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Introduction: geography, science and historical geographies of knowledge

This book is an attempt to understand the connections between geography, science and national identity in a particular geographical and historical context, and, in so doing, to write a historical geography of geographical knowledge. The focus is Scotland between the work of late Renaissance humanists concerned to 'situate' their nation historically and the engagement with geography as a form of identity in the work of Patrick Geddes and others in the early twentieth century.

I use the term 'historical geography of geographical knowledge' to signify two central concerns, elaborated upon in what follows. The first concern is with understanding the ways in which geographical knowledge in the past was used to constitute the 'space' that was Scotland and to shape ideas about the nature of Scotland as a geographical entity. 'Geographical knowledge' is understood here as a particular form of intellectual and scientific enquiry encompassing a variety of practices such as, for example, mapping, writing, picturing and natural historical surveying. In this first sense, then, geography itself as one form of intellectual enquiry – however understood by different people at different times in different places – is treated as part of a wider conception of geographical knowledge, part of a range of discursive practices through which ideas about the nation and national identity were realised. My second concern is to recover the sites and the social spaces in which geographical knowledge was undertaken and to plot the connections between the places of geographical knowledge production and its audiences and makers. Taken together, these two concerns inform the historical geography of geographical knowledge as I employ the term as being about how and why different forms of geographical knowledge were used in the past to constitute national identity, about where those different ideas were made and received and for whom they had the meanings they did.

These issues reflect wider interests within geography and other disciplines both in the nature of geographical knowledge and in the situated nature of science and other forms of intellectual endeavour. The 'critical turn' within the

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history of geography, discussed further in this chapter, has been accompanied by a recognition from other disciplines that geography matters. Historians of science, for example, have studied the situated nature and movement of scientific knowledge and science as a social construction. That they and others have considered the place of scientific knowledge in these terms is a conscious rejection of earlier idealist notions of science as a universal practice derived without reference to the spaces of its production. In so doing, the local meanings of science have been brought into focus. Such interests are apparent, too, in the social sciences and in the humanities.

David Livingstone has noted these issues in discussing what he calls 'the historical geography of ideas'. Taking seriously the geography of knowledge or of scientific practice is not simply a matter of site and location. Spaces of and for knowledge are metaphorical as well as material. Place is an ordering term, a relational position for categories of knowing and for the objects of theoretical enquiry as it is also a site of display, for example, or a site either for knowledge production or for the didactic consumption and reception of theories, practices and natural objects. For Livingstone

Glimmerings of what a geography of scientific knowledge might amount to are thus indeed beginning to be glimpsed as sociologists and historians of science have begun to probe the role of the spatial setting in the production of experimental knowledge, the significance of the uneven distribution of scientific information, the diffusion tracks along which scientific ideas and their associated instrumental gadgetry migrate, the management of laboratory space, the power relations exhibited in the transmission of scientific lore from specialist space to public space, the political geography and social topography of scientific subcultures, and the institutionalization and policing of the sites in which the reproduction of scientific cultures is effected.

As he further notes, a geography of science 'will need to attend to spatial considerations at a variety of scales. Indeed, it will be one of the key methodological issues of such an undertaking to ascertain just what is the appropriate spatial scale at which to conduct any specific historical investigation, and then to determine how the various scales are to be related.'

For Scotland, something of these issues is apparent in a paper to the British Association for the Advancement of Science in September 1885 where H. A. Webster spoke to the title 'What has been done for the geography of Scotland, and what remains to be done'. Of Scotland, a country 'which has been traversed and retraversed in every possible direction by persons devoted to every department of knowledge, in which every district has been mapped and remapped, in which every county and town and parish has its local guide-book, its local antiquary, its local geologist, its local botanist, surely, you say, every geographical fact must have been recorded and made readily accessible to any

D. Livingstone, 'Science and religion: foreword to the historical geography of an encounter', Journal of Historical Geography, 20 (1994), 372.



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who feel interest therein'. Webster continued in order to note the contrary: 'I hope to show you that, to many questions which the geographer naturally asks, no answer is forthcoming, and that there are whole departments of geographical investigation at which we have only begun to work in a serious and fruitful manner.'²

I want to suggest that a historical geography of geographical knowledge can be the subject of 'serious and fruitful' enquiry. I hope to do so for Scotland with reference to questions concerning the different practices of geographical knowledge, the sites and spaces of geography's making, the audiences for such knowledge and the connections with other forms of national knowing. My concern is not only with the national scale. I consider the nature and making of local knowledge, the role of particular institutions and of individuals, even of single texts, as well as the connections between the making of national knowledge in different local places and at different times.

Before considering such questions, however, let me place these intentions in context by first considering recent writings on the history of geographical knowledge and then examining second, work within the history of science on the social and situated nature of scientific knowledge. The final part returns to the question of a historical geography of geographical knowledge through brief consideration of the historical geography of Darwinism and of modernity.

New histories of geography and of geographical knowledge

The history of geography was not, until recently, a particularly active or prominent field of geographical enquiry. In most cases, writings upon the history of geography were distinguished by uncritical notions of what geography was, by hagiographic portrayals of the subject's 'great men', and by too little attention to the wider social and intellectual contexts in which geography and geographers worked.

In recent years, however, there has been a notable resurgence of interest in the subject.³ This has been evident in attention to the following: the discursive nature of geographical knowledge; the genealogy of geography's key concepts; the connections between geography and power; and the fact that much work in the history of geographical knowledge has been undertaken by practitioners of other subjects.

² H. A. Webster, 'What has been done for the geography of Scotland, and what remains to be done', Scottish Geographical Magazine, 1 (1885), 487.

³ F. Driver, 'New perspectives on the history and philosophy of geography', *Progress in Human Geography*, 18 (1994), 92–100; 'Visualising geography: a journey to the heart of the discipline', *Progress in Human Geography*, 19 (1995), 123–34; 'Histories of the present: the history and philosophy of geography', *Progress in Human Geography*, 20 (1996), 100–9. For the contemporary context, see E. Baigent, 'Recreating our past: geography and the rewriting of the Dictionary of National Biography', *Transactions of the Institute of British Geography*, 22 (1997), 488–504.



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On context and the discursive production of geographical knowledge

For Felix Driver, writing in 1994, the 'progress' evident in work on the history of geography has been apparent in an engagement with the wider academic literature on the history and philosophy of the social sciences, a willingness to consider geographical knowledge as constituted as much by social relations and technical practices as by ideas and individuals, and by critical reflection on the wider purposes of writing about the history and present condition of geographical discourse.⁴ These advances have been reflected in and stimulated by Livingstone's The geographical tradition (1992). Livingstone's book has been widely and enthusiastically reviewed by geographers and historians of science alike as a key 'moment' in the new critical histories of geographical knowledge.⁵ In its attention to geography's context and its defence of 'situated messiness' - the ways in which geographical knowedge was (and is) both discursively complex and intellectually shaped in different places by different people at different times - Livingstone's work, argued Driver, 'set a new agenda for the history of geography'. 6 It has done so, too, not just through Livingstone's thorough-going critique of conventional approaches to the history of geography but in his insistence that we must situate geography historically and geographically.

Understanding geographical knowledge as a *situated* concern can mean several things. Geographical knowledge, whatever that term means now or meant in the past, cannot be understood as something set apart from the intellectual, social and political milieux of its time. In this sense, recent work by scholars interested in the history and nature of geographical knowledge has been distinguished by attention both to the personal and political connections that underlay geography's emergence as an institutionalised academic subject in Britain from the later 1880s,⁷ and to the connections between geography and leading scientific ideas, such as neo-Lamarckianism and Darwinism.⁸

Matters of context are also epistemological. For David Stoddart, the later eighteenth-century encounter between European explorer-navigators and

⁴ Driver, 'New perspectives', 92.

⁵ Two fuller discussions of the book are A. Werritty and L. Reid, 'Debating the geographical tradition', *Scottish Geographical Magazine*, 111 (1995), 196–8; and 'Conversations in review', *Ecumene*, 3 (1996), 351–60. Good sees one of the book's strengths as its combination of the history of geographical thought with the history of the social and institutional settings of geography's practitioners: G. Good, *Sciences of the earth: an encyclopedia of events, people and phenomena* (New York), Vol. I, xix.

⁶ Driver, 'New perspectives', 92.

D. Stoddart On geography (Oxford, 1996); Livingstone, Geographical tradition, 177–215; T. Unwin, The place of geography (London, 1992), 83–5; F. Driver, 'Geography's empire: histories of geographical knowledge', Environment and Planning D: Society and Space, 10 (1992), 23–40.

⁸ D. Livingstone, 'Natural theology and neo-Lamarckism: the changing context of nineteenth-century geography in the United States and Great Britain', Annals of the Association of American Geographers, 74 (1984), 9–28; Darwin's forgotten defenders: the encounter between evangelical theology and evolutionary thought (Edinburgh, 1987); R. Peet, 'The social origins of environmental determinism', Annals of the Association of American Geographers, 75 (1985), 309–33.



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native 'Others' provided the basis for the emergence of 'modern' geography as a whole. Such encounters took place not just in given geographical contexts such as the Pacific Ocean, North America, sub-Saharan Africa or the Indian sub-continent, but in particular 'scientific' ways: realism in description, systematic classification in collection, and comparative method in explanation. Other means of securing geographical knowledge should be noted: trusting native informants; circulating questionnaires; speculative and essentially Baconian fieldwork designed to gather facts about distant places and the unknown near at home. One must also consider the conjoint interests of politicians and natural philosophers whose concerns demanded the institutionalisation of natural knowledge in order to advance it and, of course, the shipping 'home' of new products (and even the people themselves) to become objects of wonder for different audiences within Europe's centres of geographical and scientific calculation.

Matters of context relate also to the politics of doing geography and for whom questions about the recovery of such knowledge have significance. Much recent geographical enquiry in general has been motivated by a desire to give voice to the hitherto marginalised. Such post-colonial perspectives are mirrored in the concerns of some historians of geography and others to understand exactly how geography was implicated in European imperialism and colonialism. At the same time, critical attention to the history of geographical knowledge has resulted from a concern to consider that history in relation to other intellectual or disciplinary histories, such as the history of science. Yet others have discussed the history of geography and of geography's books as part of new perspectives on the history of (geographical) education.

Sensitivity to historical context relates both to the need to consider the making and meaning of geographical knowledge in its own terms and to question the 'idea of geographical traditions' itself.¹³ As David Matless notes:

To raise, as Livingstone does, issues of geography's earthly situation is to question the boundaries of geographical knowledge. . . . Rather than seek a new and all-inclusive definition of geography, we might perhaps recognize that the discipline of geography has been and is now one *genre* of geographical knowledge among many, and that a crucial part of geography's history consists of disciplinary geography's marking out of itself.

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⁹ Stoddart, On geography, 28–40.

D. Gregory, 'Post-colonialism', in R. J. Johnston, D Gregory, G. Pratt and M. Watts (eds.), The dictionary of human geography (Oxford, 2000), 612–15.

¹¹ D. Livingstone, 'The history of science and the history of geography: interpretations and implications', History of Science, 22 (1984), 271–302.

¹² T. Ploszajska, Geographical education, empire and citizenship: geographical teaching and learning in English schools, 1870–1944 (Historical Geography Research Group Publication Series, no. 35), (Cambridge 1999); F. Driver and A. Maddrell, 'Geographical education and citizenship: introduction', Journal of Historical Geography, 22 (1996), 371–2.

¹³ F. Driver et al, 'Geographical traditions: rethinking the history of geography', Transactions of the Institute of British Geographers, 20 (1995), 403–4.



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Matless has pointed to the implications of such claims for 'a historical geography of the grand categories of geography – region, space, landscape, geography, etc. – and of the role and make-up of the geographer: a genealogy of geography and of the geographical self'. ¹⁴

For Clive Barnett, the history of geography understood as a matter of genealogy and of historical context is not axiomatically useful because such issues have little to say concerning 'the only context that really matters: the contemporary one', and because 'the new contextual and critical histories of geography tend to assume too easily that all geography in the past is the past of today's geography, sweeping any questions about the nature of the historical relation under the cover of expanded notions like 'geographical discourse' or 'geographical knowledge'.¹⁵

Arguing that the contemporary context is the *only* context that *really* matters smacks of a surrogate presentism, even of the wholesale dismissal of the past. It is one thing to argue that we ought not straightforwardly to see the history of geography as the Whiggish history of today's geography. There I am sympathetic to Barnett. Yet it is another thing to exclude the possibility of a historical investigation of geography's past *in its own terms*, which he seems to suggest. I would want to argue that we must take *more* seriously the attempt to understand geographical knowledge in the past. As with Gillian Rose, ¹⁶ my concern is neither to insist upon a genealogy for geographical knowledge nor to privilege the present, but, rather, to recover its historical *and* geographical context as a question of historical geography. As Driver puts it:

The contextual approach to the history of geography is thus more concerned with mapping the lateral associations and social relations of geographical knowledge than with constructing a vision of the overall evolution of the modern discipline. It demands a far more historically (and geographically) sensitive approach to the production and consumption of knowledge than that provided by more conventional narrative histories.¹⁷

The idea of geographical knowledge as a discourse does not just refer to that set of intellectual and scientific practices at any given place or moment held to constitute such knowledge. It includes also the languages, the institutions and the different 'modalities' through which we have come to know the world. ¹⁸ To argue that geographical knowledge is discursive is to recognise its

¹⁴ D. Matless, 'Effects of history', Transactions of the Institute of British Geographers, 20 (1995), 405-6.

¹⁵ C. Barnett, 'Awakening the dead: who needs the history of geography?', Transactions of the Institute of British Geographers, 20 (1995), 417–19.

G. Rose, 'Tradition and paternity: same difference', Transactions of the Institute of British Geographers, 20 (1995), 414–16; see also D. Livingstone, 'Geographical traditions', Transactions of the Institute of British Geographers, 20 (1995), 420–2.
F. Driver, 'Geography's empire', 35.

¹⁸ My use of the term 'modalities' is drawn from Foucault's 'enunciative modalities', where the social subject that produces a statement is understood not as an entity 'beyond' the discourse in question, but is something formed by the statement itself. M. Foucault, *The archaeology of knowledge* (London, 1972), 95–7.



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constitutive power; as Driver and Rose note, 'To argue that geographical knowledge is discursively constructed is to insist on the importance of practices and institutions as well as concepts. Discourses always do their work in specific social contexts and with material consequences'.¹⁹

Considering discourse as specific representations, practices and performances through which meanings are produced, connected into networks and legitimized has been helpful for what Derek Gregory terms the 'revivified history of geography' in revealing the different ways in which geographical knowledge has been made.²⁰ It is interesting that this revivified history has been paralleled by a more critical history of (the) map(s), for example, and by an interest in 'mapping' as the processes, literal and figurative, of putting things in place.²¹ I take such interest to be part of wider concerns with representation in geographical knowledge, apparent in landscape painting and in photography,²² and with the attention paid to the socially constructed nature of meaning in post-modern human geography.²³

Certainly, concerns with context and with discourse have shifted the attention of historians of geographical knowledge away from paradigmatic notions of change,²⁴ and away from conceptions of 'grand theory' and meta-narrative towards the specific, the theoretical and the situated circumstances constituting the conditions of geography's making.

Geography as a form of geographical knowledge before c.1800

The 'marking out of itself' of disciplinary geography has been apparent in studies which, while focused upon different time periods and different countries, have collectively challenged the too-often repeated view that academic

- ¹⁹ F. Driver and G. Rose, 'Introduction: towards new histories of geographical knowledge', in F. Driver and G. Rose (eds.), *Nature and science: essays in the history of geographical knowledge* (Historical Geography Research Group Publication Series, no. 28) (Cheltenham, 1992), 4.
- ²⁰ D. Gregory, 'Discourse', in Johnston, Gregory, Pratt and Watts (eds.), The dictionary of human geography (Oxford, 2000), 180–1.
- ²¹ D. Burnett, 'The history of cartography and the history of science', *Isis*, 90 (1999), 775–780; J. Brotton, *Trading territories: mapping the early modern world* (London, 1997); D. Cosgrove (ed.), *Mappings* (London, 1999); M. Edney, *Mapping an empire: the geographical construction of British India, 1765–1843* (Chicago, 1997).
- ²² S. Daniels, Fields of vision: landscape imagery and national identity in England and the United States (Cambridge, 1993); J. Schwartz, 'The Geography Lesson: photographs and the construction of imaginative geographies', Journal of Historical Geography, 22 (1996), 16–45; J. Ryan, Picturing empire: photography and the visualization of the British empire (London, 1997).
- ²³ D. Gregory, Geographical imaginations (Oxford, 1993).
- ²⁴ P. Haggett and R. Chorley, 'Models, paradigms and the new geography', in P. Haggett and R. Chorley (eds.), *Models in geography* (London, 1967), 19–42; R. J. Johnston, 'Paradigms and revolutions or evolution?: observations on human geography since the Second World War', *Progress in Human Geography*, 2 (1978), 189–206; A. Buttimer, 'On people, paradigms and "progress" in geography', in D. Stoddart (ed.), *Geography, ideology and social concern* (Oxford, 1981), pp. 81–98; D. Stoddart, 'The paradigm concept and the history of geography', in D. Stoddart, *Geography, ideology and social concern* (Oxford, 1981), pp. 70–80; M. Harvey and B. Holly, 'Paradigms, philosophy and geographic thought', in M. Harvey and B. Holly (eds.), *Themes in geographic thought* (Beckenham, 1981), 11–32; A. Mair, 'Thomas Kuhn and understanding geography', *Progress in Human Geography*, 10 (1986), 345–69.



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geography in Europe has its 'origins' in the last quarter of the nineteenth century.²⁵

Lesley Cormack's *Charting an empire* (1997) examines the nature of geography and geographers in Cambridge, Oxford, and the 'third university' of Gresham College, London from 1580 to 1620. Geography, she claims, was central in inculcating a sense of English national identity that was inward looking in its attachment to local place and country, and outward looking in its attention to the English (and nascent British) empire. She identifies three sorts of geographers and of geography: a first small group focused on mathematical geography and its evident utilitarian connections; a second larger group concerned itself with descriptive geography; and a third group focused upon chorography, understood as regional or local studies. For Cormack, chorography was 'the most wide-ranging of the geographical arts, in that it provided the specific detail to make concrete the other general branches of geography'.²⁶

Cormack's work has been criticised for its prosopographical methodology and attention to the ownership of geography books, an approach which too readily divorces geography from its wider intellectual context and the other interests of the individuals concerned.²⁷ Nevertheless, Cormack's book, and her related work on empire and on geography as a courtly practice,²⁸ not only extend the chronological period over which geography was part of university education but provide a detailed study of the sites of early modern geography's involvement as a form of state knowledge.²⁹ Others have shown how geography was, from the later seventeenth century, also part of the rise of experimental science and the 'new' natural philosophy, and that chorography and mapping were practically important both in the emergence of the state and to the idea of national identity in the early modern period.³⁰

²⁵ H. Capel, 'Institutionalization of geography and strategies of change', in Stoddart, Geography, ideology and social concern, 37–69; E. Lochhead, 'The emergence of academic geography in Britain in its historical context', (Ph.D. thesis, University of California at Berkeley, 1980); G. Dunbar (ed.), From traveller to scientist: the professionalization and institutionalization of geography in Europe and North America since 1870 (Dordrecht, forthcoming).

²⁶ L. Cormack, Charting an empire: geography at the English universities, 1580–1620 (Chicago, 1997), 163.

²⁷ R. Mayhew, [Review], Ecumene, 5 (1998), 487-8.

²⁸ L. Cormack, "Good fences make good neighbors": geography as self-definition in early modern England', *Isis*, 82 (1991), 639–61; 'Twisting the lion's tail: practice and theory at the court of Henry Prince of Wales', in B. Moran (ed.), *Patronage and institutions: science, technology and medicine at the European court* (Woodbridge, 1991), 67–84; 'The fashioning of an empire: geography and the state in Elizabethan England', in A. Godlewska and N. Smith (eds.), *Geography and empire* (Oxford, 1994), 15–30.

²⁹ Cormack's attention to geography in early modern Oxford is very different from J. Baker, *The history of geography* (Oxford, 1963), 119–29.

³⁰ D. Livingstone, 'Science, magic and religion: a contextual re-assessment of geography in the sixteenth and seventeenth centuries', History of Science, 26 (1988), 269–94; 'Geography, tradition and the scientific revolution: an interpretative essay', Transactions of the Institute of British Geographers, 15 (1990), 359–73. J. Black, 'Mapping early modern Europe', European History Quarterly, 25 (1995), 431–42; Brotton, Trading territories; D. Buisseret (ed.), Monarchs, ministers and maps: the emergence of cartography as a tool of government in early modern Europe (Chicago, 1992); Cormack, Charting an empire; M. Wintle, 'Renaissance maps and the construction of the idea of Europe', Journal of Historical Geography, 25 (1999), 137–65.



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Robert Mayhew has advanced our understanding of geography as it was understood in eighteenth-century England in several respects. His work is insistent upon the recovery of geography's textual traditions and its connections with classical education, and, thus, with knowing how it was that geography was defined and used by its practitioners and understood by its audiences. Initial attention to Samuel Johnson's conception of geography as a rational discourse has been developed in further studies.³¹ Mayhew's attention to what he has called 'the character of English geography' between c. 1660 and 1800 centres upon his analysis of geography books, definitions of their function and audience, their readership and what he calls the 'milieu of book production'.³² Such a resolutely textual hermeneutic approach shows that geography in England in this period was part both of a commercial and practical tradition, with its emphasis upon practical utility and polite learning, and of a humanistic and scholarly tradition which allied geography with the classics and civil history. Although geography was not 'an independent discipline' in schools and universities in eighteenth-century England, mathematical and descriptive geography were taught to a range of ages and social classes, and grammar schools and Cambridge and Oxford universities taught geography as part of a humanist education. In these ways, geography in eighteenthcentury England was understood in particular intellectual contexts and promoted in certain sites as a textual practice designed to enlighten and to politicise civic society.³³

In France, legislators confirmed the importance of geography for what eighteenth-century commentators understood as the 'Science of Man' by placing it in the Class of Moral and Political Sciences in the new National Institute (in 1795). These initiatives were not continued beyond 1803, however, and human geography was slow to develop in consequence.³⁴ Even so, scholars such as Turgot placed geography within his progressivist vision for the human sciences. His and others' conception of human progress was fundamentally geographical since the idea of a 'stage-by-stage' development of peoples depended upon global comparisons that were temporal *and* spatial.³⁵

Mayhew, Geography and literature in historical context: Samuel Johnson and eighteenth-century conceptions of geography (Oxford, School of Geography Research Papers, no. 54, 1997); 'Was William Shakespeare an eighteenth-century geographer?: constructing histories of geographical knowledge', Transactions of the Institute of British Geographers, 23 (1998), 21–37; 'Geography in eighteenth-century British education', Paedagogica Historica, 34 (1998), 731–69; idem, 'William Guthrie's Geographical grammar, the Scottish enlightenment and the politics of British geography', Scottish Geographical Journal, 115 (1999), 19–34.

³² R. Mayhew, 'The character of English geography, c.1660–1800: a textual approach', *Journal of Historical Geography*, 24 (1998), 385–412.

³³ R. Mayhew, Enlightenment Geography: the political languages of British geography, c.1650–1850 (London, 2000).

³⁴ M. Staum, 'The Enlightenment transformed: the Institute Prize contests', Eighteenth-Century Studies, 19 (1985), 153–79; 'Human geography in the French Institute: new discipline or missed opportunity?', Journal of the History of the Behavioural Sciences, 23 (1987), 332–40; 'Paris Geographical Society constructs the Other, 1821–1850', Journal of Historical Geography, 26 (2000), 222–38.

³⁵ M. Heffernan, 'On geography and progress: Turgot's Plan d'un Ouvrage sur la géographie politique (1751) and the origins of modern progressive thought', Political Geography, 13 (1994), 328–43.



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Godlewska's *Geography unbound* (1999) examines the several trajectories of geography in eighteenth-century France and emphasises the contemporary search for languages of accurate geographical representation, notably in the mathematical tradition. In that sense, she traces the discursive bases against which France both came to know itself through projects of state mapping and national description and sought to map its overseas territories.³⁶

Such work has advanced our knowledge of geography's history and historical geography since, as with Francis Sitwell's summary of what geography books were available before *c*. 1800, ³⁷ the nature of geography and the communities who practised it as an intellectual concern is highlighted for given national contexts and at certain moments. But it is clear, too, that whilst eighteenth-century geography was a textual and institutionalised practice in these terms, geographical knowledge embraced more than either the textual or the disciplinary tradition of geography *sensu stricto*.

Other studies of geographical knowledge in the Enlightenment have shown such knowledge to be altogether more complicated and to have included the classification and display of natural knowledge, the imposition of European ways of thinking on nature's diversity, the visualisation of native 'otherness', and the voyages and travels of explorers. Work on the teaching of geography within universities and in the public sphere also suggests that what was understood as geography varied with context. Alongside an understanding of geography as a textual tradition and of its utility for eighteenth-century scholars in conceiving of conjectural history and the idea of historical change, for example, geographical knowledge in the form of what the Royal Society in the period 1720–79 termed 'natural history' and 'mixed mathematics' (including astronomy, weights and measures, and geometry as well as geography) was an integral part of British commercial and imperial knowledge.

Several things follow from these claims. The first concerns the need to establish the connections between geography and other forms of natural and social knowledge – 'globalising discourses of terrestrial knowledge' as Porter has it⁴² – in the eighteenth century and for other times. The second is in showing how

³⁶ A. Godlewska, Geography unbound: French geographic science from Cassini to Humboldt (Chicago, 1999).

³⁷ O. Sitwell, Four centuries of special geography: an annotated guide to books that purport to describe all the countries in the world published in English before 1888, with a critical introduction (Vancouver, 1993).

³⁸ C. Withers and D. Livingstone, 'Introduction: on geography and enlightenment', in D. Livingstone and C. Withers (eds.), Geography and enlightenment (Chicago, 1999), 1–28.

³⁹ C. Withers, 'Notes towards a historical geography of geography in early modern Scotland', Scotlands, 3 (1996), 111–24; 'Towards a history of geography in the public sphere', History of Science, 37 (1999), 45–78.

⁴⁰ G. Abbatista, 'Establishing "the order of time and place": "rational geography", French erudition and the emplacement of history in Gibbon's mind', in D. Womersley (ed.), Edward Gibbon: bicentenary essays. Studies on Voltaire and the eighteenth century, 355 (1997), 45–72.

⁴¹ R. Sorrenson, 'Towards a history of the Royal Society in the eighteenth century', *Notes and Records of the Royal Society of London*, 50 (1996), 29–46; R. Drayton, 'Knowledge and empire', in P. Marshall (ed.), *The Oxford history of the British empire: the eighteenth century* (Oxford, 1998), 231–52; C. Bayley, *Empire and information* (Cambridge, 1996), 300–14.

⁴² R. Porter, 'The terraqueous globe', in G. Rousseau and R. Porter (eds.), The ferment of knowledge (Cambridge, 1990), 285–324.