

INTRODUCTION

Rarely do historians describe seventeenth-century English natural philosophers as colonialists. Rarely, too, has there been serious scholarly discussion of natural philosophers' involvement in the intellectual and practical processes of English empire-building. This is a curious omission. It may surprise some historians of the British Empire to learn that Robert Boyle served on the board of the English East India Company, held shares in the Hudson's Bay Company, and served as President of the New England Company, a missionary society which sponsored the translation of the Bible into the indigenous Algonquian language. He also served on the Council for Foreign Plantations. Boyle's intellectual predecessor Francis Bacon held shares in the Virginia Company, the Newfoundland Company, and wrote extensively on the issue of colonizing Ireland. Moreover, many of Boyle's contemporaries in the Hartlib Circle, as well as those in the Royal Society of London such as Sir Hans Sloane and Henry Oldenburg, maintained an avid interest in the English colonies.

Natural philosophers' colonial involvement, and their absence from histories of the British Empire's intellectual origins, compels a historical question. What understanding of empire did natural philosophers hold? The answer to this question is startling. In his tract, *Of the Usefulness of Experimental Natural Philosophy*, Boyle described his overarching project as the re-creation of '*The Empire of Man over inferior Creatures*.'¹ This was the framework through which he understood his involvement in the institutions of English colonization.

Boyle's motivation for involving himself in English colonization was not that of establishing virtuous new commonwealths in North America. Nor was it primarily about the profit from the plantations in the Caribbean or in Ireland, the latter of which he was himself a direct beneficiary. It was not even England, as a realm under the unchallenged authority of King Charles II, which constituted Boyle's primary ideal of 'empire'. Rather, the 'empire of man over inferior creatures' denoted the original dominion that Adam commanded over nature in the Garden of Eden.

British Empire scholarship has largely focused on the emergence of the British Empire as a territorial entity and upon its inheritance from the Roman law

tradition in which the primary conception of empire was of the un-impinged sovereignty of the monarch over a composite collection of territories. According to this account, the British Empire's primary intellectual inheritance is in Roman law, and its texts concern English state-building. When confronted with this story, Boyle's conception of empire as man's prelapsarian dominion over the earth seems incongruous: its inheritance is not Roman but theological, and its texts concerned not state-building but the Old Testament Creation narrative.

This narrative, articulated in the book of Genesis, tells a markedly different story about empire. In the Garden of Eden, God endowed Adam with a mastery over the natural world. 'Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth' (Genesis 1:28). Adam's mastery over the earth was partly manifested in his perfect knowledge of the natural world; knowledge that enabled him to give correct names to creatures. In the Fall, however, Adam, who stands as a cipher for mankind, lost both his knowledge and his empire over nature.

To historians of science, this idea of empire – at least as it pertained to man's proper relationship to the earth – is well known as the foundation of Francis Bacon's project *The Great Instauration* which aimed to 'enlarge the bounds of humane empire to the effecting of all things possible'.² Bacon's aim was adopted by the exponents of the new natural philosophy, during what might, in an historically messy shorthand, be called the Scientific Revolution. Robert Boyle, John Locke and other founding members of the Royal Society of London aimed to use natural philosophy to restore man's original dominion over nature. The fact that the core of this ideal of man's dominion is actually a theory of *empire* remains unexplored. Did natural philosophers' appeals to the restoration of man's *original* empire over the world have anything to do with their involvement in the institutions of *colonial* empire-building? What was the relationship between the concepts of geographic empire, and man's prelapsarian empire?

This book has two aims: the first is historical and the second is methodological. The historical aim is to use the tradition of empire in the work of English natural philosophers from Francis Bacon (1561–1626) to John Locke (1632–1704) as the basis of an intellectual history of the origins of the British Empire. This is an interdisciplinary project which takes the form of bringing natural philosophy back into the history of the British Empire and, conversely, bringing the concept and origins of the British Empire to bear on early modern English science.

My methodological aim concerns the usefulness of political languages as a means of understanding early modern intellectual transmission. In intellectual history, the dominant way of understanding the process of intellectual transmission is through a series of political vocabularies or languages: that is, through a set

of terms or keywords that constitute a kind of rhetorical tool box; a set of resources into which authors consciously delve in the context of a political debate. I hope to demonstrate, however, that the rubric of 'political' languages is inadequate for understanding the intellectual origins of the British Empire. Languages are certainly the means through which early modern ideas were articulated, but the characterization of such languages as *political* is problematic. There are two reasons for this. First, the notion that early modern vocabularies are best described as 'political' does not allow sufficient room for natural philosophy or theology. It is too secular a context. Natural philosophers' use of the language of Adam's empire did not primarily occur in political debate; the language is better understood as theological, or natural philosophical, than political. The characterization of early modern languages as 'political' misleads us into assuming a secular context for the generation of these ideas. The seventeenth-century mental universe – in particular the mindset of natural philosophers – was deeply theological.

The second point is that, associated with the rubric of *political* vocabularies is the idea that the most formative intellectual tradition in early modern England was that derived from Roman thought. In the context of the intellectual origins of the British Empire, however, the Bible was just as influential a text as the work of Cicero. My methodological aim is to extend the conception of early modern vocabularies beyond the political. I will introduce a theological and natural philosophical vocabulary of Adam's empire to the group of languages which shaped the intellectual life of the seventeenth-century Atlantic world. In doing so, I aim to broaden our understanding of the intellectual origins of the British Empire beyond both the Puritan and the Roman inheritances to include the formative traditions of theology and natural philosophy.

The book pursues these aims by mounting two central arguments. The first concerns the importance of the New World, and of a concept of 'empire', to early modern English natural philosophers. The reason why English natural philosophers were so interested in the New World, and particularly in English colonies, was because they held a theory of empire as man's original dominion over nature. It was the emphasis upon restoring man's original encyclopedic knowledge of the natural world which generated their interest in the New World, and ultimately in its English colonies. Put another way, there existed a concept of empire – largely overlooked by British Empire scholars – which influenced a tradition of natural philosophers involved in the institutions of empire-building.

One might question why I choose to focus on the New World and not, for example, the trading posts being established on the Indian subcontinent during this period. The New World was of particular interest to natural philosophers because it was unknown to the ancients. The natural knowledge it would yield, therefore, was assumed to be that which was lost at the moment of the Fall. It would be misguided and nearly impossible, however, to study natural philosophi-

cal attitudes toward the New World without extensive references to Ireland, so the scope of this book is Atlantic. This is not to say that other overseas places, such as the Indian subcontinent, were not of interest to my subjects, but rather that for considerations of space, this is a book about Atlantic history.

My second argument concerns the role that natural philosophy played in the ideological origins of the British Empire. The idea of man's dominion over nature became part of the basis for the Lockean theory of property. In subsequent centuries, the British used this theory to help justify their colonial possessions, whatever Locke's original intention. The final chapter will demonstrate that Locke's theory of property in the *Two Treatises of Government* was rooted in the ideal of restoring man's prelapsarian empire over the earth. This was a project of redemptive labour in which man had to cultivate the soil in order to return the earth to its fruitfulness and man to his proper position of earthly dominion. As Locke put it, 'Man had a right to a use of the Creatures, by the Will and Grant of God'.³

Although this argument rests ultimately upon my analysis of Locke, its groundwork is laid in the preceding chapters, which trace what I argue were two separate but related aspects of the restoration of man's plenary empire over the earth: one agrarian and the other epistemological. The agrarian aspect consisted in the idea that man must cultivate the soil and in doing so return the earth to its original fruitfulness. After all, the earth also suffered because of the Fall. 'Cursed is the ground for your sake; In toil you shall eat of it all the days of your life' (Genesis 3:17). An ideal of cultivation based upon the redemptive possibility of labouring to amend the agrarian implications of the Fall was developed throughout the seventeenth century and eventually became the basis of Locke's theory of property.

The second aspect of Adamic empire was epistemic. This was the recovery of man's encyclopedic knowledge of the natural world. The idea of recovering and collating knowledge was not unique to the seventeenth century. As Richard Yeo has shown, 'Protestant theologians in particular, were exercised by the hope of restoring former pristine knowledge of nature, languages and morality',⁴ and that, in the mind of Bacon, for example, the 'search for natural knowledge [was] a precondition for spiritual redemption'.⁵ Aside from Bacon and a number of the members of the Royal Society, whose primary concern was the recovery of man's epistemic empire, the natural philosophers I explore were predominantly interested in both aspects of the recovery of man's original empire over nature. Over the course of the century, however, there was a gradual shift towards an emphasis upon the project of cultivating the earth and, ultimately in Locke's work, a connection between this agrarian project and English colonization.

Historians and the British Empire

Approaching the British Empire as an intellectual historian is an odd experience. One expects to find histories of the *idea* of empire, and of the ideologies of empire, perhaps along the line of the kind of 'history of concepts' which has taken hold of other key political ideas like democracy. For this kind of study, one would think that 'empire' would be a marvellous candidate. Yet scholars of the British Empire have exhibited a certain resistance to writing about their subject's conceptual origins. There are, I think, two reasons for this.

The first has to do with the nature of the history of political thought. There is a certain incongruity when the idea of empire is placed in the context of other political concepts: empires transcend the 'state', they transcend the 'nation', and so, it is often thought, they transcend the territory of the historian of political thought, insofar as politics is an activity of citizens, subjects and the State.⁶ A good deal of British Empire scholarship, however, deals with the theory of *imperialism*. This is partly because of the importance of the concept of imperialism to the Left, for example in the works of Vladimir Lenin⁷ and Karl Kautsky⁸ and more recently Edward Said.⁹

But in these studies, empire becomes an *ism*; an abstract characteristic of the capitalist economic structure which defines modernity. There is little space in this debate for a discussion of the sixteenth- and seventeenth-century intellectual origins of the British Empire, in which ideas of profit and capital were less important than those of virtue or Old Testament theology, for example. It is not surprising that the etymology of the term 'imperialism' presented by Raymond Williams in his famous study *Keywords* (1976) sees the term as part of a *modern* political lexicon. The word imperialism is, he states, a nineteenth-century invention.¹⁰ And so it is. But *empire* was not. Williams's choice of 'imperialism' as his keyword is perhaps the best illustration of the fact that, among many scholars, *imperialism* rather than *empire* is the issue.

The second reason that there has been little scholarly investigation of the conceptual origins of the British Empire concerns the division of labour among historians. In recent years the British Empire has become the subject of new types of history-writing: post-colonialism and cultural history have reoriented the scholarly debate towards the idea of cultural encounters between colonizers and colonized. Most of the primary sources for this theme in British history pertain to the eighteenth and nineteenth centuries, with the spread of English colonization into India, Africa and the south Pacific. Related to this is the fact that the story of the rise and fall of the British Empire has largely been told as the story of the rise and fall of the 'second' British Empire, that which began in India and spread to Africa and Australasia in the latter half of the eighteenth century, and was founded upon military conquest and the exploitation of indigenous

people. Consequently, the haphazard colonization in the Atlantic world, that amorphous outgrowth of early modern English state-building, has been omitted from many histories which dealt only with the second empire.

In Eric Hobsbawm's series of general histories, *The Age of Empire* denotes the period from 1875 to 1915. The British Empire's origins in the late sixteenth-century colonization of Ireland and tentative colonization of North America are implicitly out of synch with Hobsbawm's epoch-defining nineteenth- and twentieth-century empires. In European scholarly consciousness, the British Empire is a capitalist phenomenon and its history is seen as distinct from Britain's domestic history. There exists what David Armitage has called the 'continuing disjuncture between "British" and "Imperial" histories.'¹¹

Until recently, Puritanism was the focus of much scholarship on the history of English colonization.¹² Although I do not deal explicitly with Puritanism, my case for the importance of theology to our understanding of the intellectual origins of the British Empire echoes this scholarship's emphasis upon the religious ideals of the early colonizers. The immediate historiographic context for this book is the recent shift away from the scholarship on Puritanism and towards a more secular reading of the British Empire's ideological origins in which the traditions of Roman law and civic humanism are central. This move was pioneered by David Armitage's *Ideological Origins of the British Empire* (2000).

According to Armitage, the intellectual inheritance of the British Empire is to be found in the Roman law tradition, in which the term 'imperium' denoted the un-impinged, indivisible sovereignty of the monarch over a number of territories. In England's case, this was a composite monarchy comprised of territories in the British Isles. Anglo-Saxon kings, for example, claimed to be rulers of an *Imperium Anglorum*. As Frances Yates showed, under the reign of Elizabeth I, an imperial idea emerged which concerned religion above all. It was an idea of 'sacred empire' characterized by royal supremacy over both church and state and was articulated in works such as John Dee's *General and Rare Memorials Pertaining to the Perfect Arte of Navigation*. In Dee's work, 'the tale of the lands and seas to which she can lay claim is based both on the dominions mythically reported to have been held by the British King Arthur and on those over which the Saxon King Edgar ruled.'¹³

The concept of a British Empire, however, emerged in the context of Anglo-Scottish relations in the 1540s and drew upon the idea of empire in Roman law: *Rex in regno suo est imperator* – the king is an emperor within his own kingdom.¹⁴ The 1540s saw the birth of the concept of the 'empire of Great Britain', and it also saw the beginnings of a Protestant conception of that empire.¹⁵ Authors of pamphlets on behalf of Henry VIII advocated a union of England and Scotland under English supremacy, claiming that the archipelago of Britain was his empire in the tradition of Brutus. It was an empire in the sense that the monarch possessed

unlimited authority within his territory, and at the same time he was independent from the Pope. Thus the three kingdoms of England, Scotland and Ireland were united in the form of a composite monarchy, in which all three were independent, but under one sovereign. As Armitage shows, the Roman lineage of empire as unchallenged sovereignty 'encouraged the fastening of territorial boundaries'.¹⁶ This was a concept of empire as sovereignty which was exercised geographically.

The fact that the emergence of a concept of empire in England took place in the context of debates about the nature of the three kingdoms illuminates one of the underlying themes of Armitage's study, which is that state-building and empire-building went hand in hand. The other historical moment of the creation of the British Empire also involved a state-building exercise. This was the colonization of Ireland which, as Armitage has shown, was based upon a Roman model. Ironic from the standpoint of history, in the Irish context colonization was put forward as the solution to the troubles of governing the area and keeping it under English control. It was these acts of state-based consolidation, in Scotland and in Ireland, that Armitage argues formed the basis of the British Empire.

This process was, however, imperfect and contingent.¹⁷ The Irish and the Scottish did not think of themselves as British, and the Scottish pursued colonization on the other side of the Atlantic under their own identity and auspices at Darien on the Isthmus of Panama, much to the chagrin of the English.¹⁸ Moreover, as Armitage has shown, the term 'British Empire', denoting a single political body encompassing the Atlantic colonies as well as the British archipelago, was not used until the late seventeenth century at the earliest.¹⁹

Caution is needed, therefore, when discussing the intellectual origins of the British Empire. It is important to remember that despite the fact that the concept of the British Empire emerged at the end of the seventeenth century, its ideological origins were shaped much earlier. We can legitimately speak of the influence of seventeenth-century natural philosophy upon the intellectual formation of the 'British Empire'. The reason for this is that there is a foundational connection between the idea of man's plenary empire and the Lockean theory of property which, whatever Locke's original intention, ultimately became central to the British Empire's ideological apparatus. For the purposes of historical accuracy, I will refer to 'English' colonization and empire-building throughout the book.

A central problem in the ideological origins of the British Empire, David Armitage argues, was the uneasy coexistence of *dominium* (property, or the rights that landlords had over their estates) and *imperium* (the unlimited, independent authority of a monarch over his territory which did not necessarily encourage expansion). This problem is the basis of one of Armitage's most important claims: that the British ideologies of empire were never able to unite a theory of sovereignty with a theory of property. This, he argues, was the 'ultimately combustible dilemma at the core of British Imperial Ideology'.²⁰ According to Armitage, there

were several attempts at incorporating *dominium* and *imperium* but the disjunction remained, and it explains why Thomas Jefferson and John Adams could show that, since the first discovery of America had been undertaken by individuals or companies rather than by the state, Parliament could make no claims over the American colonists who were encompassed only by royal *imperium*.²¹

I disagree with the claim that there was a disjunction between the concepts of *imperium* and *dominium* – sovereignty and property – and that the two ideas were never properly brought together. I aim to demonstrate that in the Biblical tradition of empire, these two ideas existed in harmony. According to the Hartlib Circle, and later John Locke, for example, dominion over land would lead to the restoration of man's earthly sovereignty. Furthermore, the terms *imperium* and *dominium*, and their English translations empire and dominion, were often used interchangeably as synonyms.

Although this argument will be explicated later, we can demonstrate the point briefly by comparing the King James Bible's use of the terms with that of Francis Bacon in his 'Temporis Partus Masculus', the Masculine Birth of Time. The full title of this text is 'Temporis Partus Masculus Sive Instauration Magna Imperii Humani in Universum',²² which can be translated as 'The Masculine Birth of Time or, The Great Instauration of the Empire of Man Over the Universe'. Bacon chose to use the term *imperium* to describe man's original power over the world. According to Armitage's argument, however, we would expect Bacon to have used the term *dominium* rather than *imperium*, because 'dominion' was the word used in the book of Genesis to describe man's plenary empire over nature.²³ Given that Bacon was referring to this theological idea in the book of Genesis, there are two possible interpretations for Bacon's word choice. Either Bacon was intentionally altering the meaning of the passages in Genesis because he believed that man's plenary 'dominion' and man's plenary 'empire' were different ideas, or the terms were, in this context, synonyms. The latter is clearly the case. This linguistic ambiguity between the concepts of dominion and empire, a phenomenon that we witness throughout the seventeenth century, challenges the argument that the two were irretrievably disjointed.

For Armitage, Genesis 1:28 was a scriptural basis for colonization and it was also the Biblical justification for the agricultural argument for property rights. This was the idea that, as Locke put it, if we mix our labour with the earth it becomes legitimately ours. For Armitage, however, this is only a theory of property – of *dominium* – rather than empire. By contrast, I want to suggest that the Biblical injunction to improve the earth was in fact attached to the idea of Adam's original empire over nature. As I show in the final chapter on John Locke, the agricultural argument for property was part of the Adamic *imperial* project because recovering the fruitfulness of the earth will give man an empire over it. Locke was making an argument not only about property but also about man's

original *empire*. Because Locke employed a theory of property that encompassed a theory of empire, I hope to demonstrate, contra Armitage, that *dominium* and *imperium* coexisted in the ideological origins of the British Empire.

The emphasis upon the Roman lineage of empire is extremely valuable to our understanding of the British Empire's ideological origins. It is also a very important depiction of the role of debates about early English state-building in shaping claims to empire. The point of this book is not to suggest that the conception of man's plenary empire over nature was opposed to, or in competition with, the Roman tradition. Rather, my point is that the British Empire has a largely overlooked intellectual lineage in natural philosophers' adoption of a theology centred upon Adam.

A second recent study to bring the legacy of classical thought back into the intellectual history of English colonization is Andrew Fitzmaurice's *Humanism and America: An Intellectual History of English Colonisation 1500–1625*. Fitzmaurice argues that the 'humanist imagination dominated colonizing projects'²⁴ and that early English colonists aimed to establish new commonwealths. They were often anxious about dispossessing the indigenous inhabitants of the land, and about the potential for moral corruption on the colonial periphery. Francis Bacon, for example, displayed a civic humanist anxiety about 'displanting' native peoples. This is an astute observation. I aim to show that the rest of Bacon's work reveals him not just as a civic humanist but also as a natural philosopher for whom the advancement of learning would enable man to recover his original empire over nature. The New World was vital to this epistemic imperial project.

There are several recent scholarly trends in the broad field of British Empire historiography. In general, these have accompanied the increasing interdisciplinarity in the humanities and the attention to cultural history. The first trend decentres Britain as the subject of history and places it in the broader context of the Atlantic world, the Commonwealth and the kingdoms of Ireland and Scotland. The creation of the British Empire is now frequently seen in the context of the development of England's sixteenth- and seventeenth-century colonial policies toward Ireland, and her relationship with Scotland. The 'New British History' as it is called, includes for example the new five-volume *Oxford History of the British Empire*, and recent work on the relationship between the English colonization of Ireland and that of America includes the work of Nicholas Canny and David Beers Quinn.²⁵

The relatively new field of Atlantic history has emerged from a recognition of the interrelationship of the Three Kingdoms and North America in the formation of the early modern world and its intellectual traditions. Atlantic history tells 'the story of the creation, destruction and recreation of communities as a result of the movement, across and around the Atlantic basin, of people, commodities, cultural practices and ideas' as J. H. Elliott puts it.²⁶ This is part of a

larger trend to examine the way that cultural encounters shaped the mental categories of their European colonizers.²⁷

The scholarship on Atlantic history would benefit from an exploration of the role that natural philosophy played in shaping the concept of empire. It is especially indicative that the new five-volume *Oxford History of the British Empire* does not deal with the influence of natural philosophy on the conceptual origins of the Empire. The first volume, on the 'Origins of Empire', makes no reference to natural philosophy or science. The second volume on the eighteenth century does include Richard Drayton's chapter, 'Knowledge and Empire',²⁸ and the fifth volume includes another chapter by Drayton on 'Science, Medicine and Empire',²⁹ but both deal primarily with the period after the seventeenth century. Moreover, as Drayton's analysis and synopsis of the historiography reveals, the recent burgeoning interest in the role that science played in British empire-building has seen no study of the *concept* of empire.³⁰

Nevertheless, a number of illuminating studies focus upon the role that science played in the English imperial endeavours and early American colonial history. Joyce Chaplin's *Subject Matter: Technology, the Body and Science on the Anglo-American Frontier, 1500–1676*,³¹ deals with the relationship between science and English colonization in the context of early American history with particular attention to the history of race and disease. Richard Grove's *Ecology, Climate and Empire: Colonialism and Global Environmental History*³² and his *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860*³³ take the phenomenon of empire as the defining feature in the history of ecology. Grove charts the origins of environmental concern and argues that 'the seeds of modern conservationism developed as an integral part of the European encounter with the tropics and with local classifications and interpretations of the natural world and its symbolism'.³⁴ For natural philosophers in the early modern period, for example, 'the physical environment began to acquire the attributes of religious experience and purpose ... Paradise had become a realizable geographical reality, or so it seemed'.³⁵

In the British context, Richard Drayton engages in a similar project in *Nature's Government: Science, Imperial Britain and the Improvement of the World* (2000).³⁶ This is one of few studies to bring together the history of science with the intellectual history of the British Empire. Underpinning Drayton's work is the argument that 'ideas of Providence, and of Adamic responsibilities and prerogatives, were the ideological taproot of the First British Empire and, translated into political economy, they underpinned the Second'.³⁷ In other words, there was a Protestant theological background to the ideals of economic improvement which animated the British Empire from the late seventeenth century onwards.

I hope to develop this attention to the theological, intellectual lineage of the British Empire by arguing that Adamic ideas of man's dominion over the world

constituted a theory of empire. This Biblical understanding of empire warrants being conceptualized as an intellectual tradition of empire, such that we can map its use and development by natural philosophers from the late sixteenth to the early eighteenth centuries.

Aside from these important works, the bulk of the literature on the relationship between science and the British Empire falls into two categories. First, a vast amount focuses upon the late eighteenth and nineteenth centuries, over one hundred years after Boyle and his contemporaries.³⁸ Second, of the studies to theorize the relationship between 'science' and imperialism, most are not intellectual histories and thus the *concept* of empire's scientific inheritance remains unexplored.³⁹ Chaplin, Drayton, Grove and others who do consider the role of natural philosophy in English empire-building in the seventeenth century have produced instructive scholarship. But the question remains. What role did natural philosophy play in shaping the very *concept* of empire?

Early Modern English Natural Philosophy

This book uses 'science' rather than natural philosophy in its title. This is not to imply that science and natural philosophy are identical but rather that natural philosophy shaped the origins of modern science. My task is to explore the origins of what is now popularly known as the relationship between 'science and empire', so I use the term 'science' to signify the book's contribution to these debates. The terminological quagmire that is the science/natural philosophy relationship often leads historians to use the term 'science' in the titles of their books. Here I follow the lead of historians like Michael Hunter and Joyce Chaplin who use the word 'science', yet are careful to historicize the nature of natural philosophy.⁴⁰

Even the term 'natural philosophy', however, brings with it definitional problems. It is hard to identify exactly what constituted the subject in the early modern period. Nevertheless, I believe that we can plot a coherent tradition of natural philosophy in seventeenth-century England, centred upon the Baconian belief in the restoration of man's dominion over nature. In short, men like Bacon and Boyle were involved in a fundamentally religious project. In this sense, my research corroborates Andrew Cunningham's argument that seventeenth-century natural philosophy should be seen as 'a discipline and subject-area whose *role and point* was the study of God's creation and God's attributes'.⁴¹

The history of science has produced a wealth of literature on the idea of recovering Adam's dominion over the earth. Pioneered chiefly by Charles Webster, this project was part of the 'Puritanism and Science' thesis which argued that the rise of Puritanism was one of the engines of the Scientific Revolution in England. This thesis developed in response to two scholarly traditions. The first was the correlation between the Protestant work ethic and the 'spirit of

capitalism' put forward firstly by Max Weber, and then by Robert Merton, who originally sought correlations between the rise of capitalist social classes and the practitioners of the new Science.⁴² Merton's work was published in 1938. The second tradition emerged approximately two decades later in the 1960s and 1970s, and surrounded the claims made by Christopher Hill regarding the role of radical Puritanism in the English Revolution.

The foremost exponent of an argument influenced by Hill was Charles Webster, whose seminal work *The Great Instauration* was based upon his lectures to the Workers Educational Association in Leeds, 1968. Arguing that the origins of experimental natural philosophy consisted in the radical social reformist aims of a group of Puritan scientists, Webster reoriented the history of early modern English science, and did for this field what Christopher Hill did for the English Revolution. The substance of Webster's thesis was that Puritan intellectuals held the millenarian conviction of restoring Adam's prelapsarian dominion over the earth. 'It seemed', he wrote, 'that the fateful intellectual decline which had begun with the Fall of Adam might at last be reversed. The Puritan Revolution was therefore seen as a period of promise when God would allow science to become the means to bring about a new paradise on earth.'⁴³

Webster pointed out the Biblical basis for the Puritan natural philosophers' millenarian hopes. It was not only Genesis 1:28 which captivated the Puritans, but also the book of Daniel, which stipulated that 'in the final days of the earth, knowledge will increase' (Daniel 12:4). The eschatological hope in the book of Daniel was one of the founding ideals of Francis Bacon's magnum opus, *The Great Instauration*. The inscription under the illustration of the Pillars of Hercules, on the title-page of the *New Organon*, was based upon the passage in Daniel: *Multi pertransibunt et augetur scientia*, roughly translated as 'Many will travel to and fro, and knowledge will increase.' The opening up of the geographic world signalled the opening up of knowledge, such that the 'thorough exploration of the world (which so many long voyages have apparently achieved or are presently achieving) and the growth of the sciences would meet in the same age.'⁴⁴

Natural philosophy assumed 'considerable significance in the Puritan programme and the Puritan intellectual became committed to a dedicated attempt to procure the return of man's dominion over nature.'⁴⁵ Webster, however, draws a neat historical line at the moment of the Restoration in 1660. With the institutionalization of natural philosophy that accompanied the emergence of the Royal Society, he assumes, the utopian element died out.

The Puritanism and Science thesis certainly has its critics. Lotte Mulligan argues that the distinct interest in science was held not only by Puritans but also by Anglican royalists. Furthermore, she argues that those characteristics which Webster termed 'Puritan' could equally be found among non-Puritans.⁴⁶ James and Margaret Jacob make the criticism that the dichotomy that Webster pos-

ited between Puritan science on the one hand, and the state-supported science of the Royal Society on the other, is unconvincing.⁴⁷ They argue instead that there existed a connection between the two, which manifested itself in a reformist dimension to the science pursued by members of the Royal Society. Boyle, together with John Wilkins, John Wallis, Christopher Wren and John Evelyn, 'continued to advocate and engage in the organized pursuit of experimental science. But they dissociated this project from any radical reform of the church, state, the economy or society.'⁴⁸ Rather, their Anglican reformism was manifested in a language of improvement, in order to inspire commerce and food production. As James Jacob puts it in a more recent article, 'the study of nature would make all men more pious by revealing God ... it would increase [economic] prosperity.'⁴⁹ Yet even though they recognize the significance of a programme of social and economic reform to the natural philosophy of the Royal Society, Webster and his critics do not place this intellectual tradition in the context of the history of England's imperial expansion and in the formation of 'empire' as a concept.

Puritanism was not the only intellectual context to encourage the pursuit of experimental natural philosophy. After all, the Royal Society was established in the Restoration, a period that produced its own set of conditions and problems for the pursuit of natural philosophy. As Michael Hunter has shown, the growth of a 'fashionable leisured culture focused on London'⁵⁰ was a significant enabling factor for the collective, organized and institutional pursuit of natural philosophy. The Restoration also placed several problems in relief, however. As Steven Shapin and Simon Schaffer demonstrated, one issue raised in particular by the Restoration Settlement was that surrounding the relationship between knowledge and social order.⁵¹ This took the form of a general scepticism about the doctrinal nature of scholasticism which was intensified by the belief that scholastic philosophy, with its truth claims based upon the authority of texts, caused disagreement and civil unrest. Latitudinarians in particular found this repellent.

The issue became acute following the Restoration Settlement of 1660 which raised the question of how best to maintain public order and establish the legitimacy of political power which, as Shapin and Schaffer point out, was always entwined with the authority of knowledge.⁵² One of experimental philosophy's responses to the problem was an empirical methodology for the production of facts – in a public space and with collective acclamation by other scientists. Barbara Shapiro and others have shown that the epistemological scepticism about the validity of scholasticism's claims generated the rise of an empiricist methodology in natural philosophy.⁵³

The issue of establishing and verifying knowledge was peculiarly pronounced in an arena inaccessible to the majority of seventeenth-century natural philosophers. This theatre of knowledge was the New World. The problem of the reliability of knowledge is one of the most compelling in the scholarship.⁵⁴ It is

not one of the central problems with which this book grapples, but my chapter on Boyle attempts to provide one modest point of entry into the debate. Boyle used his New World informants' connections to English colonies as a means of establishing their reliability.

Boyle's 'Outlandish Books' alert us to the excitement that the New World generated in natural philosophers. Recently, a number of historians of science have studied the importance of travel narratives to the early Royal Society. Daniel Carey approaches the topic by focusing on this issue of the reliability of knowledge. He shows that the narratives 'often masked rather than exposed problems of belief, testimony and evidence'.⁵⁵ Robert Iliffe places the Royal Society's interest in travel in the context of the growth of the Protestant state. In 'Foreign Bodies: Travel, Empire and the Early Royal Society of London',⁵⁶ Iliffe explores how, as the Protestant state grew more powerful, 'prejudice formed the basis of a dynamic process of "productive exclusion" [of foreigners] in which many practices which had once been part of a more pluralist outlook were deemed to be unacceptable'.⁵⁷

Both Carey and Iliffe show originally and convincingly the significance of the narratives of travellers abroad to the scientific interests of the Royal Society. This line of enquiry could be enhanced, I would suggest, by extending our investigation into the relationship between the Royal Society's interest in the New World and the actual concept of empire that its fellows held. How did Royal Society fellows such as Boyle, Oldenburg and Edmond Halley articulate what they were doing? Did they, for example, believe they were contributing to a project of building an empire of knowledge?

Closely related to the Royal Society's endeavours to collect information and specimens from the New World was its creation of a repository (a museum) to store it all. This scientific imperial booty, as it were, is the other theme of my chapter on the Royal Society. I argue that, in its encyclopedic representation of the natural world, the Royal Society's repository became a tangible microcosm of an empire of knowledge.

The other dimension of scholarship on Adamic dominion concerns the significance of the Bible for seventeenth-century natural philosophers. Jim Bennett and Scott Mandelbrote's *The Garden, the Ark, the Tower, the Temple: Biblical Metaphors of Knowledge in Early Modern Europe*⁵⁸ is a compelling exploration of four Biblical metaphors and their influence upon early modern natural philosophy, particularly that of the Hartlib Circle. The metaphors of the Garden of Eden and the Ark, in particular, were influential in shaping natural philosophers' conception of Adam's empire. Bennett and Mandelbrote describe the belief that, before the Fall, the Garden of Eden's fruitful perfection meant that it enjoyed an ever-present springtime, and yet after the Fall the Garden's plants were made difficult to grow and its soil almost barren. After the Fall it was up to Adam's

'hard labour [to] make the Garden grow again, and restore the knowledge which humans had once employed to govern nature in paradise.'⁵⁹

Despite the importance of the Bible during the early modern period, natural law is more frequently recognized as the major ideational source for legitimizing colonial expansion.⁶⁰ In a recent article, however, Peter Harrison demonstrates that seventeenth-century English colonists drew upon Biblical ideas to justify their colonial endeavours. These included the 'commission to preach the gospel to all nations',⁶¹ and the Old Testament injunction to Adam, and then to Noah, 'Fill the earth and subdue it'.⁶² In the seventeenth century this injunction was interpreted to emphasize the importance of agrarian labour. Having dominion over the earth 'is, by Culture and Husbandry, to Manure and make it fit to yield fruits and provision ... which is done by Planting, Earing, Sowing, and other works of Husbandry', wrote John White in 1656.⁶³ Harrison points out the connection between the Biblical warrant to subdue the earth and the development of formal doctrines of property and ownership. I am in complete agreement with Harrison's contention that 'there are clear parallels between rhetoric based on Old Testament narratives and John Locke's classic statement of the origins of private property in *Two Treatises of Government* (1690)'.⁶⁴ I aim to develop this idea by arguing that we can be quite specific about Locke's Old Testament inheritance: it was in fact a theory of *empire* as Adam's dominion over nature which helped underpin Locke's theory of property.

In his book *The Bible, Protestantism and the Rise of Natural Science*, Harrison turns his attention to the influence of Protestant hermeneutics upon the development of natural science. The Protestant practice of reading the Bible literally rather than emblematically generated an impulse to study nature.

The new conception of the order of nature was made possible by the collapse of the allegorical interpretation of texts, for the denial of the legitimacy of allegory is in essence a denial of the capacity of things to act as signs. The demise of allegory, in turn, was largely due to the efforts of Protestant reformers, who in their search for an unambiguous religious authority, insisted that the book of scripture be interpreted only in its literal historical sense.⁶⁵

Harrison argues that literalism fostered the emergence of natural science in two ways: 'first by evacuating nature of its symbolic significance', and second by 'restricting the possible meanings of the biblical narratives of creation and the fall, in that they cannot be read as other than as enjoining upon the human race the necessity of re-establishing dominion over nature'.⁶⁶

Harrison's point about the Protestant Biblical hermeneutics is one aspect of a larger shift in attitudes toward the natural world which characterized the late Renaissance. This shift is a good way to begin sketching the background to the relationship between natural philosophy and English colonization in the early modern period.

Natural Philosophy and English Colonization, c. 1550–c. 1700

The early modern period was characterized by fundamental shift in the perception of nature. As Paula Findlen puts it, ‘before the sixteenth-century, nature was primarily a subject for allegory and commentary’, yet during the sixteenth and seventeenth centuries, natural histories assumed a more recognizable form. Thenceforth, natural phenomena were not understood through their symbolic resonances but, rather, through systematic, taxonomical investigation.⁶⁷

Admittedly, such a broad characterization is in some ways problematic. In Michel Foucault’s *The Order of Things*, for example, this is an epistemic shift of grand importance, and yet hardly any explanation is given as to why it occurred.⁶⁸ It remains useful to note this shift, albeit cautiously, because it is one of the epistemological effects of what some scholars have termed the Scientific Revolution, a term I use here with the knowledge that it is problematic, but with the hope that its usefulness in giving us a name for a phenomenon outweighs these problems.

A second effect of the Scientific Revolution was that it produced a vision of Nature ‘subject to rational laws which might be discovered and applied to human purposes.’⁶⁹ Nature was now subject to man’s will to make it useful, an idea perhaps most famously expressed by Francis Bacon, whose aim was to use this knowledge as the foundation of a new and superior statecraft.

Salomon’s House, on the island of Bensalem, in Bacon’s posthumously published utopia, *New Atlantis*, was an official and well endowed institution in which scientists collectively pursued experimental philosophy in a public domain and for the public good.⁷⁰ Based upon Bacon’s ideal for the advancement of learning, the institution would make possible the recovery of true knowledge. As Bacon wrote in *Valerius Terminus*, ‘the true ends of knowledge ... [are] a restitution and reinvesting (in great part) of man to the sovereignty and power (for whensoever he shall be able to call the creatures by their true names he shall again command them) which he had in his first state of creation.’⁷¹ It is hardly surprising that it is often thought that Salomon’s House was a prototype for the Royal Society.

Founded in 1660, the Royal Society of London for the Promotion of Natural Knowledge emerged as the first official scientific institution in England. For several decades preceding the Restoration, however, a number of unofficial groups of like-minded gentlemen had met informally to discuss natural philosophy. One of the characteristics of the new experimental natural philosophy was, after all, the collaborative context in which it was practised. In 1645 a group of men including John Wallis and Robert Boyle met in London. Called the ‘Invisible College’ by Boyle in three letters, the group was the context for Boyle’s introduction to natural philosophy.⁷² By the end of that decade, many moved to Oxford, where, during the 1650s, the group centred upon Wadham College under the

auspices of the college's warden John Wilkins.⁷³ By this time the group included Christopher Wren, Seth Ward and William Petty.

Although the exact nature of the connection is debated, many of these men went on to form the Royal Society, with Charles II as its patron, in 1660.⁷⁴ In 1662 the Society was granted a Royal Charter and a second one followed in 1663, which assured its permanency as an institution. During the late 1660s there was a plan to found a college for the Society, where its members could pursue adequately-funded research in either a laboratory or the observatory. The college, however, never came to fruition.⁷⁵ The Society did, however, form a number of committees directed to gleaning and managing information from far away places. In 1661, for example, Boyle, John Wilkins, Robert Moray, John Evelyn and Henry Oldenburg were all members of a committee formed to consider the questions to be enquired 'of the remotest parts of the world'.⁷⁶ In 1664 a Committee for Correspondence was formed, and its members were instructed to read various travel books.⁷⁷ When specimens were sent back to individual fellows, they were collected and kept in Gresham College where the Society met. Already possessing the title 'Curator of Experiments', Robert Hooke was appointed the Keeper of the Repository in 1663. Three years later, the Society purchased the cabinet of curiosities belonging to Robert Hubert, who claimed that he had travelled to the West Indies. In 1678 the botanist Nehemiah Grew was commissioned to produce a catalogue of the Society's repository. It was published three years later and was entitled *Musaeum Regalis Societatis*. Lack of funding and insufficient room in Gresham College for the store of curiosities, however, meant that the repository did not live up to expectations.⁷⁸

What intellectual traditions inspired the Royal Society's collecting and its interest in natural history? A good point of entry into this question is the confrontation between the novelty of the New World and the ancient text of the Bible. As Peter Harrison has shown, seventeenth-century Protestantism developed a new textual hermeneutic in which the Bible was understood as literal history. But reading the Bible as history posed a number of questions. Where, geographically, was the Garden of Eden? Did it still exist? And whose descendants were the inhabitants of the New World? Thomas Burnet, in his *Telluris Theoria Sacra* (1681), argued that Eden could be found in the southern hemisphere, where the weather was perpetually temperate. Like many others, Burnet believed that before the Fall, the Garden of Eden enjoyed a constant springtime, and that seasons were imposed as a consequence of the Fall. The theme of the Fall from paradise and of its consequences for both mankind and nature was popular in the seventeenth century. The book of Genesis recorded God telling Adam that 'cursed is the ground for thy sake ... thorns and thistles shall it bring forth to thee' (Genesis 3:17–18). The poet Joseph Fletcher, in his collection of poems entitled *The Historie of the Perfect Cursed, Blessed Man* (1628), argued

that those plants which were poisonous became so when the earth suffered the effects of man's fall. Similarly, the diarist John Evelyn believed that moss was a product of the Fall.

The fallen nature of the earth produced the redemptive possibility of agrarian labour. Through planting and husbandry, it was commonly believed, man could redeem himself by making the earth fruitful once more and reaping from it what John Locke called the 'conveniences for this life'.⁷⁹ Agricultural labour was a project of redemption: 'In the sweat of thy face thou shalt eat bread' (Genesis 3:19). Or, as John Evelyn explained in his *Elysium Britannicum*, man must 'recover ... by Arte and Industrie, which was before produced to them spontaneously; and to improve the Fruites of the Earth'.⁸⁰

One of the forms that this labour took was the attempt to recreate the Garden of Eden itself. John Evelyn, in his *Kalendarium*, argued that man-made gardens should attempt to recreate Eden, 'as near as we can contrive them'.⁸¹ Adam was believed to have been the first gardener, and he is represented as such in many seventeenth-century works, such as John Parkinson's *Theatrum Botanicum* (1640). As John Prest points out, the early botanic garden was conceived as a living encyclopedia; it was ordered and planted in rows, just as the original Eden was thought to have been. In fact, the Oxford Garden, which was opened in 1632, was square and its three acres were divided into four quarters representing the four corners of the earth.⁸² By contrast, man now lived in a disordered world.

A fascinating illustration of one of the diverse thematic treatments of Adamic empire was the genre of handbooks of agricultural improvement. In 1649, Walter Blith's *The English Improver Improved, or the Survey of Husbandry Surveyed* appeared. Within a year it had been reprinted. Blith had republican connections. He was a captain in the parliamentary armies, and acted as an agent for the sequestration of royalist land. He also surveyed crown land.⁸³ But it was not only the republicans who used gardening as a tool of exerting dominion over the earth. Evelyn, a royalist, was asked by the Commissioners of the Navy to write an account of the cultivation of forest trees. *Sylva, or a Discourse of Forest-Trees, and the Propagation of Timber in His Majesties Dominions*, which was aided by various fellows of the Royal Society, was published in 1664.

The connection between husbandry and property extended beyond the creation of domestic gardens. As Patricia Seed has shown in her recent study, cultivating a garden was one of the most important ways that the English enacted their possession of the New World.⁸⁴ As the Massachusetts minister John Cotton wrote in 1630, 'in a vacant soyle, hee that taketh possession of it, and bestoweth *culture* and *husbandry* upon it, his Right it is'.⁸⁵ This dictum became famous primarily in the reception of John Locke's *Two Treatises of Government* but, decades before Locke published his work, English natural philosophers were well aware of the connection between husbandry – 'planting' – and legitimate property. The

work that Richard Hakluyt presented to Queen Elizabeth in 1584, for example, was titled *Discourse on Western Planting*,⁸⁶ and it outlined various projects of colonial planting in the Americas.

Scholarship on the intellectual history of English colonization has paid excellent attention to the historical consequences of an agrarian theory of property. The idea that only cultivation constitutes ownership of land haunted the history of the English colonies from the seventeenth-century colonization of the Americas until the present day. In 1992 a momentous decision by the High Court of Australia in *Mabo and Others v. Queensland* found that an idea of native title (in the form of traditional ties and occupation of land) existed in common law. This overturned the theory of property which the British used to justify their dispossession of Aboriginal land since the colonization of New South Wales began in 1788.⁸⁷ One of the aims of this book is to show that the Lockean idea of property that legitimated this colonization was part of a larger theory of man's plenary dominion over nature.

Let us now move from the epistemic to the geographic, and outline the growth of England's colonization in the seventeenth century. English colonization was an outgrowth of the privateering expeditions of the late sixteenth century. The first expeditions were essentially licensed piracy; the aim was to wrest gold from the Spanish ships. English fishermen had for some time been fishing for cod in the icy waters of Newfoundland, and it was at St. John's in Newfoundland that Sir Humphrey Gilbert made the first claim of land for England in the New World in 1583. Three years later in 1586, Sir Walter Raleigh founded a colony on the island of Roanoke, in the marshes offshore from the modern-day North Carolina. A year later, however, the majority of the settlers had to be rescued by Sir Francis Drake. Drought, famine and attacks by the local indigenous people almost destroyed the colony. There was a second attempt to settle people on the island in 1587, but this colony also met its end soon after.⁸⁸

Jacobean colonization was more successful. In 1606, James I granted a patent to colonize the east coast of North America between 34 and 45 degrees latitude.⁸⁹ The patents were won by a pair of joint stock companies, collectively known as the Virginia Company.⁹⁰ The first permanent settlement was in Jamestown in 1607; the colonization of New England followed soon after. The London Virginia Company gave a grant of land to Puritans which became the Plymouth Colony, founded by those from the *Mayflower* in 1620. Maine became a province in 1622, New Hampshire was settled the following year, Massachusetts Bay in 1626, and Connecticut, which was settled by Puritans from Massachusetts, in 1633. Formal government was established on the island of Acquidneck, which was renamed Rhode Island, in 1644.

England was also active in the Caribbean, and it would be a mistake to assume that the North American colonies of settlement were more important than the

Caribbean colonies of trade. It was the Caribbean that offered the abundance of raw materials that England needed. The sugar plantations in Barbados made it the most prosperous English colony by far. The Virginia Company laid claim to Bermuda in 1612, after an initial English settlement there in 1609. Settlements were then established at St Kitts in 1623–4, Barbados in 1627–8, Nevis the following year, Barbuda and Antigua in 1632 and Anguilla in 1650. Five years later Oliver Cromwell's troops under the commandship of William Penn Sr wrested Jamaica from the Spanish.

The administration of the colonies provided much cause for discontent. Between 1650 and 1657 there were several Committees of Trade, and these were replaced in 1660 by the newly established Council for Trade, and the Council for Plantations. It was the councils' role to apprise themselves of the condition of the colonies in terms of their administration and needs, and also to instruct colonial governors on issues of law and welfare.⁹¹ In 1672 these two bodies were reconstituted as the Council of Trade and Foreign Plantations. John Locke was appointed the Council's Secretary in 1673–4. Locke was also the most influential member of the subsequent body, the Board of Trade, which was established in 1696.

In 1651, Cromwell's Parliament introduced the first of a number of Navigation Acts which were designed to restrict foreign shipping and ensure that the raw materials from England's colonies were traded for her own benefit. This would place pressure on the Dutch who had dominated the carrying trade.⁹² The Acts enshrined the view of the colonies as a source of raw materials for England, and they were received with a good degree of resentment. The Puritan population of Massachusetts Bay, who had been trading with the Dutch of their own accord, ignored the Acts, while Barbados petitioned London to be excused from them. The Acts were only loosely enforced until the mid-1670s. From then until the Glorious Revolution, however, the absolutist tendencies of Charles II and then James II increased the control of England over her American dominions, particularly in regard to enforcing the Navigation Acts. In 1686, James II declared the Dominion of New England, which brought the colonies of New England under the one governor, Edmund Andros. The Dominion was repealed after the Glorious Revolution.

As the historiography of early American history has charted, the situations in New England, the Chesapeake and the Caribbean islands markedly differed from one another. The Chesapeake struggled with disease, conflict with Algonquian Indians and famine. The Virginia Company collapsed and had its charter revoked in 1624, and Virginia became a crown colony. The colonies in Puritan New England, by contrast, were quite successful. They traded independently with the Dutch and their population grew. By 1640 over 20,000 people had settled in Massachusetts.⁹³ In contrast to the prosperity of New England, the island of Montserrat acted as a penal settlement where Irish Catholics were forcibly

moved in 1631s. More dissidents were transferred after the battle of Drogheda in 1649. This human trafficking is perhaps the most graphic illustration of the way in which English colonization entwined the histories of peoples and countries across the Atlantic and Caribbean.

Historical Change

The influence of natural philosophy upon the intellectual origins of the British Empire developed through three phases, from the late sixteenth to the early eighteenth century. When Francis Bacon put the Pillars of Hercules on the frontispiece of the *New Organon* in 1620, his conception of the New World was as a storehouse of information which could be explored by travellers and merchants. Thomas Harriot and Richard Hakluyt held the same view. For this generation, the knowledge offered by the New World was quite a separate issue from that of colonization. Indeed, for Bacon, colonies posed the dangerous moral threat of corruption.

By the time members of the Hartlib Circle were agitating and writing in the 1630s and 1640s, however, the English colonies were becoming viable enterprises. Their inhabitants began to survive, reproduce and establish towns. The population in New England multiplied. This was the historical moment in which colonies began to impress themselves on the consciousness of natural philosophers, through the expeditions of men such as John Tradescant the younger (c. 1608–62), whose collections formed the basis of what became the Ashmolean Museum in Oxford. Tradescant travelled to Virginia three times, first in 1637, then in 1642 and finally during 1653–4. Moreover, a number of gentlemen interested in science, such as John Winthrop Jr, the Governor of Connecticut, actually lived in the colonies. The success of the colonies as viable places to live established the material conditions that made possible the communication between the Atlantic periphery and natural philosophers in the metropolis.

For all the Hartlib Circle's hitherto overlooked fascination with the Atlantic world, their interest did not extend to conceptualizing any systematic relationship between an empire of knowledge and the Atlantic colonies. It was Robert Boyle who, in the Restoration, first put forward a programmatic suggestion for the way in which man's dominion over nature could be restored by fostering a relationship between naturalists and the English colonies. This relationship would enable England to harness a wealth of information from the New World that would improve natural philosophy. During this historical moment a new idea emerged that characterized the second phase of development. The colony could serve as a space for the production of natural knowledge.

Boyle's ideas regarding the beneficial coexistence of colonies and natural philosophy were put into practice by the Royal Society. The Society's members made

constant requests to be sent information about natural history from their correspondents in the New World. Not only were letters containing this information sent back from American colonies such as Massachusetts Bay and Virginia, but some men, such as Thomas Hill, shipped back to London wooden boxes containing plant and animal specimens. Other natural philosophers such as Sir Hans Sloane and the astronomer Edmond Halley travelled to the Americas themselves and collected specimens. Sloane travelled to Jamaica and St Helena; he returned with over 800 plants which eventually formed the basis of the British Museum. The Atlantic transportation of wooden boxes of natural artefacts and letters about plants was animated by the ideal of recovering an empire of knowledge.

This kind of practice illuminates one of the most troubling problems with which this book grapples: the tension between the universal language of Adamic empire, which, of course, belonged to man, and the very *English* empire of knowledge which the natural philosophers intended to create. They maintained the belief that England adopted the Protestant mantle for all mankind. Moreover, the way that Adamic ideas were put into practice benefited the English.

This is not to say that the natural philosophers were experiencing any imperial 'absence of mind', to quote John Seeley. After all, Boyle knew exactly what he was doing when stipulating a means through which the English colonies could aid the philosophers' empire of knowledge. Rather, this disjunction between intention and outcome illustrates the way that the processes of empire-building encompassed a European intellectual tradition that was not specifically British.

The third and final development was the sophisticated incorporation of the epistemic idea of empire into a philosophy which would influence the ideology and practices of the British Empire for centuries. This was John Locke's refashioning of epistemic empire into a theory of 'improvement'. When we explore Locke's philosophy we find it imbued with the sense of recovering the fruitfulness of the fallen earth for the benefit and enjoyment of mankind. For Locke, the purpose of natural philosophical knowledge is to endow man with the faculties to 'apply [parts of the universe] to our uses and make them subservient to the conveniences of our life, as proper to fill our hearts and mouths with praises of [God's] bounty'.²⁴ This is the idea of epistemic empire; it is the injunction to fulfil God's plan by improving the earth and therefore returning man to his intended empire over it.

Locke put his ideal of improvement into practice. He worked as a secretary to the Lords Proprietors of Carolina from 1668, served as Secretary to the Council for Trade and Plantations and was subsequently the most influential member of that Council's successor, the Board of Trade. The epistemic idea of man's empire over nature animated the ideological origins of the British Empire. We still feel its reverberations today.