INTRODUCTION

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MODERN science proclaims itself objective, rational and international: the periodic table of the elements hangs upon the chemistry laboratory wall in Berkeley, Berlin and Beijing, the writ of Boyle's Law runs all around the globe. Science is said to be a universal language or culture, transcending national boundaries and nationalistic rivalries.[1] To a fair degree this is true. A profusion of poetries, philosophies, aesthetics and theologies litters the continents, but there is only one scientific enterprise in the commonly accepted sense.[2] When an Indian scientist changes places with an Italian, or an Argentinian with an Austrian, no conceptual problems are posed. Nobel Prizes symbolize the unity of science today.[3]

This quality of universality is much prized and celebrated. It is therefore hardly surprising that historical accounts have sought to demonstrate that the pursuit of natural knowledge in earlier centuries was equally independent of, and superior to, subjective, personal, local and other essentially contingent factors. Science (we are often told) owed its progress to a commitment to strict scientific method (whether that be induction, deduction, experimentalism, or whatever) and, above all perhaps, to genius, the Odyssey of the brilliant Mind, lost in thought, confronting the external realities of Nature. Thus, in explaining Copernicus' rejection of geocentrism and espousal of a heliocentric astronomy, Imre Lakatos and Elie Zahar have written:

> Our account is a narrowly internalist one. No place in this account for the Renaissance spirit so dear to Kuhn's heart; for the turmoil of Reformation and Counter-Reformation, no impact of the Churchman; no sign of any effect from the alleged or real rise of capitalism in the 16th century: no motivation from the needs of navigation so much cherished by Bernal. The whole development is narrowly internal; its progressive part could have taken place at any time, given a Copernican genius between Aristotle and Ptolemy, or in any year, say, after the 1175 translation of the

> *Almagest* into Latin, or for that matter, by an Arab astronomer in the 9th century. External history *in this case* is not only secondary; it is nearly redundant. Of course, the system of patronage of astronomy through Church sinecures played a role; but studying it will contribute nothing to our understanding of the Copernican scientific revolution.[4]

The aim of the present book is to argue the opposite of these claims: that the practice of science has, in reality, been profoundly dependent upon a variety of specific contexts to be explored below. The following essays do not especially engage with Lakatos and Zahar's peculiar idea that the Copernican Revolution could have taken place at almost any *time*, even before the flowers had withered on Ptolemy's grave. After all, history is about understanding why things happened when they did, not how they might have happened – but didn't – at sundry other times; and even the great majority of 'intellectual' historians of science have accepted the notion of the ripeness of time. Rather, this book will amplify a more challenging and novel case: that it is at our peril that historians of science neglect the geo-cultural element. Study of the rise of modern science, this book aims to show, needs to take into account not merely the Renaissance, the Reformation and the Counter-Reformation, not merely the problems of navigation and the needs of capitalism; and not merely various other so-called 'external' factors that the proudly 'internalist' Lakatos and Zahar do not mention: magic, hermetism, the occult tradition, the discovery of the New World, technological developments such as the invention of the microscope, the telescope and the printing press, the reform of the university, the exigencies of war, and so forth.[5] It also specifically needs to evaluate the role of particular and disparate national and cultural traditions of thinking and mental work, the patterns of education, the channels of intellectual communication, the opportunities for, or restrictions upon, free thought and expression that operated within discrete language groups and under distinctive political jurisdictions. We will not gain a full grasp of the special filiation of that much-maligned but still useful beast of historical burden, the Scientific Revolution – roughly, the vast transformation in ways of thinking about Nature wrought between the early sixteenth century and the close of the seventeenth – until we take account of its *where*, as well as its when and how; or, in other words, as Josef Smolka neatly puts it below, the Classical unities of time and place apply to the dramas of science no less than to the tragedies of the theatre.[6]

Cultural topography and geo-politics are, not surprisingly, almost totally neglected in the great synoptic histories of the Scientific Revolution that appeared in the decades after the War, the works of Alexandre Koyré, Herbert Butterfield, A. R. Hall and Marie Boas Hall,

Charles Gillispie, and others, works that accented the inner adventures of ideas and their transformation.[7] For intellectual historians of this kind, the Scientific Revolution was a revolution in and of the mind; if there was a geography of thought, it was to be traced on maps that were metaphysical, *metaphorical*.

Yet neither did the so-called 'externalist'[8] histories of science that rose to popularity from the mid-sixties pay much more attention to tangible national contexts of thought and frameworks of intellectual production.[9] The writings of Frances Yates and others were more concerned with recovering alternative intellectual traditions long hidden from history – astrology, alchemy, cabalistic magic and Rosicrucianism[10] – but their material base was often left all too vague, sometimes being loosely associated with a folk or underground tradition.[11]

This is not to say that the links between natural knowledge and the operation of the socio-political sphere had always been totally neglected. In an influential, if widely denigrated, paper delivered in 1930, the Soviet scholar, Boris Hessen, explicitly situated Newton's *Principia* in Newton's England (*of course*: it cannot have been irrelevant that Newton became both an MP and Master of the Mint, not to say President of the Royal Society). In his *The Social Function of Science* (1939) and *Science in History* (1954), J. D. Bernal systematically juxtaposed political, social economic and scientific history.[12] By contending that the spirit of modern experimental science was a function of the Calvinist ethos, even the rather Weberian Robert Merton implied in the 1930s in his *Science, Technology and Society in Seventeenth Century England* that it was no accident that the scientific movement was disproportionately associated with Protestant Holland, England and Scotland.[13] And, on the grandest scale of all, Joseph Needham's magisterial *Science and Civilisation in China* (1954–) has aimed to show that, despite her scientific precocity, China failed to pioneer the Scientific Revolution because that empire lacked the socio-political and socio-economic structures and climate of Europe, above all, nascent capitalism.[14]

Certain currents in modern history of science have built upon these insights. Investigations of the (micro-)politics of scientific inquiry have recognized the involvement of men of science in political affairs, as with Shapin and Schaffer's account of Hobbes or James Jacob's biography of Robert Boyle.[15] Margaret Jacob's study of the Boyle Lecturers and their milieu has shown how Newtonian ideology was put to political service in supporting the Whig–Anglican establishment in England after the expulsion of James II.[16] The chauvinistic dimensions of the Newton-Leibniz quarrel, or the long-sustained resistance of French science to Newtonianism (or, in a later century, to Darwinism), have also received

notice.[17] Over the last decade, many comparable cases have been examined.[18]

Despite such initiatives, however, the relations between the staggering scientific changes wrought between Copernicus and Newton, and, in the widest sense, the political diversity and change, the chaos and 'search for stability' that characterized Europe in the century after the Reformation, remain neglected.[19] And this is so even though every historian of European politics emphasizes the magnitude of the transformations in the nature of the state and the bases of princely power that Europe underwent during the early modern centuries.[20] The history of states and the history of science are generally studied in isolation from each other; the excellent Routledge *Companion to the History of Modern Science* (1990) contains, in all its thousand pages, only one discussion pertaining to these questions, and that relates exclusively to twentieth-century scientific internationalism. *Reappraisals of the Scientific Revolution* (1990), another important revisionist work, barely touches upon the dialectics of knowledge with political cultures. Only one publication appearing in English in recent years – *The Emergence of Science in Western Europe* (1975) – engages with the national basis of early science head-on. And, though bold for its day, its discussions now appear, nearly twenty years later, rather narrow and dated.[21]

Because of such neglect, it has seemed worthwhile to produce the following volume posing the question of the relations between scientific endeavour and its distinct national contexts,[22] in the hope of throwing further light upon the social, economic and political dimensions of the Scientific Revolution. There is no need here to summarize the contributors' findings in full, but it is worth underlining certain of their conclusions.

No one would dispute that there was a certain internationalism in the pursuit of science in the early modern era. There was a shared ancestry: Greek natural philosophy, passed down *via* scholasticism throughout Latin Christendom. There was a common language, Latin – and if Descartes was venturing to write his *Discours de la méthode* in French, Newton was still publishing the *Principia mathematica philosophiae naturalis* in 1687 in the old *lingua franca*.[23] And there was much scientific travelling and migration, some impelled by persecution, as for example the French Huguenot refugee-scientists who fled from Louis XIV and settled in the Dutch Republic and in England.

But, alongside this cosmopolitanism, special politico-cultural circumstances produced force-fields shaping natural knowledge in different ways in different nations. As Mario Biagioli argues in the first essay, the power of the princely court in post-Renaissance Italy produced not

merely patronage-based scientific networks but a style of intellectual production ('Baroque') that was distinctively rhetorical and theatrical.[24] In France, the authority of the Sun King underwrote a deeply authoritarian style of scientific activity, whereas in England the disturbances of the Civil War and the studied moderation of the Restoration invited the gentlemanly cultivation, and cult of a philosophy that prized facts.

Later essays flesh out, extend and modify some of Biagioli's claims. Laurence Brockliss demonstrates how the sheer populousness and opulence of France helps explain its sudden burst into scientific eminence during the seventeenth century, while showing how *la grande nation*, though Catholic, managed to escape the strangulation of scientific inquiry that overtook post-Galilean Italy and (as David Goodman's essay demonstrates) the Iberian peninsula. The aspect of England which John Henry chooses to emphasize in his contribution is its distinctively Hookerian Anglicanism, a *via media* that embraced an element of doubt, and so laid the epistemological basis of a scientific ethos that valued a certain empirical cast of thought. William Clark contends that features of the economic and political landscape of the German-speaking lands – their well-developed technology, the pedagogical role of the Jesuits and other Catholic teaching orders in southern Germany, the military involvement of princes at the height of the Thirty Years' War – did not merely give special stimulus to certain sciences like chemistry, but provided a distinctive symbolic and ideological seedbed for the mechanical philosophy. Superficially similar, but, at bottom, radically different circumstances in the low countries gave rise to a very different scientific alignment. Like much of Germanic Europe, the United Provinces were urbanized and supported a high level of economic development. But, Harold Cook shows, the liberal–Protestant politics of the Dutch favoured smaller-scale, more empirical scientific activities, such as botany, collecting, microscopy and medical inquiry, rather than the ostentatious system-building of an Athanasius Kircher or a Leibniz.[25]

No nation produced the Scientific Revolution single-handed. That ferment of knowledge was the outcome of complex and intricate cultural-chemical affinities and processes. It may well have been crucial to the development of modern science in Europe – contrast China – that distinct intellectual traditions were able to flourish in a multiplicity of polities. Edward Gibbon was soon to offer the typical Enlightenment reflection that the political pluralism of modern Europe happily prevented the reinstatement of the imperial and intellectual tyrannies of Rome (imperial and Christian) and permitted the seeding of freedom of thought.[26] And – *pace* Lakatos and Zahar – in such processes of in-

tellectual change, time and space both counted, an issue especially tackled below by Josef Smolka in his essay on Bohemia, focusing on the court of Rudolph II. As Jerzy Dobrzycki suggests, early centres of scientific transformation, such as Renaissance Poland – rather like Tycho Brahe's Denmark or Rudolph's Prague – had declined in both political and intellectual importance by the eighteenth century. Josef Smolka's discussion of Bohemia likewise demonstrates that political and military disaster – the Thirty Years' War and the consequent imposition of intellectual uniformity, through recatholicization under the Jesuits – could terminate what had been lively milieux for scientific innovation.

By the eighteenth century, however, other nations had gained economic strength, not least Sweden and Scotland – which, as Sven Widmalm and Paul Wood show in their respective essays, were to play distinguished parts during the Enlightenment era in both consolidating the scientific endeavour through systematic teaching and diffusion, and also in pioneering 'backward' sectors, such as chemistry, natural history and the technological application of science. Above all, Enlightenment ideology increasingly stressed the value of science for national improvement.

Historians commonly wave some dimension of history in front of their readers, claiming that it is the forgotten grand arcanum, the key to Clio's mysteries. It would be foolish to contend that attention to national cultural seedbeds will resolve, once and for all, the ambiguities of the Scientific Revolution. Nevertheless, it is our conviction that the twists and turns of global scientific change will not be understood without regard for questions of indigenous language, education, communication networks, institutions, economics, social relations, politics, religious confession, patronage, and other comparable elements that can be called its 'national context'. It is no accident that the making of the modern state and of modern monarchies formed the background of the tremendous transformations constituting the making of modern science. This volume foregrounds the complex interplay between these factors, differing as they do from country to country – from state to state – and the life of scientific intelligence. We believe the result rectifies imbalances, and provides a richer canvas for viewing the Scientific Revolution.

NOTES

1 The concept 'culture' is used here in the wider, anthropological sense. See C. Geertz, *The Interpretation of Cultures* (New York, 1973). On the language of science, see J. V. Golinski, 'Language, Discourse and Science', in R. C. Olby,

G. N. Cantor, J. R. R. Christie and M. J. S. Hodge (eds.), *Companion to the History of Modern Science* (London, 1990), 110–26; L. Jordanova (ed.), *Languages of Nature: Critical Essays on Science and Literature* (London, 1986).

2 Naturally these claims beg many questions, because there remain tribal societies which operate cognitive systems for understanding and transforming nature that are in no way indebted to the chain of labours from Aristotle and Ptolemy, through Vesalius and Newton, Einstein and Crick and Watson, up to the present. For discussion of rival rationalities, see John Ziman, *Public Knowledge* (Cambridge, 1968); Michael MacDonald, 'Anthropological Perspectives on the History of Science and Medicine', in P. Corsi and P. Weindling (eds.), *Information Sources in the History of Science and Medicine* (London, 1983), 61–96.

3 And naturally this is not to deny the presence of ferocious national scientific rivalries. The point is that such rivalries take place against the background of a cosmopolitan, cooperationist ideology.

4 Imre Lakatos and Elie Zahar, 'Why Did Copernicus's Research Program Supersede Ptolemy's?', in Robert S. Westman (ed.), *The Copernican Achievement* (Berkeley, 1975), 354–83, quotation from p. 380. The historical background to Copernicus is discussed in Dobrzycki's essay in the present volume and in Robert S. Westman, 'Proof, Poetics and Patronage: Copernicus's Preface to *De revolutionibus*', in David C. Lindberg and Robert S. Westman (eds.), *Reappraisals of the Scientific Revolution* (Cambridge, 1990), 167–205. The works of Kuhn alluded to are T. S. Kuhn, *The Copernican Revolution* (Cambridge, Mass., 1957); and *idem*, *The Structure of Scientific Revolutions* (Chicago, 1962). For Bernal, see below, note 12. Our disagreement with Lakatos and Zahar is not meant to imply that we deny or minimize the importance of transformations in scientific method in the Scientific Revolution. Changes in theories and practice of observation, classification, systematization, experimentation, quantification and so forth were immense. We merely demur from the implication that these are somehow 'timeless' and merely 'in the mind'.

5 For some introduction to such factors, see, for instance, E. Eisenstein, *The Printing Press as an Agent of Change*, 2 vols. (Cambridge, 1979); William Eamon, 'From the Secrets of Nature to Public Knowledge', in Lindberg and Westman, *Reappraisals*, 333–65; Paolo L. Rossi, 'Society, Culture and the Dissemination of Learning', in Stephen Pumfrey, Paolo L. Rossi and Mauric Slawinski (eds.), *Science, Culture and Popular Belief in Renaissance Europe* (Manchester, 1991), 143–75; Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, N.Y., 1989); John Gascoigne, 'A Reappraisal of the Role of the Universities in the Scientific Revolution', in Lindberg and Westman, *Reappraisals*, 207–60; Roger Emerson, 'The Organization of Science and its Pursuit in Early Modern Europe', in Olby, Cantor, Christie and Hodge, *Companion*, 960–79.

6 Whether the transformations in science in this period are best called a 'revolution' is a crucial question but not the central issue of this volume. For recent discussions of the value of the concept of scientific revolution and of *the* Scientific Revolution, see John A. Schuster, 'The Scientific Revolution', in Olby, Cantor, Christie and Hodge, *Companion*, 217–43; I. B. Cohen, *Revolution in Science* (Cambridge, Mass., 1985); Roy Porter, 'The Scientific Revolution: A

Spoke in the Wheel?', in Roy Porter and Mikuláš Teich (eds.), *Revolution and History* (Cambridge, 1986), 297–316; *idem*, 'Introduction' to Pumfrey, Rossi and Slawinski, *Science, Culture and Popular Belief*, 1–15; David C. Lindberg, 'Conceptions of the Scientific Revolution from Bacon to Butterfield: A Preliminary Sketch', in Lindberg and Westman, *Reappraisals*, 1–26.

7 Herbert Butterfield, *The Origins of Modern Science, 1300–1800* (London, 1950); C. C. Gillispie, *The Edge of Objectivity: An Essay in the History of Scientific Ideas* (Princeton, 1960); A. R. Hall, *The Scientific Revolution, 1500–1800* (London, 1954); *idem*, 'Merton Revisited, or Science and Society in the Seventeenth Century', *History of Science* 2 (1963), 1–16; *idem*, 'On Whiggism', *History of Science* 21 (1983), 45–59; M. B. Hall, *The Scientific Renaissance* (London, 1962); Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore, 1957).

8 For the 'internalist/externalist' debate, see H. Kragh, *An Introduction to the Historiography of Science* (Cambridge, 1987); Steven Shapin, 'Social Uses of Science', in G. S. Rousseau and Roy Porter (eds.), *The Ferment of Knowledge: Perspectives on Scholarship of Eighteenth Century Science* (Cambridge, 1980), 93–142.

9 Scientific developments in national context pertaining to Soviet-type socialist countries have received largely uncritical attention by indigenous historians. This does not apply to the broad-ranging history of astronomy, mathematics, physics and chemistry in Bohemia and Moravia by J. Folta, Z. Horský, L. Nový, I. Seidlerová, J. Smolka and M. Teich, *Dějiny exaktních věd v českých zemích do konce 19 století* ['History of science in the Czech lands to the end of the nineteenth century'] (Prague, 1961). There is a summary in English.

10 See Frances Yates, *Giordano Bruno and the Hermetic Tradition* (London, 1964); I. Couliano, *Eros and Magic in the Renaissance*, trans. by Margaret Cook (Chicago and London, 1987); Patrick Curry (ed.), *Astrology, Science and Society: Historical Essays* (Woodbridge, Suffolk, 1987); *idem*, *Prophecy and Power: Astrology in Early Modern England* (Cambridge, 1989); *idem*, 'Astrology in Early Modern England: The Making of a Vulgar Knowledge', in Pumfrey, Rossi and Slawinski, *Science, Culture and Popular Belief*, 274–92; for magic, see Keith Thomas, *Religion and the Decline of Magic: Studies in Popular Beliefs in Sixteenth and Seventeenth Century England* (London, 1971; repr. Harmondsworth, 1978); John Henry, 'Magic and Science in the Sixteenth and Seventeenth Centuries', in Olby, Cantor, Christie and Hodge, 583–96; Brian P. Copenhaver, 'Natural Magic, Hermetism, and Occultism in Early Modern Science', in Lindberg and Westman, 261–302; H. Leventhal, *In the Shadow of the Enlightenment: Occultism and Renaissance Science in Eighteenth-Century America* (New York, 1976); Robert Darnton, *Mesmerism and the End of the Enlightenment in France* (Cambridge, Mass., 1968); M. J. T. Dobbs, *The Foundations of Newton's Alchemy* (Cambridge, 1975); Germana Ernst, 'Astrology, Religion and Politics in Counter-Reformation Rome', in Pumfrey, Rossi and Slawinski, *Science, Culture and Popular Belief*, 249–73; Keith Hutchison, 'What Happened to Occult Qualities in the Scientific Revolution?', *Isis* 73 (1982), 233–53; Michael MacDonald, 'Science, Magic and Folklore', in J. F. Andrews (ed.), *William Shakespeare: His World, His Work, His Influence*, 1 (New York, 1985), 175–94; Brian Vickers (ed.), *Occult and Scientific Mentalities in the Renaissance* (Cambridge, 1984).

11 See, for instance, for a popular cosmology, C. Ginzburg, *The Cheese and the*

Worms: the Cosmos of the Sixteenth Century (London, 1980); or, for the intertwining of natural knowledge with social knowledge, David Warren Sabean, *Power in the Blood: Popular Culture and Village Discourse in Early Modern Germany* (Cambridge, 1984); Peter Burke, *Popular Culture in Early Modern Europe* (London, 1978).

12 See Mikuláš Teich, 'Reflecting on the Golden Jubilee of Bernal's *The Social Function of Science*', *History of Science* 28 (1990), 411–18; J. D. Bernal, *The Social Function of Science* (London, 1939); *idem*, *Science in History* (London, 1954); Boris Hessen, 'The Social and Economic Roots of Newton's *Principia*', in *Science at the Crossroads* (1931; repr. London, 1971).

13 Robert K. Merton, *Science, Technology and Society in Seventeenth Century England* (New York, 2nd edn., 1970). For further attempts to relate science and religious thought, see R. Hooykaas, *Religion and the Rise of Modern Science* (Edinburgh, 1973); S. Jaki, *The Road of Science and the Ways to God* (Edinburgh, 1978). For the theological underpinnings see Amos Funkenstein, *Theology and the Scientific Imagination from the Middle Ages to the Seventeenth Century* (Princeton, 1986); and, for surveys of this field, Pietro Corsi, 'History of Science, History of Philosophy, and History of Theology', in P. Corsi and P. Weindling (eds.), *Information Sources in the History of Science and Medicine* (London, 1983), 3–28; and John Hedley Brooke, 'Science and Religion', in Olby, Cantor, Christie and Hodge, *Companion*, 763–82.

14 J. Needham, *Science and Civilisation in China* (Cambridge, 1954–); for evaluation, see Nathan Sivin, 'Why the Scientific Revolution did not take place in China – or didn't it?', in E. Mendelsohn (ed.), *Transformation and Tradition in the Sciences* (Cambridge, 1985), 531–4.

15 See Steven Shapin and Simon Schaffer, *Leviathan and the Air Pump* (Princeton, 1985); James Jacob, *Robert Boyle and the English Revolution* (New York, 1977). For the politics of micro-science, see Bruno Latour, *Science in Action* (Milton Keynes, 1987).

16 M. C. Jacob, *The Newtonians and the English Revolution, 1689–1720* (Ithaca, N.Y. 1976); see also *idem*, *The Radical Enlightenment: Pantheists, Freemasons and Republicans* (London, 1981).

17 A. R. Hall, *Philosophers at War: The Quarrel Between Newton and Leibniz* (Cambridge, 1980); S. Shapin, 'Of Gods and Kings: Natural Philosophy and Politics in the Leibniz-Clarke Disputes', *Isis* 72 (1981), 187–215; Henry Guerlac, 'Some Areas for Further Newtonian Studies', *History of Science* 17 (1979), 75–101.

18 For instance, in *The Great Instauration: Science, Medicine and Reform, 1626–1660* (London, 1975) Charles Webster links scientific developments to the Puritan revolution. Underpinning much recent work on the politics of scientific knowledge has been the tradition of the sociology of knowledge associated with the 'Edinburgh strong programme'. See for instance D. Bloor, *Knowledge and Social Imagery* (London, 1976); H. Collins, *Changing Order. Replication and Induction in Scientific Practice* (Beverly Hills and London, 1985); B. Barnes, *Interests and the Growth of Knowledge* (London, 1977). The writings of Michel Foucault have equally drawn attention to the relations between science/knowledge and power. See Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings 1972–1977* (Brighton, 1977).

19 T. Rabb, *The Struggle for Stability in Early Modern Europe* (New York, 1975).

20 See V. Kiernan, *State and Society in Europe 1550–1650* (Oxford, 1980); J. Shennan, *Liberty and Order in Early Modern Europe: The Subject and the State, 1650–1800* (London, 1986); Perry Anderson, *Lineages of the Absolutist State* (London, 1974); F. Braudel, *Civilization and Capitalism, 15th–18th Century*, I: *The Structures of Everyday Life*; II: *The Wheels of Commerce*; III: *The Perspective of the World* (New York, 1985); J. De Vries, *European Urbanization, 1500–1800* (Cambridge, Mass., 1984). On the relative failure of historians of science and general historians to talk to each other, see Roy Porter, 'The History of Science and the History of Society', in Olby, Cantor, Christie and Hodge, *Companion*, 32–46.

21 Olby, Cantor, Christie and Hodge, *Companion* – the essay referred to is Brigitte Schroeder-Gudehus, 'Nationalism and Internationalism', 909–19; Lindberg and Westman, *Reappraisals*; M. Crosland (ed.), *The Emergence of Science in Western Europe* (London, 1975). An older work that brings out national differences in style of scientific thought is John T. Merz, *History of European Thought in the Nineteenth Century*, 4 vols. (Edinburgh, 1896–1914).

22 It is recognized, of course, that the notion of 'nation' in the early modern era is fraught with historiographical difficulties. See the Foreword and Introduction respectively to Mikuláš Teich and Roy Porter (eds.), *The National Question in European Historical Context* (Cambridge, 1993) and *The Renaissance in National Context* (Cambridge, 1991).

23 Peter Burke, '*Heu Domine, Adsunt Turcae*: A Sketch for the Social History of Post-Medieval Latin', in Peter Burke and Roy Porter (eds.), *Language, Self and Society: the Social History of Language* (Cambridge, 1991), 23–49.

24 See further Mario Biagioli, 'Galileo and Patronage', *History of Science* 28 (1990), 1–62.

25 For the material background that underpins Cook's reading of Dutch culture, see Simon Schama, *The Embarrassment of Riches: An Interpretation of Dutch Culture in the Golden Age* (London, 1988).

26 See Roy Porter, *Edward Gibbon: Making History* (London, 1988), Conclusion.