprises language, habits, ideas, beliefs, customs, social organization, inherited artifacts, technical processes, and values’ (Niebuhr, 1951, pp. 31–2). Although culture is not divorced from nature and in many respects is created to meet natural necessities, it nonetheless consists of activities that are undertaken to achieve uniquely human purposes (Gustafson, 1981, pp. 3–16). A lake, for instance, is natural while a reservoir is cultural; an angry scream is instinctual but cursing an enemy is a cultured act. Particular cultures, however, do not exist in historical vacuums. Consequently, a culture requires what may be described as an interpretive discourse, broadly conceived, that serves to preserve, reform and pass on traditions; order social and political institutions; and project future aspirations. In this respect, theology, science, or technology may serve as public types of discourse for achieving these interpretive purposes.

Two important aspects of these cultural forces need to be noted. First, the type of public discourse enjoying a privileged status changes over time. The interpretive needs and purposes of a culture do not remain static. An alternative mode of discourse may arise which more adequately meets these needs and purposes, thereby gaining an authoritative and formative status at the expense of the predecessor. Although the shift from one form of dominant cultural discourse to another may occur rapidly, the transition tends to be evolutionary rather than revolutionary, even though the cumulative effect may be dramatic (Basalla, 1988; Kuhn, 1970). A scientific culture, for instance, is markedly different to its earlier theological counterpart, but identifying the point in which the former supplanted the latter defies precise determination.

Second, the emergence of a new dominant and formative cultural force does not mean the old one is necessarily eradicated (Ferkiss, 1969, pp. 27–8). A once prevalent form of discourse may continue to be intelligible even though it no longer enjoys a privileged or authoritative status. Theologians, for example, continue to write books in a culture shaped by science even though theology is no longer regarded as a dominant cultural force. In addition, it is indicative that a cultural transition is under way when different types of discourse appeal extensively to what is perceived as the dominant form of public discourse. In the early seventeenth century, for example, scientists appealed frequently to theological doctrines to buttress the validity of their claims, while in the late nineteenth and early twentieth centuries theologians often appealed to science to support their arguments (Brooke, 1991). More tellingly for the purpose of this inquiry, technology was once portrayed by its most eager proponents as an applied science in order to enhance the reputation of lowly engineers and inventors. Now funding of ‘pure’ scientific research is increasingly justified by its potential to promote technological development.

With these clarifying notes in mind, we may now begin our exploration of the two cultural shifts that will help us place the postmodern divide.

From Providence to Progress

Question 27 of the Heidelberg Catechism asks: ‘What do you understand by the providence of God?’ To this the prescribed answer is: ‘The almighty and ever-present power of God whereby he still upholds, as it were by his own hand, heaven and earth together with all creatures, and rules in such a way that leaves and grass, rain and drought, fruitful and unfruitful years, food and drink, health and sickness, riches and poverty, and everything else, come to us not by chance but by his fatherly hand’ (*Heidelberg Catechism*, 1962, pp. 32–3). This brief answer confidently asserts that nothing occurs that is not in accordance with God’s will and purpose. The apparent vagaries of natural forces and daily life are not random events, but indications of a creation being governed by its creator. God is the sovereign Lord of nature and history.

The Catechism, however, is not content to merely assert God’s power, for the next question asks: ‘What advantage comes from acknowledging God’s creation and providence?’ The given answer is again terse: ‘We learn that we

are to be patient in adversity, grateful in the midst of blessing, and to trust our faithful God and Father for the future, assured that no creature shall separate from his love, since all creatures are so completely in his hand that without his will they cannot even move' (ibid., p. 34). The seemingly capricious series of events that humans routinely encounter is in fact a method of divine instruction. Through the unwieldy interplay of good and evil we learn the virtues of patience, gratitude and fidelity. It is only in retrospect, in God's own good time, that we will discern the providential and orderly pattern of God's redemptive plan. In the meantime we must remain satisfied with the assurance of God's steadfast love.

It is striking that these sweeping claims are merely asserted instead of argued. There is no suggestion that nature could be studied and better understood in order to ameliorate human toil and misery; no hint that the justice of God's dealings with humans might be probed, much less challenged. There is simply no effort to persuade the catechumen that the teachings are true. What is also striking to the contemporary reader is the seeming ease and credulity with which the doctrine of providence is asserted and presumably accepted. Yet it must be kept in mind that an instructional document is not meant to persuade, but to summarize what is already believed. Although the Heidelberg Catechism was published in 1563 to reconcile differences between Lutherans and Calvinists in the Palatinate, a long cultural heritage stood behind it though now expressed in a distinctly Protestant rather than Catholic dialect.

Augustine is arguably the most influential figure in shaping the principal strands of this heritage. In his *City of God* he offers an expansive account of God's providential governance of creation. God has blessed humans with everything they need to survive and flourish. The utility of nature in general, and the human body in particular, have been ordered by the creator to achieve this very end. Through procreation, for example, humans perpetuate themselves from generation to generation (Augustine, 1984, pp. 1070–71). These divine gifts are not confined to the realm of natural necessity. More importantly, there are the blessings of intellect and ingenuity which make possible the formation of human culture. In effusive language Augustine describes wondrous achievements in such areas as agriculture, architecture, navigation, medicine, art and literature (ibid., pp. 1072–3). Human history has unfolded within the laws of God's providence (ibid., p. 96), and history is itself an educational process teaching a culture about God's enduring care (ibid., p. 392).

But it is a hard education. God's providential care does not mean that humankind enjoys an earthly paradise, for evils originating in nature and culture conspire to form a 'hell on earth'. According to Augustine, it is only Christ's grace that can liberate individuals from this hell, because the source of evil is sin and not a flawed creation (ibid., p. 1068). Since God governs creation with justice, pain and misery is the fitting punishment for Adam's fateful rebellion (ibid., p. 1073). The presence of suffering is a sign that God has not abandoned creation, but continues to be its sovereign Lord. Moreover, God's justice is tempered by mercy. God's goodness pervades creation, showering the world with innumerable blessings.

It is important to note, however, that these blessings are consolations, not rewards. Humans cannot use divine gifts to create a heaven on earth, but must wait for their relief and perfection in God's own good time. A perfect peace is the promised destiny of the elect, but the way leading to this destination is circuitous (*ibid.*, p. 1082). Invoking the Apostle Paul (Romans 11:33), Augustine reminds his readers that the ways of God are untraceable and inscrutable (Augustine, 1984, p. 896). The outlines of providence can be seen, but only vaguely as puzzling reflections in a mirror. The details of God's providential care are mysterious and can never be known with certainty – at least this side of eternity. The perfect peace that awaits the believer is also a perfect rest; the rest of a perpetual Sabbath. It is in this rest that we shall at last embrace perfect virtue and desire, for it is only in the fullness of time that God's blessings are given to reward rather than console. It is only from this vantage point that one can gaze back upon history and recognize the clear pattern of God's governance (*ibid.*, pp. 897–8).

Consequently, the end or *telos* of the elect is an eternal Sabbath rest. From this endpoint Augustine traces the providential history of creation back to its origin. It is a history comprising seven epochs, in which the present age is the sixth (*ibid.*, p. 1091). It is in the impending seventh epoch that the faithful shall find true peace and rest, enjoying with God in their perfected state an eternal eighth day of creation. The destiny of creation is to share eternity with its creator, for as Augustine asks rhetorically, 'what is our end but to reach that kingdom which has no end?' (*ibid.*, p. 1091)

This brief excursion into the *City of God* does not imply that Augustine was the only or even dominant voice forming an emerging Christian culture. His significance waxed and waned among subsequent generations of theologians. But the range and architecture of his thought cast a long and influential shadow over the developing theological, social and political thought of western Christendom (Brown, 1996, pp. 34–53). That influence remained so pronounced and enduring that he served as a convenient lightning rod for the Enlightenment's assault against the church; to assail Augustine was synonymous with refuting a moribund Christianity (Rist, 1994, pp. 290–94). For what Augustine presented in his masterpiece was nothing less than a 'positive and comprehensive philosophy of history, an interpretation of the entire human drama' (Latourette, 1975, pp. 175–6). It was a drama whose beginning and end in God were certain, but the details of the providential storyline in between proved untraceable. Subsequent Catholic and Protestant editors refined and embellished the storyline, but the essentially Augustinian structure of the drama remained unaltered for over a millennium.

It is not surprising that the seemingly credulous teaching on providence could be merely asserted rather than argued in the Heidelberg Catechism. The terse answers were slogans reinforcing what a long theological and cultural tradition propounded, and what the students thereby already took for granted, namely, that although God was in control of the world and its fate, life in the meantime was tough and uncertain, inspiring a fitting response of faithful patience. What is remarkable is how rapidly following the Catechism's publication its teaching on providence was greeted with mounting incredulity,

prompting subsequent theological reformulations that would have appeared barely recognizable to its authors.

In the early eighteenth century, for example, Jonathan Edwards pondered the significance of a collapsing balcony in the Northampton church during the Sunday morning worship service.¹ Shortly after the sermon had begun the balcony crashed, covering the worshippers both sitting in and under it with shattered timbers and other heavy debris. Their rescuers feared the worst, expecting 'to find many people dead, and dashed to pieces' (Edwards, 1974, p. 345). To their astonishment, however, no one was killed, and although many were cut and bruised there were no broken bones or other serious injuries. Edwards is quick to attribute this good fortune to divine providence, but what is interesting to note is his detailed description of and conjecture on how the episode occurred. The building had been allowed to fall into disrepair since a new meeting house was currently under construction. The beams supporting the balcony were especially weak, and their decay had been exacerbated by a severe winter followed by an unusually warm spring. In short, the balcony was an accident waiting to happen. Yet it collapsed so quickly and in such a manner that the 'motions of every piece of timber, and the precise place of safety where every one should sit, and fall, when none were in any capacity to care for their own preservation' (Edwards, 1974, pp. 345–6). The event itself disclosed both God's displeasure and protection, inspiring corresponding responses of humility and gratitude. In expounding the 'miraculous' nature of this providential act, Edwards did not appeal to divine intervention which suspended or violated the laws of nature. Why the balcony collapsed and why timber and bodies fell the way they did in avoiding death or injury were explicable in terms of what was known about the nature of decaying wood and the physics of moving objects. What was genuinely miraculous was that God had ordered a series of events to occur in such a way that the collapsing balcony would have the greatest effect upon the faithful of Northampton. Edwards used the best science of his day to explicate the doctrine of providence revealed in this particular incident, and it was an explication that would not have seemed foreign to his Protestant forbears.

This easy recognition, however, faded in the following century. Horace Bushnell, for example, chides phrenology (a respectable science in his day) for its vain attempt to locate the physical situation of various thoughts within the human brain that could then be subsequently mapped. Presumably this mapping would offer insight into the workings of the soul or psyche. Bushnell is confident that the effort will fail because only poetry can lead the way to a true and complete science of humankind (Bushnell, 1849, p. 73). What this curt dismissal reflects is not a keen ability to discern bad science, but hostility directed against science's growing influence on theology. A turn toward science corrupts religious faith, because theology cannot be understood or expressed in scientific terms (*ibid.*, pp. 93–4, 310–13). Doctrine expresses opinions (*ibid.*, pp. 304–5), and the attempt to cloak them in the mantle of science only perpetuates the decline of Christianity (*ibid.*, pp. 321–2). Bushnell, then, is not anti-science but is opposed to dogmatic theologians who turn to science in constructing their stultifying arguments. This is the case because religious faith

in general and Christian faith in particular can only be understood through subjective experience, and this experience can only be expressed in poetic or artistic terms (*ibid.*, pp. 203–4). It is dogma masquerading as, or distorted by, science that restricts this subjective encounter and expression. Consequently, Bushnell feels no need to invoke science in promulgating his doctrine of providence, because he simply has no use for any doctrine. Religion is a matter of the heart, not the head.

Bushnell's dismissive attitude toward doctrine, however, is not entirely representative. Many theologians still believed that religion encompassed both head and heart. James McCosh, Bushnell's contemporary, for instance, wrote a systematic treatise on the methods of divine government.² The purpose of his treatise was to portray providence and conscience respectively as the external and internal indications of God's governance (McCosh, 1882, p. 16). McCosh asserts that anyone observing nature can and should conclude that it has been designed by a 'higher intelligence' (*ibid.*, p. 3). Science confirms this observation, although revelation is needed to obtain a full knowledge of God; the external signs of providence must be combined with the internal witness of conscience. In explicating his doctrine of providence, McCosh spends a great deal of time discussing the intricacies of the latest scientific theories, especially in the areas of geology and biology. The purported purpose of his lengthy excursions into the realm of science is to confirm God's orderly governance of the natural world, but the tone is defensive and apologetic. McCosh simultaneously tries to refute the atheistic and pantheistic implications of recent discoveries (*ibid.*, pp. 207–13), while also making traditional Christian claims explicable in scientific terms. He employs Taylor's words, for example, in insisting that 'the great miracle of providence' is 'that no miracles are needed to accomplish its purposes' (*ibid.*, p. 178). McCosh's account of providence reflects a great deal of scientific sophistication, but in the end God appears to be more a decorative ornament than a necessary governor. In turning to the conscience, the tone becomes less defensive and more confident, while the references to science are more cursory and oblique. Seemingly, even if science should call into question the evidence of God's governance of the physical world, the province of the soul is a dependable bulwark for exhibiting the moral need for divine involvement in human life.

These succinct summaries may be used to plot an important trajectory that emerged in theological thinking following the promulgation of the Heidelberg Catechism. Edwards could confidently reassert the theological claims underlying the Catechism's teaching on providence, and used science to explain God's providential care. Presumably this enriched explanation reinforced the religious responses of humility and gratitude. For Bushnell, however, science impedes genuine religious impulses, because they are grounded in experience rather than rationality. Science is not so much bad as it is used badly by theologians to construct doctrines that ignore the experiential basis of faith. Theologians should concentrate on the spiritual dimensions of the human heart which can only be expressed in poetry and art, rather than attempting to explain God's handiwork in rationalistic and scientific terms. Consequently,

there is no reason to address whether science confirms or challenges the doctrine of providence, because there is no compelling reason to propound the doctrine in the first place. At first glance it appears that McCosh employs Edwards's strategy in a more sophisticated manner. Yet, unlike Edwards, McCosh must first defend providence against objections raised by new scientific theories. More importantly, the resulting doctrinal account must be couched in categories that are scientifically intelligible. Although McCosh contends that the inward world of faith and morality mirrors that of the external world, and therefore both are subject to divine governance, the former is clearly more secure and superior to the latter. Thus he shares with Bushnell the belief that the heart is the premier source of faith through which God asserts his moral governance. Moreover, McCosh is confident that the workings of the human psyche will remain an opaque mystery, resisting any definitive inquiries that science might launch. More tellingly, his defensive tone intimates that science has already effectively displaced theology as the dominant form of public discourse.

How may we account for this trajectory plotted by these three Protestant theologians? In order to answer this question, we must return to the sixteenth century and the rise of modern science. A new breed of scientists was gaining greater knowledge about the details of nature and history that had remained impenetrable to theologians. A growing body of scientific knowledge not only enriched intellectual pursuits, but was also applied to improving the health and material well-being of the general population. It was not the human lot to endure misery and suffering to the extent presumed by earlier doctrines of providence. Nor was this transition the aftermath of a so-called paradigmatic revolution. Theology was not shaken simply in reaction to the sun replacing the earth as the center of the universe, but as the result of the increasing ability of science to explain the workings of nature and history which had previously seemed beyond comprehension. The idea of progress fuelled by scientific discovery emerged as a more captivating cultural icon than that offered by an inscrutable providence. An exhaustive examination of how science came to displace theology as the dominant intellectual force is beyond the scope of this chapter, but some revealing points can be noted for plotting the course of this shift.

The antecedents of modern science can be conveniently placed with the recovery of Aristotle in the great medieval universities. This recovery enabled natural philosophers to establish themselves within the faculty of arts alongside the more established and prestigious faculties of medicine, law and theology. Although there were inevitable tensions among these faculties, the natural philosophers, emboldened by recent discoveries of extant texts of *the* Greek philosopher, were permitted to pursue their 'scientific' interests unencumbered, so long as they did not espouse any ideas contradicting scripture or church teaching – for example, Aristotle's claim that the earth is eternal rather than created (Grant, 1996).

Over time the arts in general, and natural philosophy in particular, developed greater methodological independence, easing their subservience to theology. This growing intellectual freedom paved the way for the so-called

scientific revolution of the sixteenth and seventeenth centuries. The employment of these refined methodologies, particularly in conjunction with new observational and experimental techniques, prompted the emergence of a large corpus of texts that could be called 'scientific' in the modern sense of the term, especially in such fields as physics, astronomy and optics. It should not be assumed, however, that this scientific literature contradicted doctrinal teaching. Galileo's celebrated trial was anomalous (Lindberg and Numbers, 1986, pp. 114–35), for more often than not the new science went about its business with little or no interference from ecclesiastical authorities, as witnessed by the prodigious work of both Protestant and Catholic scientists (*ibid.*, pp. 136–66, 192–217). Most theologians tended to either ignore the new scientific discoveries, or embrace them as confirmations of Christian doctrine. More commonly, it was the scientists who invoked theology to bolster the veracity of their claims. Johannes Kepler, for instance, argued that the physical structure of a heliocentric cosmos was a reflection of the Trinity (Brooke, 1991, p. 3), and Robert Boyle believed that his mechanistic portrayal of the universe reinforced both the notions of God's orderly governance and miraculous interventions (*ibid.*, pp. 130–35). It was arguably the inherited constraints of Aristotelian natural philosophy, rather than theology, that presented a greater barrier to the new science (*ibid.*, pp. 52–81).

By the beginning of the eighteenth century, however, theology was on the defensive against what appeared to be an ascendant and hostile science. Yet care must be taken in assessing this relationship, for it is only a partial consequence of the more complex agenda of the Enlightenment.³ The self-styled philosophes were profane cosmopolitans, dedicated to promoting what they believed was a liberating humanism. Freedom was the cornerstone of their project, for its goal was to emancipate humankind from the shackles of ignorance and superstition. All forms of external authority – save that of unfettered reason – were objects of contempt, resulting in a wide range of intellectual and religious targets. These targets were often assaulted with crude but effective force rather than with any surgical precision. The Enlightenment was not a uniform movement, but a 'volatile mixture of classicism, impiety, and science; the philosophes, in a phrase, were modern pagans' (Gay, 1969, p. 7).

As modern pagans, the philosophes were the vanguard in a war to liberate history from its Augustinian captivity. Following Augustine's lead in the *City of God*, increasingly elaborate epochal histories had been published up through the end of the seventeenth century. The philosophes maintained this essentially Augustinian structure while simplifying its sequence and recasting its content. In barest outline, the religious fervor of the primeval orient was tamed by ancient Greece and Rome only to decline under Christianity, but the long era of deterioration could now be reversed through a modern rebirth of reason. The midwife was classical antiquity, for the philosophes drew their inspiration from Epicurus, Lucretius, Cicero and other kindred luminaries in championing their born-again paganism.⁴ It would not be an easy delivery. The birth canal was blocked by the encrustations of a millennium of Christian superstition, requiring radical surgery.

Science provided a useful surgical instrument, particularly in removing the tumor of providence. The strategy employed for dismantling this hideous doctrine was straightforward: it was condemned as being intellectually incoherent and morally bankrupt. The central doctrinal claim that the God who created the world also governs it was particularly vulnerable on both flanks. Divine governance purportedly consists of God's willful acts that are not fully comprehensible to any mere mortal. Consequently, whatever good or ill humans encounter is not the result of blind fate, but God's will. The new science, however, was uncovering a universe governed by law rather than fiat. The problem was not that the workings of nature were in principle beyond the limits of human understanding, but that Christian dogma prevented rational examination as witnessed by the dearth of scientific achievements during the dark ages of Christendom. Moreover, the growing body of scientific knowledge was being applied to improving the quality of daily life. The pain, misery and suffering that God presumably inflicted to teach such virtues as patience and fortitude were in reality the result of ignorance. Wherever science prevailed against superstition, improved health, commerce and comfort followed. Humans could fashion a better world for themselves if only science were unleashed from its bondage to religious disingenuousness. If the church, in both its Protestant and Catholic versions, insisted on clinging to an obsolete doctrine of providence, then they were also invoking a God who was either an incompetent or cruel creator. In either case, such a God was certainly not worthy of obedience or worship. The choice presented was stark: Europe could either cast its lot with the history of a moribund Christianity, or forge a new history of a progressive science invigorated by the rebirth of pagan philosophy.

The tactic deployed initially by theologians in defending providence was to seize the surgical instrument away from the adversary. Instead of challenging God's governance of the world, the new science confirmed God's wondrous work of creation; the laws of nature disclosed the orderly manner in which God governed creation. After all, none other than Isaac Newton – the quintessential scientist – insisted that his work did little more than illuminate the providential design of the universe (Brooke, 1991, pp. 144–51). To a limited extent, this was the tactic deployed by Edwards. Scientific evidence was used to blunt the force of philosophical attack by emphasizing the reasonableness of the theological doctrine he was defending.

This tactic was doomed to fail.⁵ With the accumulation of greater scientific knowledge, the gaps within a Newtonian framework could be filled without appeal to divine intervention. Newton himself had created the opportunity for this turn of fortune by contending that the universe reflected evidence of divine design, *not* specific acts of God. Since God had presumably not designed an imperfect universe, then there was little reason for God to be an active participant in the daily affairs of creation. Consequently, a number of theologians turned increasingly to nature, instead of revelation, to describe the relationship between God and the world. These natural theologies portrayed a remote and detached creator. William Paley's watchmaker may have been an elegant theological image in light of the best science of his day, but it portrayed a deity who did little more than observe the beauty and precision of its own

handiwork (Paley, 1820). The influence of this turn is seen in McCosh, who purportedly attempted to reassert a robust defense of providence, but devoted much of his effort to demonstrating the compatibility of science and religion. His insistence that God was active in every aspect of the world had the practical effect of making God indecipherable from nature. Although the goal of natural theology was to make God intelligible within a scientific age, the deity expounded was a dispassionate creator and not the God of orthodox Christian faith who gave both drought and rain, and punished and consoled sinners.

Such a God could not sustain religious devotion. Deism and rationalistic Christianity claimed few adherents beyond a small cadre of intellectuals. A God intimately involved in human life was needed to nourish the soul. Yet believers could no longer turn to science to disclose a divine presence in either nature or history. Many retreated inwardly to find God in the depth of their psyche, a place which was presumably invulnerable to scientific scrutiny and skepticism. A religion of the heart offered experience as an alternative foundation for belief, but it was a foundation of poetic sentiment rather than empirical knowledge. This withdrawal into personal faith was the tactic employed by Bushnell. The world could be divided between science and religion. The former guided by reason described physical reality, while the latter following the leading of the heart described spiritual reality. Believers could thereby have their faith nourished by a God who could be neither challenged nor proven by science.

Although a religion of the heart preserved a comfortable and comforting niche for God, the price was dear. Religion was now a matter of private belief instead of public explication. By the mid nineteenth century it was widely accepted that science had effectively displaced theology as the dominant source of reliable knowledge. In this respect the philosophes's expectation that 'religious institutions and religious explanations of events' would be 'displaced from the center of life to its periphery' had been met if not exceeded (Gay, 1966, p. 338). The alliance between a reinvigorated paganism and the new science had proven to be both an intellectual and social force to be reckoned with. Yet this shift did not mean that religion disappeared. It lurked along the edges in the hearts of many individuals, including a large number of scientists. These private religious convictions could inspire spiritual and moral insights of public relevance that could not be easily ignored or dismissed, a fact readily admitted by even the most ardent agnostics. Skepticism, agnosticism and even atheism fueled by a burgeoning confidence in science did not lead inevitably to public immorality, but served to amplify the need for a continuing belief in morality itself.

This dichotomy between private belief and public reason, however, was intolerable if humans were to flourish as a humane *civilization*. Although providence had been displaced as a central cultural symbol, some compelling icon must fill the void if humankind was to fully enjoy its liberation from religious superstition. Progress presented itself as the most promising candidate. With their growing knowledge about the workings of nature and history, humans could apply their reason in fashioning a more desirable future.

The inscrutability of providence could be exchanged for greater control over the seemingly capricious flow of natural processes and historical events. An appeal to divine intervention was no longer needed to discern the pattern of God's plan for creation, if indeed such a plan existed.

In many respects, the torpid natural theologies and retreat to personal experience prepared the way for this shift from providence to progress. Yet contrary to Robert Nisbet, progress was not a latent quality whose origin could be traced back through Augustine to classical antiquity (Nisbet, 1980; cf Ferkiss, 1969, pp. 22–3). Although Nisbet is correct that modern progressivism maintained the epochal structure of history inherited from its Christian antecedents, its content differed radically to that inspired by traditional doctrines of providence. The history of the world was not an account of creation being drawn mysteriously to a destiny assigned by its creator, but an unfolding tale of human potential and capability. Moreover, this progressive trajectory could be plotted, and thereby exploited, by invoking an enlightened naturalism and historicism. What was needed to perceive this pattern, and project it into the future, were reliable methods of inquiry and application that were cumulative, empirical, experimental and precise (Turner, 1985, pp. 194–5). Consequently, science, much more than theology, provided a more suitable intellectual and practical framework for charting the course of a culture predicated on inevitable progress.

Although the philosophes understood their task as another round in the death struggle between Christianity and paganism, their program was oriented toward the future rather than the past. They had no nostalgic desire to restore classical antiquity; it was instead a source to inspire humans to shake off the chains of superstition, and take control of their own fate. The intellectual and moral courage of Athens and Rome could be plundered, but no attempt should be made to resurrect (Gay, 1969, pp. 92–8). Judging by the rhetoric of succeeding generations, the Enlightenment exceeded its own expectations if progress can be understood as a culture oriented toward the future, stripped of any providential trappings. By the mid nineteenth century 'progress', as James Turner has observed, 'did not merely describe human history; it functioned as a central value. Anything that put the brakes on progress smacked of evil' (Turner, 1985, p. 217). Yet to appreciate the import of the ascendancy of progress, particularly in terms of its relationship to science, requires that the story be told in anticipation of its impending demise.

From Progress to Process

By the mid nineteenth century the ubiquitous signs of progress were difficult to dispute, at least in terms of popular perception. The volume of scientific data continued to expand exponentially, exposing a natural world governed by dependable laws. Ignorance was everywhere steadily giving way to knowledge. Moreover, although the growth of scientific knowledge was impressive in its own right, its value was not merely esoteric. A growing familiarity with natural laws was enabling a mastery of nature itself for the sake of improving the

quality of human life. The toil, drudgery and suffering which had plagued previous generations were no longer taken for granted, but were seen as problems that could be solved. Medicine, for instance, was increasing human longevity, and was now, more often than not, ameliorating instead of inflicting pain on patients as physicians and surgeons adopted scientifically informed practices. But it was the development of new manufacturing and transportation technologies that had the greatest impact. The construction of large factories in tandem with steam-powered locomotives and ships created unprecedented commercial opportunities. Natural resources were now reliably delivered to factories, and manufactured goods were in turn distributed quickly to rapidly expanding markets. The resulting employment opportunities, wealth and prosperity fueled an economic transformation in which rural and aristocratic societies were displaced by urban, and more egalitarian, social structures. To be sure such developments were not without their critics. The transcendentalists and romantics, for example, bemoaned the loss of both natural beauty and the social graces that plagued the new centers of urban blight, but they were little more than eccentrics offering amusing diversions that did little to slow the inexorable pace of progress. It was the Crystal Palace exhibition, not Walden Pond, that captured the public imagination (Kasson, 1976).

More importantly, there was widespread public belief that progress was, at least in principle, limitless and unending. Why? Because it was also believed that the science underlying the dramatic improvements in material comfort and well-being was also, in principle, unlimited in the knowledge it could discover and apply. Although a direct causal relationship between scientific research and resulting technological development was exaggerated (Turner, 1985, pp. 121–2), it is nonetheless arguable that the marriage of Baconian utopian thought and a refined Cartesian methodology was a significant factor in spurring rapid industrialization (Borgmann, 1992, pp. 34–5). Moreover, since science was held in high public esteem, industrialists and inventors eagerly portrayed their work as applied science. The ploy worked, as witnessed by public accolades for newly constructed museums of science and industry and new systems of scientific management and production. Soon research could scarcely be mentioned without referring to an accompanying development. Science-based technology was, in short, the engine driving modern progress. Ironically, the principal imagery of natural theology had proven prophetic: the dominant reality directing and governing human life was mechanistic. But it was not a mechanism designed by a supernatural creator, but the machines of human ingenuity.

Progress was clearly the most prized legacy of the Enlightenment, yet the symbolic weight heaped upon it by its most eager champions proved incautious. The philosophes were in no doubt that reason in general and science in particular would eventually improve the human condition, but progress was neither as inevitable nor as uniform as their descendents proclaimed. Advances in science and technology did not necessarily mean that moral, social and political progress would keep pace. Condorcet, for instance, insisted that the overall pattern of history was progressive, yet progress itself

was the result of a dialectical process, often resulting in unexpected consequences – evil begets good and vice versa. History is a story of both human progress *and* suffering, and the blessings of the former are achieved only in uneven spurts. Although Condorcet remained confident that science offered the best road to progress, as witnessed by his utopian predictions, he also acknowledged that it could be used for good or evil purposes. A golden age lay beyond the horizon, but he was not optimistic that the road leading there would be either straight or easy (Gay, 1969, pp. 112–25).

Indeed, there were some who worried that modernity had lost sight of its progressive horizon. The axis of industry, science and technology had admittedly generated unprecedented prosperity. The distribution of wealth, however, was far from even. The cost of industrialization was the emergence of widespread poverty, deplorable working conditions, squalid cities, political corruption and devastated rural communities and landscapes. Mastering nature was a violent conquest, encompassing the collateral damage of appalling numbers of decimated families and communities (Borgmann, 1992, pp. 20–47). Exchanging the pain and misery of an inscrutable providence for that of willful exploitation was proving, for many, to be a bad bargain. The science which had promised to liberate humans from the shackles of superstition and fossilized tradition was instead serving as a cruel, industrial taskmaster. For many, there was little difference between the medieval serfs tied to the estates of their lords, and modern laborers chained to the factories of their employers.

Something had to be done. Social and political stability could not be maintained in the face of mounting public unrest. The most obvious strategy, to put the breaks on industrialization, was never seriously entertained. Doing so would be tantamount to admitting that progress was a false ideal, a demoralizing prospect given the hard-fought victory in capturing public confidence. The problem was not that the idea of progress was inherently flawed, but that it lacked direction; it needed a rudder and compass. Moral progress had failed to keep up with science. It was crucial that the distance be narrowed, and narrowed quickly, in order that scientific knowledge could be applied in a more humane manner.

Ironically, undertaking this moral task required focusing attention on the *psyche*, a mystery presumed to be impregnable to scientific scrutiny. Since there was no science of the soul, however, where to turn for guidance in accomplishing this task? There were two readily available options. One option was religion (Turner, 1985, pp. 82–95). Although theology had been exiled from the public square, religious sentiments remained alive along the periphery in the hearts of believers. Science had surely become the coin of the realm, but religious faith continued to be a strong force in shaping the morality of many individuals. Indeed, one strategy employed by many evangelicals in response to the ethical issues posed by industrialization was to stress self-improvement. It became increasingly apparent, however, that the issues could not be resolved on a person-by-person basis, because they were deeply embedded in economic, social and political structures. Sufficient moral progress could not be attained by changing individual hearts; more systematic reform was needed. This need

rekindled millennial expectations. The city of God was, after all, humanity's destiny and salvation. Only this time hope was not placed in the distant future with the descent of a ready-made heavenly city. If believers had learned nothing else from the Enlightenment and its aftermath, it was that the faithful were called to act, not wait patiently. All that was lacking was a noble moral and spiritual purpose which science and technology could serve. In this respect, God's will became virtually synonymous with human welfare. Consequently, God's city would be built firmly on the earth from the ground up, and the creator had wisely outsourced the construction project to local architects and contractors.

The social gospel movement took upon itself the task of overseeing this project.⁶ Its most prominent leader was Walter Rauschenbusch, the pastor of a Baptist church in New York's 'Hell's Kitchen', and a faculty member of Rochester Theological Seminary. Rauschenbusch believed that the widespread poverty and social unrest of the late nineteenth and early twentieth centuries presented a propitious moment for Christianity. Theology needed the social gospel to make it pertinent, and scientific and technological progress required a modern theology to steer it in the right direction. The social gospel marked the 'fact that for the first time in history the spirit of Christianity has . . . a chance to form a working partnership with real social and psychological science' (Rauschenbusch, 1997, p. 5). In alliance with the new social sciences, Christians could help reform commerce and industry in accordance with more just and democratic principles. The social gospel, therefore, required that Christian leaders be conversant with the best science of the day to ensure that it be applied in ways promoting 'ethical righteousness' (*ibid.*, p. 15), for theology 'ought to be the science of redemption and offer scientific methods for the eradication of sin' (*ibid.*, p. 57). The root of sin is the selfish ego, expressed through antisocial behavior that diminishes the common good. In submitting to God humans also embrace the common good, and their resulting sanctification is embodied in 'useful labor' (*ibid.*, pp. 102–3). In consistently promoting the common good through just social and political structures, sin would eventually be eliminated. In short, the 'social gospel is concerned about a progressive incarnation of God' within the social and political fabric (*ibid.*, pp. 147–8). If 'progress' were to become genuinely progressive, then Christian and democratic forms of cooperation must be implemented as opposed to the unchristian and autocratic principles of capitalism.

The other approach was that of reason. Although there was no empirical foundation for morality, one could nonetheless think clearly about ethics. Immanuel Kant had demonstrated that ethics could be grounded in universal principles from which rational maxims were drawn. Admittedly the result was a rather thin account of morality, virtually devoid of any substantive claims, but the rational procedural framework Kant offered went a long way in providing the lineaments of a social morality promoting economic and political reform. Dry Kantian principles might not change the values of most individuals, but they could ensure the implementation of public procedures that treated everyone fairly and humanely. Moreover, the absence of firm scientific knowledge about the basis of morality did not mean that science was

a hindrance in putting progress back on the right track. First, scientific methods involving rigorous observation, experimentation and dispassionate analysis reinforced a rational approach to ethics. The efficacy of reform was aided more by hardheaded instead of softhearted thinking. Second, science provided valuable information that assisted reformers in achieving their goals. Improved living conditions of the poor, for instance, resulted from knowing something about basic sanitation that could be incorporated in more stringent building codes. Third, although science could neither explain nor predict behavioral variation among particular individuals, great strides had been made in identifying trends within larger populations. The emerging social sciences provided useful data that informed new legislation in such areas as education, healthcare and labor. Reasoned ethical discourse in league with science was what was needed to redirect the social and political order toward a progressive horizon.

Although religious and secular reformers often conducted their respective crusades in isolation from each other, they nonetheless shared a number of goals and assumptions. Paramount among these was a belief in morality itself. Both shared a repugnance of suffering, and the conviction that it could be ameliorated through purposeful human action. Where they differed was at the source of their respective moral visions. For religious reformers it was divine righteousness that should permeate society, whereas for their secular counterparts God was not needed to reform the social order. These differing perceptions did not ultimately matter if the end result was human betterment. Thus both believed in progress, and for both it was unimaginable that true progress could be achieved in the absence of an alliance between science and morality. In this respect even the most faithful reformers were forced to admit that science, unlike theology, was in the best *public* position to maintain a progressive momentum. This acknowledgment did not mean that private beliefs had to be jettisoned, but if they were to have any public currency they needed to be expressed and acted upon in moral rather than religious terms. Religion had not been reduced to ethics, but it was through morality that progressive Christianity made its peace with modernity. There was no reason why Christians could not believe that science and technology, guided by fervent moral values, were the key instruments for building God's kingdom on earth, but it would not be the kind of city envisioned by Augustine.

Yet in the midst of all this progressive optimism, new advances in biology and psychology were already corroding the alliance between science and morality. The corrosive effects were nearly imperceptible, because in isolation from each other the scientific findings appeared benign. But their combined implications would eventually present a withering challenge to the very idea of progress. On the one hand, Darwinism was portraying a natural world that was varied, pliable and adaptive. The world was literally seething with life, not in the fixed form of discrete kinds, but in species that changed and adapted over time. Moreover, humans were very much a part of this evolutionary process – their ancestry was grounded firmly in the animal rather than heavenly kingdom. On the other hand, Freudian psychology was disclosing the complex and intricate strands of the human *psyche*. Powerful desires, often expressed in

contradictory selfish and altruistic ways, reflected unresolved and largely unconscious tensions emanating from unfulfilled emotional needs. By identifying and confronting these needs one was enabled to resolve or at least control these desires in a manner that did not result in antisocial behavior. Good mental health required a process of coming to terms with a human nature that was more earthy than angelic in character.

As mentioned previously, the central claims of these seemingly discrete sciences were not perceived initially as challenging a progressive agenda, and in some instances were welcomed as useful weapons to be deployed in the struggle. Darwin's world inspired in many a sense of awe and wonder in the natural grandeur of life, and by way of extrapolation moral, social and political change could be achieved in an evolutionary (read orderly) rather than revolutionary (read chaotic) manner. The sheer complexity of Freud's inner world was equally breathtaking, and offered the company of analysts who would assist individuals in coming to terms with the pace of rapidly changing social structures and mores. Although many of the religious blanched at Darwin's agnosticism and Freud's atheism, their lack of faith did not detract from the usefulness of their discoveries. Evolution could be construed as the way God created and governs the world, and sufficiently sanitized variants of Freudian psychology would later dictate the practice of pastoral counseling.

Not everyone, however, was receptive, because doubts were emerging over whether the alliance between morality and science would result in inevitable progress. Huxley, for example, granted that the nature revealed by science might inspire a terrifying awe, but he was quite certain that it offered nothing of value for ethics (Turner, 1985, p. 256). Although morality must guide science, science *per se* could do nothing to identify or purify the source of moral vision. The Darwinian and Freudian investigations corroborated his skepticism, for when combined they opened a small portal on what had been thought to be the opaque human psyche, and what was seen inside was not pretty. The world was indeed filled with diverse forms of life, but the price paid for their variation and survival was exorbitant. Evolution was an account of continuous and violent competition. One species survived because others became extinct, and even within a species the strong and adaptable thrived at the expense of the weak and maladaptive. The drama of evolutionary ascent was predicated on a subplot of death, and the omnipresent threats of pain and misery accompanying it. Moreover, humans were not spared a role in this bloody spectacle, but were shaped by it. As psychoanalysis revealed, humans carried within their subconscious a host of virulent instincts and murderous impulses that the rational mind was hard pressed to keep under control. The line separating barbarous and civilized behavior was, at best, thin and tenuous. Humans, like any other animal, were driven by the overwhelming urge to survive.

Consequently, morality did not capture the noble quality of human nature, but was merely an adaptive tool offering a survival advantage. Cooperation and compassion, for instance, were not valued because they were inherently good or right, but because they gave a particular individual or group an advantage over others in the competition over scarce resources. Individuals learning the conventions of self-control and altruistic acts were ultimately

grounded in a self-interested desire to preserve the stability of one's welfare. Morality was little more than a symbolic method of sharpening the tools of survival.

Although the chain coupling morality and science had not been broken, deep chinks were now apparent in its key links. If religious reformers were to square their beliefs with science, then they must return to the Enlightenment's challenge to explain once again how they could base their morality on a God who was either an incompetent or cruel creator. And if secular reformers were to continue arguing for the efficacy of a morally directed science, then they must explain how a dispassionate reason could somehow be invoked by thoroughly self-interested beings. No readily compelling answers were forthcoming, and in their absence the confident assumption that progress would inevitably result from the alliance between morality and science appeared as little more than spurious rhetoric.

Whether the caricatures of nature red in tooth and claw, and the human as tamed savage portrayed accurately the implications of Darwinism and Freudianism, respectively, is highly questionable. Less contentiously, the imagery seized public imagination, and altered the course of progressive reform. Given the violent tendencies of human nature, the competition of the economic arena was perhaps not such a horrible specter after all. Competing for monetary rewards was arguably a preferable channel for sublimating instinctual drives than other, more violent, options. Over time the human species might be better served if it were comprised of rugged individuals, whose survival in a society being shaped increasingly by technological artifacts would depend increasingly on competition conducted over social rewards instead of natural necessities. Even the socially minded Rauschenbusch did not deny the need for personal responsibility and individual initiative, and that these good goals were at least partially achieved through economic incentives and disincentives. The means of achieving human progress might be counter-intuitive, as Condorcet had recognized. More ominously, many individuals, or perhaps even entire groups or races, might be unable to adapt to these changing social, economic and political environments. The net effect would be escalating poverty and crime unless the reproductive capacities of the ill-adaptive were brought under control. Hence the logic of eugenics that encourages the fit to procreate, while discouraging or preventing the unfit from breeding. Even the tender-hearted Bushnell would take his cues from harsh evolutionary lessons in this respect, contending that the kingdom of heaven would be built on earth by Christians 'out-populating' inferior stock (Bushnell, 1960, pp. 165–83). Human progress was in jeopardy unless the inferior genes retarding its momentum were removed.

These attempts to incorporate the dark side of human nature within the progressive agenda distracted attention from a more troubling, underlying issue, namely, that the alliance between morality and science was a bankrupt enterprise. If neither religion nor reason could disclose *the* normative content of morality, then what was to prevent science from serving a destructive ideology posing as morality? The fear would come true in the bloodbaths of the twentieth century in which totalitarian regimes of both the left and right

waged wars and genocidal vendettas disguised as moral crusades to cleanse the world of its vermin (Arendt, 1968). Most distressing to true believers in progress was how easily science embraced the task of perfecting tools of war, torture and terror. The mushroom clouds detonated both in anger and to satisfy scientific curiosity also incinerated the locomotive and tracks of progress. Nor could any massive reconstruction project bring them back. Looking back from this vantage point prompted a growing recognition that the preceding battles over the course of history had been waged in vain. There was no progressive trajectory to discern; only a non-directional *process* marking the passage of time. History was not headed toward a golden age, because history was simply not heading in any direction at all. Thus history was also not a story of the ongoing struggle between religious superstition and enlightened reason. The image was at least half right, because much of human history was an account of conflict, but one more akin to Thomas Hobbes's perpetual war of all against all (Hobbes, 1996, Part I, pp. 7–110). The vast plain of this foreboding state of nature stretched endlessly in every direction, and no rejuvenated Athens, much less a new Jerusalem, waited beyond any of the horizons.

Yet as Hobbes also knew, a tolerable and even crudely civil existence could be forged in this wilderness; indeed, any semblance of human life beyond that of bare animal necessity dictated that the effort be undertaken (Hobbes, 1996, Part II, pp. 111–245). But what recourse was available once the certitudes of religion and reason had withered, and the emotive symbols of providence and progress had been smashed? There was still the will, and unlike previous generations humans now possessed the technological power to assert it more effectively. Moreover, if humans were to carve out for themselves a hospitable niche within a purposeless and directionless history, that power would be needed not only to master nature, but also to master, if not transform, human nature. It is with the postmodern project of directing human evolution that technology begins to supplant science (as well as an already eviscerated theology) as the dominant, formative cultural force, a story that is told in greater detail in the next chapter.

Notes

- 1 Edwards's account of this event appears in a letter dated March 19, 1737, and is included in the 'Preface' to his *A Faithful Narrative of the Surprising Work of God* (Edwards, 1974, pp. 344–6). For further commentary, see Gustafson, 1981, pp. 93–4.
- 2 Although the text consulted is the twelfth edition published in 1882, the first edition was published in 1850, one year after Bushnell's *God in Christ*.
- 3 The following discussion on the Enlightenment draws heavily on the works of Peter Gay as noted in the bibliography.
- 4 Plato and Aristotle are largely absent from their canons. See Gay, 1966, pp. 31–203 regarding the influence of pagan sources in the Enlightenment.
- 5 The following discussion on the aftermath of the Newtonian revolution in respect to failed theological defenses of providence and subsequent appeals to a religion of the heart is indebted to the work of James Turner as noted in the bibliography.

- 6 The leaders of the social gospel movement drew much of their inspiration from the English Christian socialism movement led by F. D. Maurice and Charles Kingsley. For a succinct overview, see Douglas F. Ottati's 'Foreword' in Rauschenbusch, 1991.