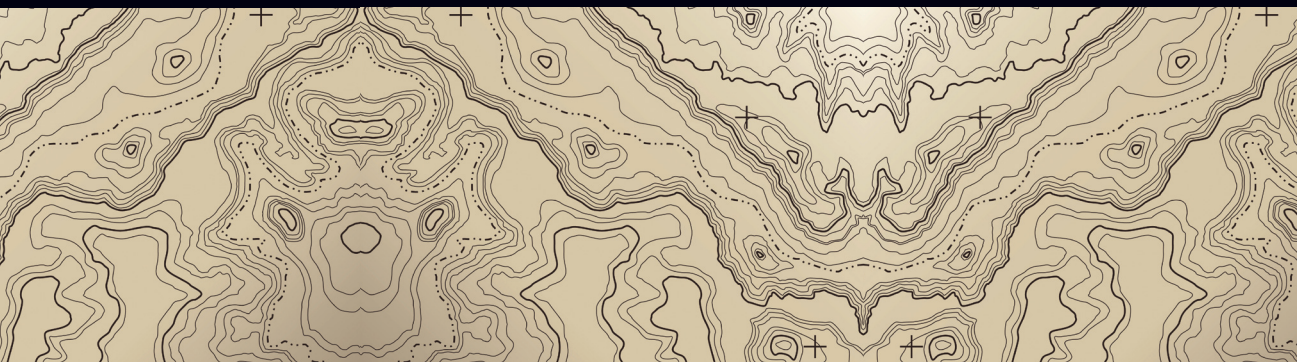


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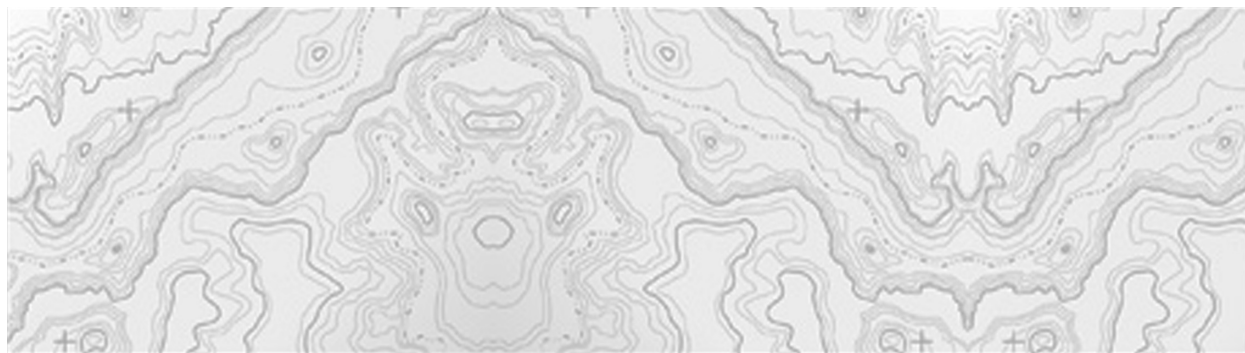


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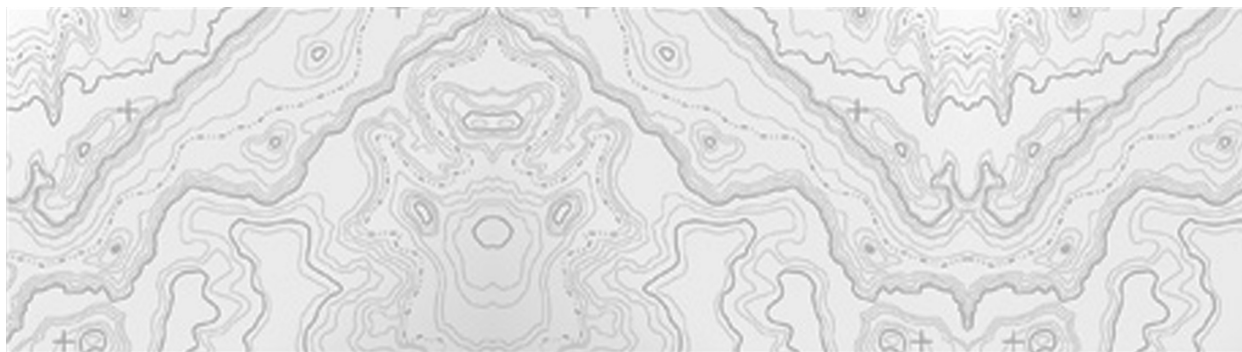
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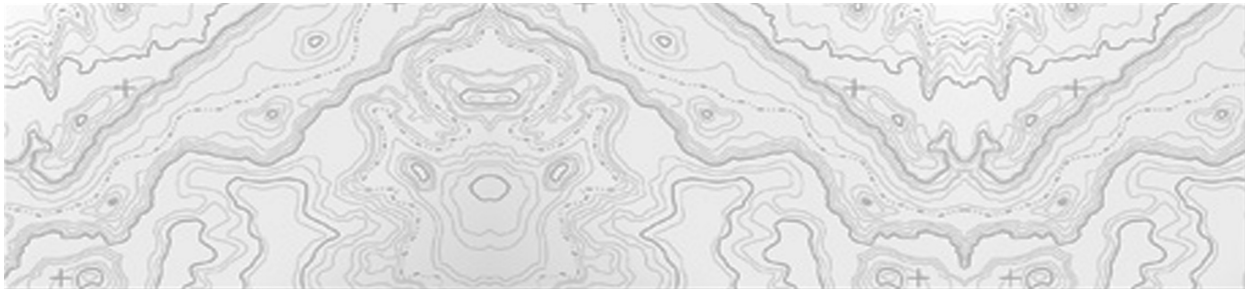
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Introduction

John A. Agnew and David N. Livingstone

This Handbook provides an opportunity to think critically about how geography as a field of knowledge, not so much as a restraining discipline with fusty conventions but as a rich set of intellectual traditions producing new knowledge with reworked concepts, has emerged and fared over the course of its modern institutionalization. Unlike some other fields, geographical scholarship is not neatly demarcated. Frequently physical and human geography are separated out from one another as if they had completely different historical trajectories. Yet, over a fairly long period of time, it is their very co-existence that is one of the things that has helped to constitute the field at large. It is quintessentially an interdisciplinary tradition when its various ‘parts’ (physical and human, cultural and economic, etc.) are considered together. Given its catholicity and relatively open boundaries, many of its most compelling practitioners are only viewed as ‘geographical’ in orientation as a result of hindsight. Particularly before the creation of university departments and degree programs in geography, the label ‘geographer’ or ‘geographical writer’ was not a self-evident one for many whom we might judge today as central figures in the ‘geographical canon’ (e.g.

Immanuel Kant or Alexander von Humboldt). Geography as a discipline is, therefore, very largely a retrospectively constituted tradition. Though there are good grounds for feeling uneasy and self-conscious about the invention of traditions, we cannot do without a tradition if we are to engage in common dialogue, avoid historical superficiality, think critically and creatively about the nature of the discipline, prepare the next generation of students, and ground commitments to our fields of study in rapidly changing institutional settings. Traditions are inescapable (Agnew *et al.* 1996). The issue is to ensure that they remain vital conversations between past and present without degenerating into repressive or exclusionary regimes.

In this Handbook we adopt a relatively broad definition of what constitutes geographical scholarship, but we do so in the belief that there is a stream of knowledge sited in discrete locations but circulating over space and flowing across time that can be plausibly labeled ‘geographical’. This is not to imply some a priori commitment to a canon of geographical thought operating as a transcendental touchstone for all that comes later. Rather, to adopt the metaphor of ancients and moderns, it is to recognize that

new authors discard some ‘ancients’ only to jump back and expropriate others, even as these are mobilized to create new visions to engage with new problematics (e.g. Klibansky 1936). The central issue is not so much the historical selectivity of the canon as the fact that it has been an unreflexive invented tradition that has avoided serious systematic critical scrutiny. As we draw on historical precursors, therefore, we need to be aware of why we draw on them (and not on others) and that what we draw on will not necessarily be the same as they (or their contemporaries) had in mind. A canon may well be fundamental to a discipline but an unexamined one is not.

Over the past 30 years or so, students of scientific, social, political and geographical thought and practice have become increasingly sensitive to the questionable ways in which their subject matter has been seen conventionally, often in a so-called Whiggish mode, as leading from a primitive and ill-informed past to what is dominant today. A string of canonical authors is typically given center stage in the unfolding linear disciplinary drama. Such an approach is indeed critical to the modern identities of sociologists, biologists, economists, geographers, and so on. This strategy is deficient in itself, however, because it often fails to justify why some authors are canonical and others are not, and it typically fails to situate authors in the context of their places and times. These two critiques have become vital components in the reformulation of textbooks in social and political thought. In geography, however, there is still a tendency to obsess about ‘big names’, partly as a result of the way in which universities have recruited talent by bringing in stars with extensive resumes to bolster their reputations, but also because of the technology of ranking journals, departments, and individuals by their so-called impact. Some commentators have hinted at the significance of, for example, networks of communication and the dynamics of ideas (e.g. Claval 1972; Stoddart 1986). But that is about all. There are relatively few studies that

successfully devote attention both to what can be called a ‘human interest’ approach, focusing on key intellectual figures, and to the major conceptual controversies that have wracked the field down the years. Powell’s (2005) exciting intellectual history of geographical disputes over the development of the Colorado River and the origins of the Grand Canyon is one that does readily spring to mind.

Strangely, at much the same time, modern geography as a discipline has been tremendously influenced by the theoretical interventions of thinkers such as Roland Barthes, who openly proclaimed the ‘death of the author’, and Michel Foucault who spread the idea of the author into what he called the ‘author function’. We could, therefore, claim writers like these as allies in the task of overthrowing the typical conception of how we construe the field. But that would be mistaken. For we are not concerned to deny authorship in the interest of designating discourses that pass through ‘authors’; our project rather is to situate authors in the context of the material and intellectual venues they occupied and the conceptual controversies in which they engaged. For without these their contributions relative to one another cannot be evaluated. Authorship will thus appear in the pages that follow, but not as a cause for celebration in itself.

In this Handbook, therefore, we do not aspire to canonize any set of authors. Rather, we propose, on the one hand, to examine the venues or places in which a range of texts, ideas, and concepts from multiple authors have emerged and among which they have circulated; and, on the other hand, to scrutinize critical and contested concepts that have served as both the ‘core’ of the field and whose expropriation, reworking, and elaboration, continue to frame and inform disputes over the direction and power structure of the discipline today. In other words, we seek to balance two critical approaches. First we focus on venues that generate geographical knowledge and are productive of modes of discourse subsequently available to people in

particular times and places; and secondly we direct attention to the intellectual and social histories of key geographical concepts whose meaning and import have evolved, sometimes controversially, over long periods of time.

The endeavor, therefore, is to situate the main ideas and influence of authors who arguably have made fundamental contributions to geographical thought and practice, and to locate them spatially, historically and intellectually. More particularly, the discipline we are addressing here is Western, largely Anglo-American, in provenance. For this we offer no apology. We make no claim to universalism for the Handbook. There are undoubtedly other streams of geographical knowledge than the ones we are concerned with here, but these often have had little or no direct influence on the traditions we are addressing. Where they are indebted to traditions of scholarship from elsewhere, the essays that follow seek to specify these and to identify the character of the intellectual obligation. To put the more specific approaches to the geographies and conceptual history of geography into a wider frame of reference, however, we do need to provide a set of preliminary orientations that trace the genealogy of terms such as 'geography' and 'the geographical' and to outline the various broad streams of theoretical and methodological thinking that have informed the field down the years.

The Handbook, then, will consist of three sections devoted respectively to Geographical Orientations, Geography's Venues, and Critical Geographical Concepts and Controversies. The first will provide a brief overview of the genealogy of 'geography' in various forms by surveying the dominant narratives of the field that have informed the methodologies and understandings of theory that have animated the discipline. Attention will be given throughout these chapters to the borrowings from and relations with other fields including interdisciplinary ones. The second section will highlight the range of spatial settings and locations in which

geographical knowledge has been generated and around which its main products circulate and are adopted and adapted. We identify 20 or so venues as of primary importance in the historical geography of geographical thought. This list is likely to be far from exhaustive, and the venues identified have waxed and waned in relative significance over time. However, they represent at least some of the key technologies and sites for the production and reproduction of geographical knowledge and its associated texts. At the same time they contribute towards an understanding of intellectual history that takes the role of space and place with great seriousness. Taken together they contribute towards the cultivation of a 'geography' of geographical knowledge and practice. The third section will address a range of critical concepts and associated controversies that have served sometimes to unify, sometimes to divide, geographical scholarship; down the years they have been expropriated anew, invested with new meanings, and used to define new 'intellectual tribes' that cite their members favorably but subject others to unremitting censure. This section moves beyond the notion of a received canon to identify reworkings and recombinations that have challenged established wisdom. It is again inevitable, as with the section on venues, that not every concept that has had some role in the geographical endeavor can have its own chapter. We have selected those that have had a persistently superordinate status in the hope that other related ones will also be addressed. Thus, for example, such concepts as movement, circulation, diffusion, and iconography should all put in appearances at suitable points in chapters devoted to landscape and nature/culture. Our aim is to be as comprehensive as possible but without claiming to be encyclopedic.

In this Introduction we try to do three things. First, we present a general perspective on what can be called 'geographies of knowledge' to highlight the perspective that has inspired the focus on venues in the body of the Handbook. If from one viewpoint this

is a negative activity, providing an alternative to the obsession with authors, authorial intent and 'big names' in much of what goes for the history of geographic knowledge, from another it is profoundly renewing for the field itself. It points to how much geography is itself implicated in the ideas of geography as a scholarly field of endeavor and as a practical and engaged enterprise; at the same time it brings to prominence the crucial significance of how ideas, technologies and practices circulate, transform and settle. Knowledge production and circulation, therefore, is not that special. The profoundly human processes of everyday life, cultural presuppositions, geopolitical contestation and social competition are at work here as they are in all other aspects of human existence. The second thrust of the chapter is to provide a theoretical perspective on the other major substantive section of the book: the essentially temporal frame by which ideas and concepts are transmitted, reformulated and redefined in disputes as a result of the waxing and waning of various fashions and enthusiasms. Tides of theoretical, methodological and referential fashion seem to have washed geography's shores at an increasing rate in recent years. As authors move from bandwagon to bandwagon we can trace their moves without having to make coherent 'whole' intellectual lives out of their much messier parts. Finally, we provide a brief summary of the substance of the chapters themselves and of how we see them fitting into the overall structure of the Handbook.

GEOGRAPHIES OF GEOGRAPHICAL KNOWLEDGE

Recent rethinking about where knowledge is produced and how it circulates can helpfully inform our understanding about geographies of knowledge. Such geographies, of course, are not simply ends in themselves. The point is to understand the ontological bases of knowing from perspectives that do not either

privilege a singular history of knowledge associated with a specific world region such as Europe versus China (a typical relativism), or presume conceptions of knowledge that implicitly or explicitly assume their own self-evident universality (a typical positivism). The specific sites or venues within which geographical knowledge is produced and across which it circulates must be situated within the framework of these larger concerns. There is no 'view from nowhere'. Knowledge is always 'local, situated, and embedded' (Shapin 1998: 6). But this is not to imply that there is no such thing as 'true' knowledge. Rather it is to insist that we need to know how knowledge is made in order to judge how well it should 'travel'. How knowledge is produced and circulates is fundamental to establishing its relative credibility or the trust that can be placed in it. Now that we know how Cyril Burt collected his data and Margaret Mead relied on her informants we can reach more reliable conclusions about what faith to put in their findings and interpretations.

Recent rethinking of the geography of knowledge can be considered initially with respect to four dominant tendencies in thinking about the nature of the world and the character of knowledge production – tendencies that need to be identified and contested. Unfortunately, they are rarely raised together and, as a consequence, dealing with any one does not always necessarily involve addressing the others. Subsequently we will turn to how we hope to use various geographies of knowledge in hopes of coming to grips with one or more of these dominant ideas about the nature of the world and the character of knowledge production.

First of all, knowledge is often regarded as simply a commodity like any other that is exchanged in a 'marketplace' of ideas. The most truthful ones win out in an evolutionary competition based on the professionalization of knowledge accumulation in universities and research institutes. From this viewpoint, there is no separable social influence on knowledge whatsoever. Now, one does not

need to endorse the view that all explanatory schemes, theoretical positions and empirical claims, are equally truthful to accept that what knowledge becomes 'normalized' or dominant and what is marginalized has something to do with who is doing the proposing and where they are located. The marketplace of ideas is not a level playing field. There are both sociologies and geographies of knowledge production and circulation. The positivism that remains defiantly agnostic about the social-geographical sources of its knowledge and the uses to which such knowledge is put is increasingly problematic. Yet knowledge is never simply a prisoner of culture, will, or power. The sort of detachment or ability to look beyond one's own limited horizons cultivated by 'academic freedom,' but also characteristic of people under much less congenial social arrangements (dissidents in Cold War Eastern Europe and contemporary China, for example) means, as Thomas Haskell (1998: 152–3) suggests, that we take seriously both parts of a famous quotation by Nietzsche, usually used to indicate the impossibility of disinterestedness and the inevitability of relativism. The second part judges that some 'conceptions' can be more complete than others:

There is *only* a perspective seeing, *only* a perspective 'knowing'; and the more affects we are allowed to speak about one thing, the *more* eyes, different eyes, we can use to observe one thing, the more complete will our 'concept' of this thing be. Nietzsche 1969: 119.

Haskell (1998: 153) concludes: 'The ideal of objectivity [if not that of neutrality] requires no more of a foothold than this.' Of course, a commitment to a modicum of objectivity, at the very least as a regulative ideal, by no means provides a guarantee that it will ever be successful in the outcome, only that it is vital to consider it as a goal rather than, say, cynically acquiescing to the presumption that knowledge always does or *should* serve power, or that this or that perspective is necessarily wrong simply because we do not like it or it is not from our culture. The main

claim here is that knowledge emanating from one place is not necessarily incommensurable or unintelligible relative to knowledge produced elsewhere. Cross-cultural communication goes on all the time without everything being entirely lost in translation. Indeed, knowledge in some places gains in both the possibility of greater geographical scope and cultural sensitivity when it is informed by knowledge coming from other places. There is much confusion about such matters in contemporary disputes about epistemology in social science in general with the possibility of constrained objectivity often summarily dismissed in favor of social determinisms of knowledge of various types often justified using a loosely employed language of social construction with extreme cultural relativism as the inevitable outcome.

The second presumption is that world geography or global space are conceived of as a 'surface' rather than, say, as Doreen Massey (2005: 4) suggests a 'meeting up of histories'. Such reconceptualisations matter because a surface (at least in a Euclidean sense) presumes total ease of movement, timelessness, no directional bias, and an Archimedean view over the whole. Yet world history has always been a narrative of collisions between conceptions of space (and time) as the world itself was made and remade by the imposition of dominant grids (think of latitude and longitude or dating based on pre-Christian and Christian eras) more than a straightforward incision of history on a passive surface. Any particular theoretical position necessarily contains within it specific grids of space and periodizations of time that deeply trouble standard spatial and temporal designations. It thus makes sense, for example, to ask questions like 'Whose Middle East?' or 'Whose medieval world?' is under scrutiny. At the same time, this perspective can overstate the linearity of intellectual development in different regions at the expense of noting both the limits of historicism (many ideas are not all specific to time and place but discovered independently in several places and persist

over time) and the complexity of knowledge formation even within particular locations. Failure to acknowledge such possibilities results in a crude spatial reductionism.

Another inclination is an impulse to characterize space in terms of temporal periods by categorizing some places as 'following in the footsteps' of others as they recapitulate previous history. This was the main move of modernization and other developmental conceptions of space and time when they were brought into circulation in eighteenth-century Europe. From this viewpoint, because some places are more developed economically, they must necessarily be superior in other respects such as the presumed universality of their knowledge claims. Eventually, by learning from their betters, those lower down the global order can potentially catch up. The very possibility that some still think this way is a greater reflection of the global dominance of some places over others than any inherent intellectual superiority reflecting 'stage' of development. Typically, national states are taken as the basic units of account arrayed along a developmental continuum. Much social and political theory, in particular, tends to be intimately intertwined with specific nation-states and to assume a world thus divided. At one time larger bounded territorial entities such as 'civilizations' were given priority and there are indeed signs that something similar is currently resurfacing. Either way, what is missing is the fact that such hard-walled territories are both relatively modern and anything but universal. Projecting the assumption that they are in fact both ancient and universal produces an image of the world as a mosaic of rigidly bounded 'peoples', 'cultures' and 'societies'. It is to these entities that the cultivation of knowledge is thus often fallaciously ascribed.

The final tendency is the sharp contrast frequently drawn between space, representing the general or universal, on the one hand; and place, standing in for the local and specific, on the other. Places are often thought of as if they are 'bunkers' or isolated communities

separated from everywhere else. For both nationalism and identity politics more generally, place is commonly seen as the ideal locale in which the group lives hermetically sealed off from all others (Simpson 1995: Chapter 5). To cosmopolitans, in contrast, space is the ideal; a world without borders in which hybridity and cross-cultural intercourse reign in all directions. This opposition, present most clearly in contemporary globalization debates between those locked into a territorialized world and those proclaiming an incipient world of placeless flows, misses both the extent to which places are almost always parts of spatial networks reaching across cultural and political barriers, and at the same time settings in which distinctive social and moral habits and routines take place. Recent thinking in human geography suggests that relational spaces and relatively bounded places co-exist and interrelate rather than being mutually exclusive (Agnew 2005: Chapter 3; Coleman and Agnew 2007). Binary or oppositional views of place and space, therefore, offer a mistaken basis for understanding the workings of geographies of knowledge.

Much cultural and literary theory of the past quarter century has been taken up with debating one or more of these issues, though often with different terminology. However, the critical question of ultimate 'ontological belonging' has increasingly bedeviled the debate: from the politics of group identity to the 'clash of civilizations'. In this construction, perhaps too much discussion of the geography of knowledge comes too close to what Timothy Brennan (2006: 6) calls 'a religious approach to knowledge in general, that is, the creation of like-thinking communities based on transcendental convictions'. In this regard, knowledge is always and everywhere regarded as emanating from incommensurable and totally distinctive worlds reflecting primordial cultural identities that the Western Enlightenment has merely driven 'underground'. In this way critical reflection is largely abandoned for excavating this or that experiential difference. At an extreme

the emphasis on 'local knowledge' – a stance in which all science [for example] is seen as ethnoscience with standards rooted in a particular culture – withdraws objectivity, turns the abdication of judgment into a principle of judgment, and recalls what was once a right-wing preoccupation with 'Jewish physics', 'Italian mathematics', and the like. Bronner 2004: 162.

Such extreme cultural relativism critically ignores the fact that cultures in the modern world never exist in isolation and that 'cultures' themselves are assemblages of people with often cross-cutting identities and commitments. From this viewpoint, culture is 'an idiom or vehicle of inter-subjective life, but not its foundation or final cause' (Jackson 2002: 125).

Be that as it may, knowledge creation and dissemination are never innocent of at least weak ontological commitments, be they national, class, gender, or some other particularity. This is precisely the point of referring to the geography of knowledge: the question of *where* brings together a wide range of potential ontological and epistemological effects under the rubric of spatial difference. At the same time, massive socio-political transformations in the world are shaping changes in how we (whoever and wherever we are) engage in how knowledge is ordered, disciplined, and circulated. Cross-global linkages are arguably more important today than at any time in human history, not so much in terms of the conventional story of producing places that are ever more alike, but more especially in creating opportunities for interaction between local and long-distance effects on the constitution of knowledge. As a result, anomalies in established theories as the world unleashes surprises and the subsequent limits to the conventional theoretical terms in which theories have been organized – states versus markets, West versus the Rest, religion versus secularism, past versus present, the *telos* of history versus perpetual flux, uniformitarianism versus climate change – pose serious challenges to the disciplinary codes that have long dominated geographical thinking. Perhaps the most

serious issue concerns the continuing relevance of the idiographic/nomothetic (particulars/universals) opposition that has afflicted Western social science and geography since the *Methodenstreit* of the late nineteenth century. Knowledge is always made somewhere by particular persons reflecting on their place's historical experience. 'Universals' often arise by projecting these experiences onto the world at large. What is needed are ways of understanding how this happens and drawing attention to the need to negotiate across perspectives so that geographical knowledge can be less the outcome of hegemonic impositions (and a dialogue of the deaf) and more the result of the recognition and understanding of differences, both cultural and theoretical.

VENUES AND CONCEPTIONS OF THE GEOGRAPHY OF KNOWLEDGE

There are broadly five different ways in which geography is currently understood as entering into knowledge production and circulation. We are sure that others might characterize this intervention differently or identify themes we have missed. Typologies such as this are inherently problematic, of course, simplifying a much more complex picture in order to achieve some purchase on it. And so our own schema is put forward as a tentative first approximation. As the literature on this expanding field develops a more refined typology will doubtless emerge. The five geographies of knowledge that we identify here are ordered so as to reflect their relative emphases put on particular places or milieus versus the spatial diffusion and circulation of knowledge across places. The various venues that are the subject of later chapters are the practical fruit of how geography as understood in these five ways conditions knowledge creation and diffusion.

The first way of conceiving the geography of knowledge is the ethnographic, by which we mean approaches that conceive of

knowledge as inherently plural and that focus on the venues and sites in which knowledge is produced and consumed. The emphasis here lies in rehabilitating what are sometimes called 'indigenous knowledges' or in pointing out how 'science' is culturally inflected by local particularity. Another related but distinctive position tends to privilege the role of 'coloniality' or the effects of colonialism on knowledge hierarchies. A third derives more immediately from the philosophies of phenomenology that emphasize the intimate relations between particular geographical contexts of 'being', on the one hand, and knowledge acquisition, on the other. While also seeing knowledge as produced locally, a fourth lays stress rather more on how the local becomes global given the rise and fall of ideas in tandem with their political/intellectual sponsors. Finally, emphasis has tended to shift recently from knowledge production to knowledge circulation and consumption in the form of highlighting what is called the 'geography of reading'. To be sure, this distinction should not be pressed too strongly for a clear boundary line between the production and consumption phases of the knowledge circuit cannot be drawn. And it is for this reason that Secord (2004: 661) has encouraged us to 'shift our focus and think about knowledge-making as a form of communicative action'. Nevertheless, taking seriously the mobility of knowledge has recalled attention to the fact that ideas circulate widely but generate distinctive readings in different places.

The cultivation of a greater sensitivity to the diverse geographies of knowledge has much potential. And to illustrate something of its riches, a brief exposition of a few of the perspectives that have been adopted is worthwhile. Our purpose here is neither to argue for the superiority of any one approach, nor to present an all-embracing survey. To put it another way, what follows is illustrative rather than exhaustive, suggestive rather than comprehensive. It is simply intended to demonstrate something of how thinking geographically about geographical knowledge

might offer distinctive insights into the working and practice of geography itself.

Sites of knowledge

Many good examples of this first approach can be found in Laura Nader's edited collection *Naked Science: Anthropological Inquiry into Boundaries, Power, and Knowledge* (Nader 1996). One insight here lies in challenging the notion that a certain idea of 'science' as a geographically invariant techno-rational activity beyond society necessarily produces knowledge superior to other 'ways of knowing'. But science itself also takes on different intellectual inflections in different locations. One of the most relevant and interesting chapters in this regard is a comparison of primatology in Japan and Canada (Asquith 1996). In this case, perspectives on the 'nature of nature' reflect unarticulated assumptions about the roles of groups and individuals in the behavior of apes and monkeys. In Japan primatologists engage in long-term observation of groups with an emphasis on inter- and intra-group relations, ranking, and individual to group affiliation. In Canada the focus lies in intense short-term observation of adaptive behaviors of individuals. These differences do not seem to be coincidental. Japanese human society is famously group-oriented compared with Canada or the United States.

Like Donna Haraway writing about how the political and the psychological come together in *Primate Visions* (1989), this study is an arresting example of just how culturally embedded science can be and thus how knowledge is variously constructed in different places even when certain common canons of observation and recording information are still operative. Metaphors, the particularly powerful ways in which scientific ideas are expressed in ordinary language, are often important in interpreting results in some ways rather than others (e.g. Ezrahi 1995; Leary 1995). Various 'social studies' of science take these insights down to the level of

the laboratory and the classroom. In the context of geographical knowledge, what they suggest is that all knowledge, including that claiming the mantle of science, is socially conditioned by the rituals, routines, and recruitment practices of powerful educational and research institutions.

Geopolitics of knowledge

The primatology example, like many others, presumes that knowledge comes packaged in territorial containers with labels like 'Japan' and 'Canada' and thus that practice in both has developed separately. At a world scale, perhaps the outstanding feature of the past centuries has been the way most places have been incorporated into flows of knowledge dominated by Europeans and extensions of Europe overseas, such as the United States. This is the story, in Eric Wolf's evocative phrase, of *Europe and the People without History* (Wolf 1982). Raised particularly by Edward Said (1978) and more recently by Walter Mignolo (2000) and others, colonialism is seen as laying the groundwork for a global geopolitics of knowledge. Initially giving rise to the type of knowledge typified by Orientalism, it has subsequently engendered reactions from historically subordinated places to which such phrases as 'subaltern knowledges' and 'border thinking' are often appended.

From this viewpoint, the modernity associated with Europe can no longer be imagined as the only home to epistemology. Mignolo (2000: 95), for example, emphasizes what he calls 'subaltern reason' as 'a diverse set of theoretical practices emerging from and responding to colonial legacies at the intersection of Euro/American modern history'. Much of this writing centers the experience of colonialism (in its various manifestations) as key to knowledge production. Rather than a singular experience, however, knowledge generation is recognized as inescapably plural. The 'place of theorizing' – in the sense of being from, coming from,

and being at particular venues – conditions what can or may be said (Mignolo 2000: 115). This is not to suggest that only people from place *x* can say so-and-so, but to acknowledge that it is a fusion of 'historical circumstances and personal sensibilities' that makes this likely to be the case. Certainly, dependency theories of development and literary genres such as magical realism with their obvious roots in Latin America, and subaltern studies with its strong connections to India, suggest that Mignolo is onto something here. Indeed, he suggests that the United States as a settler society with its own roots in colonialism can also be viewed in a similar light rather than being simply seen as an extension of Europe into the Americas. His slogan 'I am where I think' clearly identifies knowledge production as geographically relational, reflecting particular colonial histories and how these stimulate indigenously generated local content. This contrasts with the European-based 'theo-' and 'ego-' politics of knowledge that systematically devalue what Mignolo (2006) terms the 'geo-' and 'bio-' graphic politics of knowledge that emphasize epistemological 'rules' grounded in the history of political imperialism as differentially experienced around the world. The fact that these ideas now have wide circulation across the globe suggests that flows of knowledge are hardly 'one-way streets' in the ways that they once were thought to be.

Geographical 'being' and knowledge

Our third type of geography of knowledge is phenomenological with its weight on concern for the ways of acting and knowing that humans bring to 'being in the world'. Drawing from Martin Heidegger and other philosophers, but also having roots in the discipline of geography (Wright 1947; Lowenthal 1961), the interest here lies more in establishing how conceptions of space, place, and time are themselves contingent on

what Edward Casey (1996: 19) calls the 'dialectic of perception and place' because human beings are 'ineluctably place-bound'. Ontologically, such Heideggerian claims have led some to reconceptualize the human agent as always and necessarily embedded in the world, and thus, even methodologically, not abstractable from it. In the work of anthropologists like Tim Ingold (2000), this conviction has resulted in a resculpting of the idea that the world in which we *dwell* is a relational one that is brought into being by how we act in it. Of course, it is commonplace today to say that many of us live in a world that is 'de-localizing' and 'de-territorializing'. Yet, it may be more empirically insightful to say that the present situation is one in which for many people there is 'crisis and a modification of our traditional experience of space and place' (Hönnighausen 2005: 46) than a total 'de-spatialization' of life. As Clifford Geertz says: 'No one lives in the world in general.' Actual places, both as experienced and as imagined, serve to anchor conceptions of how the world is structured politically, who is in charge, where, and with what effects, and what matters to us in this place. Thus, Americans and US policy-makers bring to their actions in the world a whole set of presuppositions about geopolitics that emanate from their experiences as 'Americans', particularly narratives about US history and the US 'mission' in the world, that are often occluded by academic debates about 'theories' that fail to take into account such crucial background geographical conditioning. As Lisa Anderson (2003: 90) has noted, much of the 'liberal tradition' that has shaped social science in the United States has had 'a geographical, territorial association'. She quotes Kenneth Prewitt in support:

The project of American social science has been America. This project, to be sure, has been in some tension with a different project – to build a *science* of politics or economics or psychology. But I believe that a close reading of disciplinary history would demonstrate that the 'American project' has time and again taken precedence over the 'science project' and that our claims to universal

truths are, empirically, very much about the experience of this society in this historical period. Prewitt 2002: 2.

With something of a note of irony, Heidegger's view of world politics can be seen as illustrating this point. As Dean Lauer (2005) has recently argued, Heidegger had a geopolitics that was a result of his seemingly 'academic' philosophy of 'being-there.' The US and the Soviet Union, in this construction, represented the victory of universalizing creeds over being-in-place. In the context of post-Second World War Europe, consequently, 'Heidegger sees Europe as caught between the millstones of American liberalism and Russian Bolshevism' (Lauer 2005: 134). In this understanding, they are metaphysically the same because they, 'Russia and America,' are locked into a 'dreary technological frenzy, the same uprooted organization of the average man. At a time when the farthestmost corner of the globe has been conquered by technology and opened to economic exploitation.' (Heidegger 1987: 37). Of course, both creeds did in fact have definite geographical roots, their own ways of being-in-place, even as they embarked on a global hegemonic contest.

The spatial diffusion of hegemonic knowledge

How the universalizing and scientific creeds have recruited adherents beyond their places of origin is the main concern of the fourth approach. This could be thought of as a question of spatial diffusion. In the natural sciences, for example, the conventional way of understanding the spread of scientific knowledge is the realist claim that science's triumphant diffusion is on account of the truthfulness of its findings. But this obscures the labor involved in the successful reproduction of scientific data in different places. The management of laboratory experiment, the calibration of equipment, the training of experts, the disciplining of observation, the

enshrining of protocols in guidebooks and manuals are all implicated in the circulation of natural knowledge. In the broader cultural arena, some have focused on how ideas about social class and ethnicity are spread by imitation from one country to another, whereas others have traced the influence of intellectual conversion in, for example, the diffusion of neo-liberal fiscal and monetary policies by technocrats educated in US universities.

More holistically, however, Gramsci's concept of 'hegemony' is helpful in trying to understand how elites (and populations) accept and even laud ideas and practices that they import from more powerful countries and organizations. If part of American hegemony in the contemporary world, for example, is about 'enrolling' others into American practices of consumption and a market mentality (and, crucially, intellectual justifications for them such as those of various management gurus and journalists), it also adapts as it enrolls by adjusting to local norms and practices (Agnew 2005). This is part of its 'genius'. During the Cold War, the Soviet alternative always risked political fission among adherents because it involved adopting a checklist of political-economic measures rather than a marketing package that could be customized to local circumstances as long as it met certain minimal criteria of conformity to governing norms. Today, the conflict between militant Islam and the United States government is largely about resisting the siren call of an American hegemony associated with globalization that is increasingly detached from direct US sponsorship and with many advocates and passive supporters within the Muslim world itself.

Geography of reading

Finally, even in the face of hegemonic trends, not least that of the worldwide diffusion of scientific knowledge, *where* still matters but with respect to how ideas are understood (how texts are read) more than in terms

simply of where new knowledge is initially produced. Thus, in accounting for distinct differences in how Darwin's bio-geographical theory of evolution by natural selection was construed in a number of different settings, David Livingstone (2005) suggests, drawing from one strand of thought in Edward Said (1991) that 'theory travels'. This is not simply a recognition that texts and ideas move from place to place but that in doing so they are modified. As texts travel, they transform. This is not just because local norms or translation into a different language lead to different readings but also because the 'writings and reputations of eminent scientific practitioners have often been mobilized as resources in ideological conflicts of various kinds' (Livingstone 2003: 27). In a sense, therefore, knowledge is made as it circulates; it is never made completely in one place and then simply consumed in another. And this realization renders troublesome any simple bifurcation between knowledge production and consumption. Both are implicated in the intellectual circuitry of knowledge enterprises.

As a tradition, geography has long lauded fieldwork, direct observation, measurement, mapping, and inductive inference. At the same time, however, these favored practices have always been conditioned by the social, bureaucratic, political, and intellectual milieus in which research has been pursued (Meusburger *et al.* 2009). There has never been a geographical 'blank slate' from which research emanates and across which it is exchanged. This is not to say that research results are simply invented and then spread as a result of relative power or influence. Rather, it is to say that research arises out of and circulates by courtesy of conventions and practices associated with different venues that are jointly produced by the five geographies of knowledge. As Kohler (2002) has shown for American biology, the border zone between the laboratory and the field site has been a particularly important zone of contention among biologists, not just in terms of defining separate venues with different

prestige values, but also the distinctive research 'cultures' associated with operating within and across the borderline. These spaces arose out of competing intellectual imperatives to emphasize molecular reduction versus ecological complexity, project cognitive authority through emphasizing external as opposed to internal causal validity, and institutional pressures to both define 'proper' biology and give its findings credibility in the eyes of the wider public.

GEOGRAPHICAL CONCEPTS AND CONTROVERSIES

The history of geographical knowledge is the history of its concepts, practices, and disputes about them in various registers or keys. Modern geographical knowledge is the product of a modern era in which there is a widespread consciousness of the concepts we use; various concepts and their meanings are often the centerpiece of conflicts about theories, methods, and politics among intellectuals and others, and the evolution of concepts (and the language associated with them) is related to the changing character of particular historical periods. Organizing 'history' into epochs is an inevitably fraught and contestable exercise. Yet a good case can be made that prior to the eighteenth century (at least in Europe) there was neither much consciousness of previous history in anything other than a sense of key dates and figures and any concepts applied to the past had a timeless quality to them. These are among the sorts of claims made by Reinhart Koselleck (2002) in his attempt at understanding what he calls 'conceptual history'. In the field of history concepts such as the 'Reformation', the 'Dark Ages', 'feudalism', and, indeed, the idea of 'modernity' itself are products of a view of history as 'open' to the future but thinkable only in terms of 'stages' and 'epochs' that not only signal an increasing acceleration of time but also an acceptance of the presumption that the future will be

distinctive from both present and past. For whatever reason, this did not happen until the Age of Enlightenment. Only at this point could we begin to argue about what this was and whether it was meaningful!

Even in history the invention and elaboration of concepts, however, is a more contentious process than just a theoretical debate about the pros and cons of this or that periodization or the naming of different historical episodes as in Koselleck's account. Indeed, much of what goes today for post-structuralist thought (Derrida, Foucault, *et al.*) is intimately concerned with precisely the indeterminacy and limitations of all categories and concepts. The claims to rational truth and universality implicit in much conceptual controversy belie the particularism of knowledge claims discussed in the previous section. It is the very lack of fixity and agreement about the meaning of concepts that sparks controversy. In *Discipline and Punish*, Foucault picks up on this theme:

Disciplines are techniques for assuring the ordering of human multiplicities ... [It] could reduce the inefficiency of mass phenomena: reduce what, in multiplicity, makes it much less manageable than a unity ... [it] fixes; ... it clears up confusion; ... it establishes calculated distributions ... the disciplines use procedures for partitioning and verticality ... they introduce, between the different elements at the same level, as solid separations as possible ... [through] continuous registration, perpetual assignment and classification. Foucault 1977: 219–20.

The main point is that rather than just imitating or representing the world, invented concepts also create and circumscribe it.

Cognitive science suggests that such an understanding is by no means simply a post-Enlightenment phenomenon. All humans are concept-creating entities. Our brains constrain and direct information processing by simplifying signals and classifying them according to categories and concepts that emerge from experiences in the world. Although often inexact and problematic, such processes cannot be transcended as a simple-minded empiricism might have us

believe. There is no such thing as 'a purely uncategorized and unconceptualized experience. Neural beings cannot do that' (Lakoff and Johnson 1999: 19). The dilemma is that such schematic thinking leads to a reliance on closed and stable concepts even as we know that the world itself cannot be simply mapped on the basis of our limited experiences that these concepts often represent.

In geography the concepts are of course very different from those addressed by Koselleck and other historians. Moreover, even though it is only since the eighteenth century that much of what now goes for geographical knowledge was first stabilized and dignified theoretically in terms of concepts that we would now designate as 'scientific' or resting on some foundation other than that simply of religious faith or of much more than fabrication, it is problematic to claim that previous epochs were somehow 'concept-free'. Certainly the ancient Greeks and Romans, to say nothing of the Arabs and Chinese, had sophisticated vocabularies that they applied to natural phenomena. In early modern Europe, however, much of what went for *geographical* knowledge was exotic travel writing without much if any attention to what we would recognize as explicit conceptual claims or arguments (Dunn 1986; Campbell 1988). An empiricist 'common sense' colored by fantastic imagination and hoaxes of various sorts tended to constitute much of what was thought of as geographical story telling. How could you trust the stories brought back by travelers? What reliable conceptual basis could be given to such geographical knowledge? Such concerns have hardly disappeared. But their addressing has engendered much of what passes for modern conceptual and methodological debate. Many of the fundamental concepts and methods that we have tended to see as definitive of modern geographical knowledge date from the eighteenth and nineteenth centuries even if since that time, in line with what Koselleck would expect, they have undergone sweeping question, revision, addition, and reinvention (e.g. Peskin 2004).

The career of the term 'space' is indicative, invented initially in modern form in the seventeenth century to refer to the absolute locational properties of matter. Somewhat later given a more relative meaning as incidental to more substantive qualities of things, it has latterly bifurcated within geography to signify either a reformulated absolute 'space' (for those who see the impact of the human hand in the world as better represented by the much older concept of 'place') or as something that can itself have effects as it is 'made' or molded into different shapes by natural and human processes. A good deal of geographic thought has long involved making and disputing claims about words like 'space'. But methodological concepts, such as spatial analysis and cartography, and subject-matter concepts such as landscape, urban/rural, nature/culture, and development, as well as more fundamental explanatory concepts, such as social class, race, cycle of erosion, and ecosystem have all had such symptomatic if distinctive careers. Challenges arise on empirical as well as on theoretical grounds. Until recently, and still in some quarters, human-induced climate change, for example, was seen as problematic empirically as it was theoretically. What constitutes 'proof' or evidence becomes a way of challenging the very veracity or meaningfulness of a particular concept from those affiliated to either some competing concept or theory (uniformitarianism in this case, perhaps) or with a purely 'natural' concept of climate change.

The history of geographical concepts and controversies over them, therefore, can be classified in a number of different keys (following Philo 2008). These keys or registers are rarely completely independent of one another but frequently overlap. For reasons of exposition, however, we can distinguish between them. Some conceptual disputation and hence historic shifts in their meaning and significance is pre-eminently *philosophical*, reflecting on matters of meaning, language, and ontology as well as about the resources for acquiring reliable knowledge about such matters. Questions constantly arise about the

'nature' of such seemingly essential concepts of geographical inquiry as space, place, nature, and landscape, and how these relate to disputes about the causes of natural and social processes. Disagreements arise here, for example, about whether space is 'something' material, or is a property revealed through the relations (for instance, distance and direction) between material phenomena, out of which entities that we sometimes decide to call places, environments, and landscapes are then derived. Some concepts and disputes over them are more *methodological*, in the sense of calling into question the links between the routinized research practices of geography and what goes for 'the scientific method', asking about whether geography should be thought of primarily as a 'science', with physics or economics invoked variously as role models of rigorous theoretical specification, testing, and verification of research hypotheses using only certain very particular types of data. Much of the argument about 'region' in geography in the 1950s was of this quality rather than about its philosophical basis. Questions about statics and dynamics and simplicity and complexity likewise usually arise in this register.

Other conceptual disputes can be described better as of a *social-normative quality*, relating to how well different concepts are held to explain how nature and human society function, change, are divided by inequalities and power differentials, and how society should best be organized or undermined. Conceptual claims and arguments arise in this connection about space, place, nature, and landscape, as entities that can be made and designed or that are inherited and beyond agency. In recent years, for example, race and ethnicity have tended to replace social class as governing concepts in understanding power differentials and place differences within cities. Other concepts are subject to definition and reformulation as a result of more directly *theoretical* fiat and challenge. Concepts such as evolution, cycle of erosion, and ecosystem, to name a few, are closely associated with specific theoretical positions that when

subject to dispute throw the nature of the concept itself into question. The history of the cycle of erosion is an excellent example of this sort of linkage from concept to theory. Finally, another set of conceptual disputes are more *ethical* in character: some relate to either the relative closed and unquestioned adoption or the total rejection of certain concepts without careful consideration of their pros and cons. Some theoretical positions, such as Marxism and humanism, often entail a priori commitments to various theoretical entities, such as a certain historical teleology or a relatively unconstrained view of human agency, respectively, which are not readily subject to empirical corroboration. Critique of such commitments usually ends up as totalistic. Other disputes in this register relate more to 'new' concepts – think of gender and development for example – that are invented to address 'absences' but which then complicate the use of a range of longer established concepts and methods and when 'combined' with others (race, for example) take on different meanings. Other ethical disputes are about how knowledge is 'made' on the ground and in the air; in other words the conditions under which fieldwork is carried out, data collected, and the possible harm done to research subjects. From this viewpoint, concepts can be seen as culturally particularistic and imperialistic when applied outside the regions and places in which they were initially developed (see previous section). In some quarters the self-evident superiority of modern, scientific knowledge over indigenous knowledge is no longer acknowledged. The very nature of geographical knowledge as frequently presented is itself called into question on ethical grounds. Concepts such as development, conservation, and geopolitics are particularly subject to such challenge.

Elements of conceptual definition and conceptual disputes operating in all five keys – philosophical, scientific, methodological, social-normative, and ethical – will be found in the chapters in the third section, but, as is also apparent, hybrid variants on each

key – like environmental determinism, spatial analysis, and complexity science – are also in evidence. However, it is also important to note that these considerations also enter into discussion of the venues and practices discussed in the second section. Implicit in those are very different approaches which tend to embody varying balances of the five dimensions, with some being almost wholly philosophical with little else in play (public sphere, subaltern space) and with others being, say, highly fixated on the empirics and ethics of method (e.g. field, archive, and mission station). Other approaches, rather, incorporate shifts across all five registers: battlefield, policy and government, and financial space, for example. One problem inherent in this pluralism, of course, is that many approaches end up talking past one other and defy ready comparison. A further outcome in both sections is that different approaches taken by authors, weighted differentially in the various keys, frequently deploy radically different vocabularies in which even the same words (like ‘space’ and ‘place’ or ‘landscape’ and ‘nature’) have quite different connotations. Buried within our sections, therefore, are the very conceptual distinctions and disputes about which the authors are writing if hidden in their own words rather than simply the explicit focus of the chapters themselves.

THE ORGANIZATION AND CONTENT OF THE HANDBOOK

The Handbook begins with two orientating chapters on the shifting connotations of the label ‘geography’ itself and the different ways in which the subject’s narrative has been rehearsed. These chapters are intended to acknowledge the historicity of the very terms we use and the polyvocal character of efforts to capture its genealogy. One critical implication of these interventions is the need to recognize the historical situatedness of this Handbook itself and indeed of all attempts to

capture the supposed transcendental essence of ‘geography’. For we cannot exempt ourselves from the geographical analysis that we bring to other places and periods. The way we characterize the spaces and concepts that come within the range of this Handbook are necessarily a product of its own time and place. This means that there is an inherent provisionalism and situatedness to the stories contributors tell. But this is not only inescapable, it is desirable; for it underscores the dynamic nature of geographical knowledge and the need for this tradition of learning to engage in dialogue with itself. Geography has no essential definition; it is a dynamic tradition of inquiry that changes over time and place. As Nietzsche (1969: 80) famously put it in *On the Genealogy of Morals*: ‘Only that which has no history is definable.’

The second section of the Handbook dwells on a series of venues in which geographical knowledge has been produced and from which it circulates from arena to arena. Some of these are readily identifiable as ‘standard’ sites of geographical engagement with the world: the field, the weather station, the laboratory, and the archive, for instance. Such ready specifications, of course, conceal as much as they reveal, for these venues turn out to be anything but monolithic. They are differently shaped, managed, and constituted in different contexts, and the ways in which they condition the knowledge that they generate differ from place to place. At the same time, we call attention to other arenas not so routinely recognized as spaces of geographical knowledge – mission stations and art studios for example. In part their inclusion is to widen the domain of venues that legitimately come within the arc of geographical scrutiny, and at the same time to recognize that geographical knowledge is produced in sites that lie beyond the conventional map of geography’s production sites. This broadens the scope of our thinking about geographical knowledges – who owns them, how they are generated and circulated, and what their audiences are. Drawing attention to the geographies of geographical knowledge also

contributes to a decentering of 'the author' as the privileged site of intellectual history and conceptual change. By locating authors in the midst of their own temporal and spatial circumstances, this approach roots biography 'like a reclining Gulliver, to the ground of place and time' (Young 1988: 124).

Finally we turn to a range of critical concepts and controversies that have snaked their way – in different manifestations – through the history of modern geographical scholarship. Thus we focus attention on fundamental geographical concepts like space and place, landscape and ecosystem, race and social class, global climatic change and conservation, to name only a few. But we make no claim to comprehensiveness in the concepts we have selected for interrogation. There are doubtless many other candidates whose inclusion could readily be justified. What we do believe is that those that are dealt with have played critically significant roles in the unfolding of geography as both discipline and discourse, and that by conducting a genealogical inquiry into their history and use, we can glimpse something of how critical concepts emerge and evolve, travel and transmute. What our authors have sought to uncover are the circumstances surrounding the generation and mobilization of some of the discipline's central cognitive commitments, to identify interlocutors in debates over the nature of these ideas, and to portray how they continue to inform geographical scholarship in our own day. This approach is adopted in the conviction that historicizing our own cognitive apparatus is a particularly rich way of grasping the internal dynamic and the external influences that shape the direction in which any tradition of inquiry moves in different times and spaces.

There are, of course, many geographical handbooks, encyclopedias, dictionaries and the like currently available to readers. What marks out the present one is the consciously *geographical* analysis we bring to geographical knowledge. By locating geographical theory, practice, and controversy in their spatial-temporal circumstances, we believe

this Handbook will advance the self-referential project of thinking geographically about geography, and thereby of 'geographizing' geography itself.

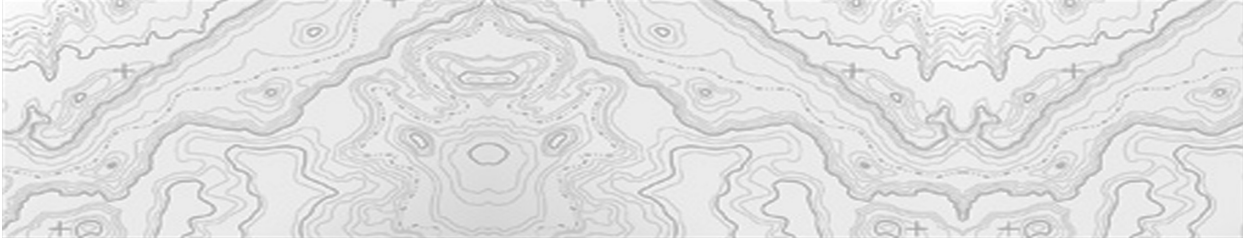
REFERENCES

- Agnew, J. (2005) *Hegemony: The New Shape of Global Power*. Philadelphia: Temple University Press.
- Agnew, J., Livingstone, D. and A. Rogers (eds) (1996) *Human Geography: An Essential Anthology*. Oxford: Blackwell.
- Anderson, L. (2003) *Pursuing Truth, Exercising Power: Social Science and Public Policy in the Twenty-first Century*. New York: Columbia University Press.
- Asquith, P. (1996) 'Japanese science and western hegemonies: primatology and the limits set to questions', in L. Nader (ed.) *Naked Science: Anthropological Inquiry into Boundaries, Power, and Knowledge*. New York: Routledge.
- Brennan, T. (2006) *Wars of Position: The Cultural Politics of Left and Right*. New York: Columbia University Press.
- Bronner, S.E. (2004) *Reclaiming the Enlightenment: Towards a Politics of Radical Engagement*. New York: Columbia University Press.
- Campbell, M.B. (1988) *The Witness and the Other World: Exotic European Travel Writing, 400–1600*. Ithaca, NY: Cornell University Press.
- Casey, E. S. (1996) 'How to get from space to place in a fairly short stretch of time', in S. Feld and K.H. Basso (eds), *Senses of Place*. Santa Fe, NM: School of American Research Press.
- Claval, P. (1972) *La pensée géographique. Introduction à son histoire*. Paris: SEDES.
- Coleman, M. and Agnew, J.A. (2007) 'The problem with *Empire*', in S. Elden and J. Crampton (eds), *Space, Knowledge and Power: Foucault and Geography*. Aldershot: Ashgate.
- Dunn, R.E. (1986) *The Adventures of Ibn Battuta: A Muslim Traveler in the 14th Century*. Berkeley: University of California Press.
- Ezrahi, Y. (1995) 'The theatrics and mechanics of action: the theater and the machine as political metaphors', *Social Research*, 62: 299–322.
- Foucault, M. (1977) *Discipline and Punish: the Birth of the Prison*. New York: Pantheon.
- Haraway, D. (1989) *Primate Visions: Gender, Race and Nature in the World of Modern Science*. New York: Routledge.

- Haskell, T.L. (1998) *Objectivity is Not Neutrality: Explanatory Schemes in History*. Baltimore: Johns Hopkins University Press.
- Heidegger, M. (1987) *Introduction to Metaphysics*. New Haven: Yale University Press.
- Hönnighausen, L. (2005) 'Where we are? Some methodological reflections on space, place, and postmodern reality', in K. Benesch and K. Schmidt (eds), *Space in America: Theory/History/Culture*. Amsterdam: Rodopi Press.
- Ingold, T. (2000) *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. New York: Routledge.
- Jackson, M. (2002) *The Politics of Storytelling: Violence, Transgression and Intersubjectivity*. Copenhagen: Museum Tusculanum Press.
- Klibansky, R. (1936) 'Standing on the shoulders of giants', *Isis*, 26: 147–149.
- Kohler, R.E. (2002) *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology*. Chicago: University of Chicago Press.
- Koselleck, R. (2002) *The Practice of Conceptual History: Timing History, Spacing Concepts*. Stanford: Stanford University Press.
- Lakoff, G. and Johnson, M. (1999) *Philosophy in the Flesh: the Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.
- Lauer, D. (2005) '"America and Russia are the same:" geopolitics in Heidegger's *Seinsfrage*', *Telos*, 132: 132–150.
- Leary, D.E. (1995) Naming and knowing: giving forms to things unknown. *Social Research*, 62: 267–298.
- Livingstone, D.N. (2003) 'Science, religion and the geography of reading: Sir William Whitla and the editorial staging of Isaac Newton's writings on biblical prophecy', *British Journal of the History of Science*, 36: 27–42.
- Livingstone, D.N. (2005) 'Science, text and space: thoughts on the geography of reading', *Transactions of the Institute of British Geographers*, NS 30: 391–401.
- Lowenthal, D. (1961) 'Geography, experience, imagination: towards a geographical epistemology', *Annals of the Association of American Geographers*, 51: 241–260.
- Massey, D. (2005) *For Space*. London: Sage.
- Meusburger, P., Funke, J. and Wunder, E. (eds) (2009) *Milieus of Creativity*. Dordrecht: Springer.
- Mignolo, W.D. (2000) *Local Histories/Global Designs: Coloniality, Subaltern Knowledges, and Border Thinking*. Princeton: Princeton University Press.
- Mignolo, W.D. (2006) 'De-linking: *Don Quixote*, globalization and the colonies', *Macalester International*, 17: 3–35.
- Nader, L. (ed.) (1996) *Naked Science: Anthropological Inquiry into Boundaries, Power, and Knowledge*. London: Routledge.
- Nietzsche, F. (1969) *On the Genealogy of Morals and Ecce Homo*, trans. W. Kaufman and R.J. Hollingdale. New York: Random House.
- Peskin, L.A. (2004) 'Pirates and the geography of knowledge: America and Algiers in the late eighteenth century', in G. Backhaus and J. Murangi (eds), *Earth Ways: Framing Geographical Meanings*. Lanham MD: Lexington.
- Philo, C. (2008) 'The difficult works in the geographers' library: reading "theory and methods" in human geography', in C. Philo (ed.), *Theory and Methods: Critical Essays in Human Geography*. Aldershot: Ashgate.
- Powell, J.L. (2005) *Grand Canyon: Solving Earth's Grandest Puzzle*. New York: Penguin.
- Prewitt, K. (2002) The social science project: Then, now and next. Items and issues, *ITEMS: Social Science Research Council*, 3(1): 1–2, Spring, 2002.
- Said, E.W. (1978) *Orientalism*. New York: Harper.
- Said, E.W. (1991) 'Traveling theory', in *The World, The Text and the Critic*. London: Vintage, Chapter 10.
- Secord, J.A. (2004) 'Knowledge in transit', *Isis*, 95, 654–672.
- Shapin, S. (1998) 'Placing the view from nowhere: historical and sociological problems in the location of science', *Transactions of the Institute of British Geographers*, 23, 5–12.
- Simpson, D. (1995) *The Academic Postmodern and the Rule of Literature: A Report on Half-Knowledge*. Chicago: University of Chicago Press.
- Stoddart, D.R. (1986) *On Geography and its History*. Oxford: Blackwell.
- Wolf, E. (1982) *Europe and the People without History*. Berkeley: University of California Press.
- Wright, J.K. (1947) 'Terrae Incognitae: the place of the imagination in geography', *Annals of the Association of American Geographers*, 37: 1–15.
- Young, R.M. (1988) 'Biography: the basic discipline for human sciences', *Free Associations*, 9: 108–113.

PART 1

Orientations



Geography's Genealogies

Robert J. Mayhew

1.1 AN ARBITRARY PRELUDE: SAUER AND HARTSHORNE ON THE ORIGIN AND NATURE OF GEOGRAPHY

Unsurprisingly given their power and influence in twentieth-century American geography, there has been much ink spilt about the geographical visions of both Carl Sauer and Richard Hartshorne, notably pointing to their differing and opposed conceptions of geography (Kenzer 1987; Entriken and Brunn 1989). Similarities also exist, notably the pair's dependence on German geographical writings to construct their visions, but one matter which has gone unremarked is a strategy of argumentation shared by them and exemplified in their paradigmatic works, 'The Morphology of Landscape' (1925) and *The Nature of Geography* (1939). Both Hartshorne and Sauer attempt to ground their arguments about how geography is and how it should be practised in evidence that the history of geographical writing shows that geography has always been practised thus. More specifically, both develop stories of the origins of 'true' geography, of geography as it should be practised, which locate key scholars in the past who founded the inquiry in its essential mould. It is worth looking briefly at their

arguments as an entrée to the nexus of ideas that this chapter treats whilst recognizing that other points of entry could just as easily have been chosen.

Sauer's 'Morphology' was explicitly an attempt to take the 'diverse opinions regarding the nature of geography' and 'seek a common ground upon which a general position may be established' (Sauer 1969: 315). Sauer argues that geography studies 'area or landscape', this being its naively given section of reality. He further argues that this arena would be studied whether geography existed or not, and could therefore be the quarry of another discipline. Sauer then, moving to what interests me in this chapter, turns from a quasi-Kantian argument about the division of experience and how inquiries cover that division, to an historical argument. The interest in landscape existed 'long before the name [geography] was coined', was represented in Ancient Greece by numerous inquiries under various labels such as 'peri-plus' and 'periegesis', but was then crystallized under the name 'geography' 'more than two thousand years [ago]'. If interest in landscape is a naïve and foundational curiosity we all share, geography has 'priority of claim ... to this field', by virtue of being the first

systematic inquiry that codified that curiosity. Furthermore, Sauer argues that etymology itself supports this claim: 'the simple connotation of the Greek word, which the subject uses as its name ... means most properly areal knowledge' (Sauer 1969: 317). As such, the history of geographical inquiry and the meaning of the very disciplinary term itself reveals what geography in essence is by showing us what it has always been. 'Ought' is reached via 'was'; history discloses essence, this being seen most purely by looking at geography's originating moment, in Sauer's view this moment lying in Ancient Greek inquiry.

This position leads to several further ramifications in Sauer's argument about the nexus between geography's disciplinary history and its core identity. 'Good' geography is the passing on of this Greek conception: 'With this preference of synthetic areal knowledge to general earth science the entire tradition of geography is in agreement'. As this also implies, there are erroneous visions of geography's identity, most notably those which move geography in the direction of being a physical science, and these are labelled by Sauer as 'recent schools of geography', the modern/non-ancient being equated with the mistaken (1969: 317–18). Equally, Sauer sees that this battle was already being played out in ancient times, a scholar such as Strabo having to assert that chorography, or areal description by another name, was geography's task, not 'cosmologic philosophy'; as Sauer puts it, true geography is 'derived from Herodotus rather than Thales' (1969: 318–19, 321). Positioning geography as an earth science rather than a descriptive practice of landscape study must be erroneous on Sauer's account because ancient evidence shows only one type of true geography: 'to discover this "areal connection of phenomena and their order" is a scientific task, according to our position *the only one* to which geography should devote its energies' (Sauer, 1969: 318, my emphasis). So, geography's Ancient Greek origins are pure and singular. True geography is the ramification of that tradition

down the ages, something which has been obscured by the claims of recent (and by that very fact) erroneous schools of geographical thought which ignore what origins tell us about the essence of geographical inquiry. Fortunately, a school of modern geographers is reasserting the true nature of geography, and Sauer's aim in 'Morphology' is to spread the good news to North America:

latterly, Vidal de la Blache in France, Hettner, Passarge, and Krebs in Germany, and others have been reasserting more and more the classical tradition of geography as chorologic relation ... we are in the process of returning to our permanent task ... Modern geography is the modern expression of the most ancient geography. Sauer 1969: 320–1.

Richard Hartshorne's *The Nature of Geography* (1939) was in part an attempt to refute Sauer's position, or rather to argue that Sauer's concept of 'landscape' was so vague as to inadequately ground a clearly defined discipline called 'geography' (Hartshorne 1961: 155–6). The position Hartshorne wanted to assert was notably different from Sauer in that he looked to a different time-frame to support a different conception of what geography in its essence should be, namely a regional science. Thus Hartshorne emphasized geography's scientific character in a way directly contrary to Sauer. Further, Hartshorne initially rejected the relevance of the ancients: 'although the roots of geography, as a field of study, reach back to Classical Antiquity, its establishment as a modern science was essentially the work of the century from 1750–1850' (1961: 35). Yet two points should be made which show a kinship in terms of argumentation between Sauer and Hartshorne. First, both want to use historical evidence to show the rectitude of their argument about the essence of geography. Thus Hartshorne constructed an extensive second chapter to the *Nature of Geography* concerning 'The Nature of Geography according to its Historical Development'. As the quote above suggests, Hartshorne places great emphasis on the birth of modern geography in the age of

Ritter and Humboldt, seeing in both the attempt to find scientific ways to divide the earth's surface and then to describe it. Thus where Sauer's originary moment for geography lies with the ancients, in Hartshorne it is in the era 1750–1850, but both agree that if we can find when 'true' geography begins, we will have a window onto the essence of geographical inquiry, and that this inquiry will ramify down in historically recoverable lineages of good geographers preserving the core geographical tradition. Secondly, if Hartshorne's focus is on the birth of modern geography, he cannot resist finding echoes of that conception in the ancients. Thus a paragraph after asserting that 'we are not concerned here with the geographers of Classical Antiquity', Hartshorne cites Strabo and Kant on the task of geography, adding 'these statements ... are susceptible of translation in terms of modern science' (1961: 35, 36). Furthermore, shortly thereafter, as Hartshorne canvasses the first attempts to 'elevate geography from its subordinate position to that of an independent science', he alights at the eighteenth-century attempts to divide the world by natural rather than political boundaries in the work of Buache and others, discerning here 'an echo from Strabo' (1961: 37; see also 41).

For all their differences, Sauer and Hartshorne share the nexus of ideas I want to interrogate in this chapter. Their arguments about the nature of geography fuse prescriptive statements about how geography 'ought' to be with historical statements about how geography 'was', suggesting that the latter confirm their arguments about the former. Furthermore, to perform this conjunction, both look to the history of geography for pure moments of disciplinary 'origin': looking at geography at its wellspring is the clearest way to see how geography is supposed to be. This means either going back to the very first geographical writings (as in Sauer) or arguing that there is a distinctive and locatable origin to 'modern geography' (as in Hartshorne), although (as just shown) this latter position can collapse into an argument

about ancient geography too. In this chapter, I want firstly to canvass briefly some of the many ways in which geographers have conjoined the origins, history and essence of geographical inquiry in their writings, showing that this is a persistent strategy in geographical argumentation, not an aberration of Hartshorne's and Sauer's. Then I want to look at Nietzsche's critique of this mode of historical reasoning and his 'genealogical' alternative. Finally, I want to use Nietzschean genealogy to develop a very different reading of ancient geography from that we have already seen in Sauer and Hartshorne, the suggestion being that the history of geography can serve similar purposes to those they proposed – the furthering of geographical inquiry in the present – but by very different means and with very different outcomes.

1.2 GEOGRAPHY'S NATURE AND/OR HISTORY: A BRIEF SURVEY OF FOUNDATION MYTHS

There is a recurrent trend in writing about geography to have recourse to stories about the origins of geography as grounding arguments about its nature. These are frequently not as clearly (and crudely) articulated as in Sauer's 'Morphology', but nonetheless the pattern of argumentation is notable for its ubiquity in geographical writing. To give some sense of this, I will briefly look to several examples from the past 50 years, dividing these into two groups according to the intentions of their authors. First, I look to several cases where, akin to Hartshorne and Sauer, the aim has been to create prescriptive arguments about the essence of geography by deploying (*inter alia*) historical evidence. Secondly, I will look at narratives of the history of geography in terms of their arguments about the origins of geography.

As with Hartshorne and Sauer, many geographers who are not avowedly historians of the discipline and whose quarry lies in contributing to the practice of contemporary

geography have nevertheless drawn on historical evidence to support their contentions. Three examples will suffice to show this trend. If Hartshorne took on Sauer, he was in turn attacked in a (now) famous paper by Fred Schaefer, 'Exceptionalism in Geography'. Arguing against the idea of regions as unique and therefore beyond the ambit of analysis through law-like statements, Schaefer's work is now seen as foundational to the emergence of a quantitative vision for geography. It is noticeable from the present perspective that Schaefer in his second sentence says 'historical accounts of the development of the field are still often mistaken for methodology', thereby distancing himself from the use of historical evidence as a way into arguments about how geography should be practised (Schaefer 1953: 226). Yet the argument that follows this statement is considerably preoccupied with historical evidence and in ways not wholly discordant with those of its target, Richard Hartshorne. Like Hartshorne, Schaefer argues that Humboldt is 'rightly called the father of scientific geography' and that scientific here means the awareness that description in and of itself is not enough (1953: 226). As such, both see a modern geography as emergent at the same time and in the same individuals. Against this tradition of a modern, scientific geography are the efforts of Schaefer's 'exceptionalists' who see geography's task purely in descriptive terms, arguing as they do that the characteristics of any particular region are so complex and multifaceted as to preclude explanation by recourse to a limited array of laws. Schaefer's depiction of exceptionalism in fact takes the form of a pedigree, tracing the persistence of this error from its 'father', Immanuel Kant, 'a poor geographer when compared with his contemporaries or even Bernhard Varenius who died more than one hundred and fifty years before him', through Hettner to Hartshorne (1953: 232; see 232–42 for the full pedigree). Thus Schaefer in fact develops a Manichean history of the dialectical struggle between good, scientific geography and delusive, exceptionalist description.

Furthermore, and again in a striking parallel to the subject of his attack Hartshorne, Schaefer cannot resist invoking ancient authority for his position:

Humboldt and Ritter thus recognized as the major concern of geography the manner in which natural phenomena, including man, were distributed in space. This implies that geographers must describe and explain the manner in which things combine 'to fill an area' ... Following the Greek geographers, this viewpoint is called the chorographic or chorological one. Schaefer 1953: 228.

Thus from the present perspective Hartshorne and Schaefer are in fact notable for what they share rather than for their disagreement. Both drew on very similar 'mental maps' of the history of geography to defend very different views about the correct practice of the discipline: for both, modern geography emerged at the same time and in the same individuals, these being called by both 'scientific' geographers; both also bolstered this by seeing a legacy from ancient geography being carried forward; and both also depicted their historical researches as showing a division between true/good and false/bad geography. Where Hartshorne and Schaefer differed was not in their argumentation, nor in their linkage of origin stories and prescriptions, but in what they took their founding fathers to be originating and prescribing for them.

If Schaefer was instrumental in pioneering a vision of geography as spatial science, within 20 years it was well enough entrenched to be producing textbooks to train the next generation of geographers in its image. Notable here as the pre-eminent North American textbook was Abler, Adams and Gould's *Spatial Organization: The Geographer's View of the World* (1971), which is of interest as the authors, like Schaefer before them, devoted time to producing a pedigree of geographical practitioners. For them, the transition from mere curiosity about the earth to a self-conscious inquiry by a group of scholars, the point at which we can discern the origins of geography, lay with Eratosthenes, because he 'was the

first to call himself a geographer and the first to devise a method which enabled geographers to locate places with some accuracy'. True to Schaefer's critique of exceptionalism, they continued that Eratosthenes was the originator of scientific geography as 'by concerning himself with methods of location, Eratosthenes demonstrates his concern with all possible places and the utility of general place knowledge' rather than engaging in discourse about the unique and non-replicable (Abler *et al.* 1971: 62). The next member of their pantheon was Ptolemy, whose system of map projections and collation of mathematical-geographical data means 'we could also argue that much of our geography is a series of footnotes to Ptolemy' (1971: 64). Once again, we have a pedigree, this time without its erroneous 'other', focusing on developing a lineage of individuals doing good geography, this lineage emphasizing the antiquity and thereby the legitimacy of the spatial – scientific understanding of the nature and purpose of geography.

Finally, lest it be thought that the prescriptive recourse to ancient geography in defining how geography ought to be is now outmoded, it is worth briefly considering Michael Curry's recent essay, 'Towards a Geography of a World without Maps' (2005). Partly moving against the currents which spatial science initiated in the previous generation, Curry wants to reassert the centrality of 'place' and other non-mathematicized ways of knowing location to geographical inquiries (see also Casey 1997; and Olwig 2008). To do so, he has recourse to ancient geography to make good the claim that 'while there is good reason to believe that places, and the concept of place, are quite ancient, there is equally good reason to believe that the concept of space arose rather recently and that it is, in fact, an invention' (Curry 2005: 680). Implicit here, as in Sauer, is an identification of the more recent with the erroneous and the more ancient with the disclosure of geography's true purpose. He anatomizes the ancient terms 'topos', 'choros' and 'geos' to suggest that the first two

predate the last term and point to different geographical epistemologies. For Curry, space as an inert container, what Newton would later call absolute space, was an idea developed in Aristotle and fully fleshed out in Ptolemy's version of geographical inquiry. Curry then argues that whilst 'in a sense, what today counts as the geographic was well established by Ptolemy' (2005: 685) our daily lives have very little recourse to this conception of the geographic, being rooted in less mathematical conceptions and being more closely prefigured in the alternative spatial epistemologies gestured to by *choros* and *topos*. For Curry, to understand the geographies of our lives demands dislodging Ptolemaic understandings; if all geography is a set of footnotes to Ptolemy, that is why geography has failed to grasp the dynamics of the lifeworld. Again with Curry we have the recourse to ancient exemplars to develop a binary of good and bad, or more accurately to depict a hegemonic conception as the source of problems which could be rectified by returning to a more ancient set of knowledges. If Ptolemy is the revered ancient of Abler *et al.*, the conception of *geos* he represents is recent in comparison with *topos* and *choros* for Curry. But Curry's argumentational structure is one that bears close affinity to those canvassed thus far: history authorizes an understanding of good/useful practice in geography in the present; was translates to ought. When he states that 'my goal is less to achieve some sort of historical accuracy than to illuminate some features about space and place and of current discourse about them' (2005: 682), he is both developing a formulation startlingly close to that announced in the subtitle of Hartshorne's *The Nature of Geography* ('a critical survey of current thought in the light of the past') and setting out the relationship between past evidence and present practice which all these authors develop with differing levels of detail and sophistication.

Narratives of the history of geography have a slightly different set of orientations to the more prescriptive projects canvassed so

far, yet they also in their structures and decisions make claims about the origins of geography and how these justify visions of the nature of geography generally. A good example is the highly influential *All Possible Worlds*, by Geoffrey Martin. Martin's lengthy exposition of the history of geographical ideas in fact deploys two sets of binaries to build its argument about the structure of the history of geography, both of them prefigured in the more prescriptive deployments of the history of geographical ideas canvassed thus far. Thus the entire book is structured around a binary between 'classical' and 'modern' geography, the divide between these two practices being located in the course of the nineteenth century. The transition is seen to be due to 'the labors of Humboldt, of Ritter, of Guyot', an identical pantheon to that highlighted by Sauer, Hartshorne and even Schaefer (Martin 2005: 131). Another binary is also laid out in the section on ancient geography. Here, contrary to Sauer, it is suggested that ancient geography did not have a singular character, but rather a binary nature, displaying 'two basic traditions of geographic study ... One is the mathematical tradition, starting with Thales ... and summarized by Ptolemy. The second is the literary tradition, starting with Homer ... and summarized by Strabo' (2005: 6). Furthermore, Martin depicts a closing of ancient geography in that 'with the death of Ptolemy, the geographic horizons that had been widened both physically and intellectually by the Greeks closed in again' (2005: 37). Geography, then, has two sets of origins, ancient and modern, divided by the caesura of the 'dark ages' of medieval geography, and it has two sets of traditions, a mathematical and a literary one. Whilst negative judgements are not foregrounded in this treatment as they were in Sauer *et al.*, Martin does suggest that modern geography is in some sense superior to its predecessor, having 'a more philosophical, and, at the same time, a more imaginative character' (2005: 131).

Other historians of geography have been less concerned with the ancients, but they

have postulated some sort of origin story for modern geography, or some rationale for their starting point. Thus David Livingstone's epochal *The Geographical Tradition* (1992) starts with the Age of Discovery, implicitly suggesting that the challenge to received authority delimits a new starting point in the history of geography. Livingstone is aware of the rather arbitrary nature of his point of departure, and throughout his text reverts to the contingencies not only of geography's history, but also of the way in which he chooses to narrate that history. The problem here is not with the author, but instead that most in his audience seeking a simple story will take his starting point as delimiting a hinge in history, rather than being an historiographical necessity, a device to allow for the writing of history to take place at all. Picking a slightly later point of departure for 'modern' geography, a number of authors have taken the Scientific Revolution, often for geography in the person of Bernhard Varenius, as distinguishing the era when a modern geography could emerge on a truly scientific footing. Fred Lukermann, for example, suggests that Varenius's mathematically grounded form of geographical inquiry leads us into a version of the discipline recognizable to geographers practising today: 'The intellectual divide separating ancient and medieval geography from modern geography is generally taken to be the publication of the *Geographia Generalis* by Bernhard Varenius' (Lukermann 1999: 7). The fact that Isaac Newton produced two editions of the *Geographia Generalis* has cemented this depiction of Varenius (Warntz 1989) and ensured that it ramifies down to the present day (Curry 2005: 682).

Other historians have plumped for still later dates for the origins of modern geography. A number of scholars, for example, have sought to flesh out the idea that modern geography originates in the Age of Enlightenment. Thus both Margarita Bowen and Anne Marie-Claire Godlewska have taken up the truism of Humboldt's originary status and sought to provide detail for that

claim (Bowen 1981; Godlewska 1999). Godlewska's book is structured around a binary between a stagnant 'mainstream' of geographical textbook writers in the eighteenth century and a vanguard of bearers of geographical modernity on the margins, that vanguard being most ably led by Humboldt. Bowen's book deploys the same basic divide, albeit drawing more on the English experience where Godlewska's focus is the French case. Yet both are explicitly valorizing a form of geographical inquiry they label as modern or Humboldtian, and locating in that form of inquiry the birth of a recognizably modern geography that is deemed superior to that which went before. Both, then, deploy origin myths to structure their highly scholarly treatments of the history of geographical thought, both also making by their endeavours an intervention into debates about present practice in geography albeit this is far more explicitly the aim in Bowen's work than in Godlewska's.¹ More stark still, but drawing on the same set of ideas and the same players, is David Stoddart's claim that a modern, scientific geography originated in '1769 – when Cook first entered the Pacific' and was codified by the work of Forster, Humboldt and Darwin (Stoddart 1986: 33). For Stoddart, geography existed prior to this, but is of no real relevance, falling outside the ambit of modernity: 'Our standard histories speak of the work of Strabo and Eratosthenes, Varenus, Hakluyt, Purchas. But all these figures seem to us remote. Their contributions have meaning in the contexts only of their own time, not of ours' (1986: 28). Finally, Gary Dunbar makes a similar category divide, framing the origins of modern geography not in terms of intellectual currents, as have all the authors canvassed thus far, but of institutional shifts. For Dunbar, the modernization of geography equates to its professionalization, the development of formal curricula of geography and such accoutrements as departments, degrees and doctorates, which begins in the German universities in the early nineteenth century (again thanks to Alexander von

Humboldt and his brother Wilhelm) and then spreads across Europe and North America in the later nineteenth century (Dunbar 2005: 1–7).

In summary, geographers have developed a wide range of 'origin stories' for their discipline, these both in position statements about the nature of geography and in histories of geography. Different eras have been picked upon as foundational to geography, notably due to the varied historiographies of 'modern' geography as a category. Yet in all of these cases it is assumed that a discernible and singular origin (or at least an enumerable multiple set of origins) can be detected and that in that origin we find a key to the nature of the 'true' geographical project, both in its own originating era and as it has ramified down the ages to the present practice of the discipline.

1.3 NIETZSCHE AND THE GENEALOGICAL CRITIQUE OF ORIGIN STORIES

For all their diversity in terms of archival grounding, intellectual ambitions and origin stories, all of these approaches to the history of geography are, in Nietzschean terms, 'pedigrees', a term which Geuss helpfully coins in contradistinction to 'genealogy', the style of historiography advocated by Friedrich Nietzsche in his later writings (Geuss 1999: 1–3).² In a pedigree, Geuss (1999: 3) detects five main characteristics:

- 1 In the interests of a positive valorization of some item
- 2 the pedigree, starting from a singular origin
- 3 which is an actual source of that value
- 4 traces an unbroken line of succession from the origin to that item
- 5 by a series of steps that preserve whatever value is in question.

In the approaches to the origins and nature of geography that have been canvassed in this chapter to date, we have several variants on

this basic conceptual structure, but nothing which moves beyond it (with the possible exception of Livingstone's work). This is especially clear in the prescriptive accounts of geography, which seek, in Geuss's terms, to valorize an approach to geography and do so by tracing it to a single origin, as in Sauer's attempt to find in Ancient Greek geographical practice and indeed the very etymology of the term a justification for his conception of geography as the study of landscapes and only the study of landscapes. The antiquity of this conception becomes, in Sauer, the source of its value. Whilst he did not fill in the 'unbroken line' of succession down to the present, he did give elements of that succession in the form of his list of worthies, a list also used for similar purposes of plotting a trajectory of valued bearers of the true tradition by writers as diverse as Hartshorne, Schaefer and Bowen.

There are some embellishments in the pedigree thinking of the writers analyzed thus far. Martin, for example, finds two originating moments for geography, a classical and a modern, and likewise finds two traditions ramifying down the centuries, a mathematical and a descriptive/literary one. But he still finds the origins to be multiple but capable of exhaustive enumeration by the patient historian, who can then track their movement down the ages. Likewise, some authors develop a Manichean structure of good and bad traditions that move down the ages, notably Schaefer, but here we still have enumerable and traceable histories of different conceptions of geography, together with a clear set of value distinctions. Finally, Livingstone is keen to emphasize the 'situated messiness' of the geographical tradition, and thereby moves still further in the direction of multiplicity in the origins, trajectories and stories which geography's history yields, but as we will see, this pluralism is still at some remove from the Nietzschean genealogical conception.

Nietzsche developed in his later writings a distinct approach to historical writing and analysis he labelled as genealogical.

Whilst the details of this approach are (appropriately) the subject of numerous contestations (for a sample of which, see Acampora 2006), we can set down some basic pointers to its structure and predispositions which will then guide a rereading of ancient geography's status as an origin point for geography's disciplinary identity. First, for all of Nietzsche's ambiguities about the worth of history as expressed in his earlier *Untimely Meditations*, we should be clear that genealogy is for Nietzsche an historical method, indeed the only historical method if we want to understand the ways concepts we deploy have come to have the shapes they do.³ As he famously puts it, a genealogist is interested in the 'gray, which is to say that which can be documented, which can really be ascertained, which has really existed, in short, the very long, difficult-to-decipher hieroglyphic writing of the human moral past!' (Nietzsche 1998: 6, Preface)⁴ For Nietzsche, this especially involves linguistic and etymological work, words revealing pasts hidden by subsequent actions (1998: 12; I.4).

Secondly, for Nietzsche the genealogist will find through their meticulous attention to the details of the historical record no essences lying at the foundations of our concepts and categories: 'only that which has no history is definable' (1998: 53; II.13). This is because there are no singular and pure origins from which traditions ramify down in unbroken continuity, and no value would be created thus in any case; in short, the premises of pedigree thinking are reversed by the genealogist.⁵ We can take these points in turn. First, there are no singular origins. On the contrary, Nietzsche's investigations show the multiplicity of the social and conceptual origins of the concepts and categories we deploy. Thus he shows in Book I of the *Genealogy of Morality* how concepts of 'goodness' were multiple, notably with a dichotomy between the aristocratic and priestly conceptions (Nietzsche 1998: 14–17; I.6–7); more plural still are the origins of the concept of punishment outlined in Book II (1998: 53–54; II.13).

Secondly, there are no pure origins, and this in two senses. First, as Geuss points out, the genealogist, finding no originating point, could in principle keep moving back in the historical record, any starting point adopted being ultimately an arbitrary imposition:

The genealogy peters out there either because there is no more information available or because further elaboration of the genealogy at that point would lead too far afield, but in principle if information were available and there were any reason to continue, one could carry on with the genealogy. Geuss 1999: 14.

Secondly, there are no pure origins in another sense, in that all the originating moments we might focus upon were moments of contest and violence, actual and conceptual: 'the beginning of everything great on earth, was thoroughly and prolongedly drenched in blood' (Nietzsche 1998: 41; II.6), something Nietzsche attempts to show for both concepts of guilt and shame at this point and later for the idea of the Gods themselves (1998: 60–1; II.19).

Thirdly, ideas do not ramify down the ages as traditions cherished, preserved and handed on to succeeding generations. On the contrary, the genealogist traces in history the violent appropriations of pre-existing concepts and categories to new uses that generations foist upon their societies to exercise their wills in the pursuit of power. Thus in historiographical terms Nietzsche posits that history works not by gradual change and 'organic growing into new conditions, but rather as a break, a leap, a compulsion' (1998: 58; II.17). We get several such 'anti-traditions' elaborated in *On the Genealogy of Morality*: for asceticism as used by the philosophers (1998: 75–6; III.7) and for good as a category seized by the 'slave revolt' in morality (1998: 16–17; I.7), for example, but the clearest general account is of the changing uses of the concept of punishment as it is appropriated by several generations: 'Something extant, something that has somehow or other come into being, is again and again interpreted according to new views,

monopolized in a new way, transformed and rearranged for a new use by a power superior to it' (1998: 50–1; II.12).

Fourthly, and lying behind this conception of historical change as violent, there is a categorical distinction between the origins of an historical entity and its value, for its value is determined by present appropriations which respond to previous appropriations but reshape them: 'For history of every kind there is no more important proposition than that ... the cause of the genesis of a thing and its final usefulness, its actual employment and integration into a system of purposes, lie *toto caelo* apart' (1998: 50; II.12).

1.4 A CONTINGENT INTERLUDE: THE TITLE OF STRABO'S 'GEOGRAPHY'

As an entrée into why Nietzsche's genealogical conception of history might matter to us as we think about the history of geography and its present uses, we can start with one minor detail, one grey documentary moment which questions the foundations of many of our origin stories.

We tend, lazily, to speak of Strabo's '*Geography*' as if it were an historical fact that the work was thus titled. In fact, no title exists for the work stemming from the earliest manuscripts available. The title we deploy has become conventional on the basis of the content of the work and the title given to it in some ancient sources. But in Strabo's *ipsissima verba*, the work he has undertaken is labelled in several ways: he does indeed call the book a 'description of the earth' (*geographia*), but also a 'description of the land' (*chorographia*), 'an outline' (*periegesis*), a 'circuit of the earth' (*periodos ges*) and a 'circuit of the land' (*periodeia tes choras*). Other ancient sources do call his work a *geographia*, but they also give it other cognate names from the array just listed (Dueck 2000: 145).

Dueck is doubtless right to say that the book is 'so named after the contents and on

the basis of the title in some ancient sources', (2000: 145) but from a genealogical perspective it is noticeable that it is only once this type of inquiry has been stabilized under an agreed disciplinary label of 'geography' at a later date that Strabo's work is consistently styled thus. In short, he is retrospectively and at some considerable violence to or simplification of his own self-categorization turned into a geographer who authored a book called *Geography*. And it is only once Strabo's work is thus labelled that he can be dragooned into histories of geographical thought as the originator of literary geography, or the great codifier of spatial description and so forth. Nietzsche famously argued that the 'slave revolt in morality' effected by the Judaic tradition had led to the equation of the poor with the good and that this 'has only moved out of our sight today because it – has been victorious' (1998: 17; I.7). Likewise, we might say that it is by sleight of hand that Strabo's work has been apportioned to a particular disciplinary tradition, or that a minor and fairly arbitrary decision to label Strabo's work as 'geography' (rather than 'chorography' or some such) has solidified into a fact of enormous significance to the reception of Strabo and to his deployment in the origin stories we tell of geography as a discipline. By looking to this minor detail, we unpick or at least throw up questions about where geography's origins are to be found and the retrospective ways, for reasons of power or pure contingency, trajectories have been drawn from this putatively simple and singular origin.

1.5 A GENEALOGICAL REREADING OF ANCIENT GEOGRAPHY

The titling of Strabo's *Geography* suggests there is capital in revisiting the history of geography more generally to consider what Nietzsche's genealogical approach to reading the historical record might do to the foundation myths geographers have developed.

In this context, I will only look to developing a genealogical reading of ancient geography, in part because as we have seen earlier it unsurprisingly figures so frequently in stories about the origins and nature of geography, in part to echo Nietzsche's claim as a classicist: 'I do not know what meaning classical studies could have for our time if they were not untimely – that is to say, acting counter to our time and thereby acting on our time' (Nietzsche 1997: 60). Attending to ancient geography seems, *eo ipso*, to be likewise untimely to contemporary geography for the simple reason that geography today has become increasingly narrow in its historical range of reference (Jones 2004). Likewise, conducting the forms of inquiry Nietzsche demands – the patient documentary work of etymology – is also cutting against the grain of the currently empowered appropriations of the label 'geography', attending as they do to the methodological canons of scientific and social – scientific inquiry in ways which eschew hermeneutics and etymology as foreign practices.

It may seem perverse to modern geographers to focus on the geographical works of the ancient world. With some notable exceptions (as well as those discussed in section 1.2, see Cosgrove 2001), geographers now leave the study of ancient geography to classicists in a way the generation of Sauer and Hartshorne did not countenance. Surely similar 'more relevant' genealogical projects could be conducted on 'more important' moments in the creation of modern geography? Without doubt such projects could be conducted in this chapter, creating re-readings of the other originating moments geographers have enshrined in their histories – the Scientific Revolution, the Age of Enlightenment, the creation of modern and professional geography are all ripe for analysis. To simply sketch one example, the past 25 years have seen an array of projects which have attended to Alexander von Humboldt as the progenitor of a modern geography (Bowen 1981; Godlewska 1999), and further works which have drawn on work by historians of science to suggest

that the broader ether of a 'Humboldtian science' was central to the practice of geography in the era of the early nineteenth century (Cannon 1978; Livingstone 1992). In its most extreme form, this has led to the recent argument that the geographic imagination as forged by Ritter and Humboldt was key to the creation of modernity (Tang 2008). And yet a genealogical reading of Humboldt's *summa*, *Cosmos*, could chip away at this edifice. While the details are beyond this chapter's remit, attending to language and etymology, the simple point is that Humboldt always placed the study of 'cosmos', the 'harmoniously ordered whole' (Humboldt 1997: 24), at some distance from 'Erdkunde' and geography. Thus, whilst he was full of praise for Varenius's *Geographia Generalis*, 'this excellent work', and for the 'skillful hand' of Carl Ritter in delineating his comparative geography (1997: 66–7), Humboldt always stressed the project of geography was not to be confused with that of cosmos: 'The uncommon, but definite expression of the *science of Cosmos* recalls to the mind of the inhabitant of the earth that we are treating of a more widely-extended horizon – of the assemblage of all things with which space is filled' (1997: 68). As such, from a genealogical perspective, attending to language highlights the disjunction between Humboldt and geography and thus points up the violence needed to dragoon him into the role of progenitor of 'modern' geography. If it suits the purposes of narrative simplicity and scientific self-image for geography to lay claim to Humboldt, the task of genealogy is to patiently unravel such appropriations.

And yet from a genealogical perspective, it is precisely the attitude which suggests that 'modern' moments in the 'creation' of 'geography' are more 'relevant/interesting' which needs to be challenged. Such an attitude, of course, is implicitly premised on the idea that a lineage of ideas has ramified from the past down to present and that in this ramification more recent ideas are either better or at the very least 'closer to us', and therefore more worthy of our attention. In genealogy this

image is exactly the point at issue; it is only by historical violence of the variety that we have seen performed on Humboldt's science of cosmos to mutate it into a progenitor of 'modern geography' that such lineages are constructed and such senses of intellectual proximity are created. Genealogically speaking, history is a set of ruptures wherein we are as removed from Humboldt as from Strabo, even if the sleight of hand of creating a lineage obscures that unsettling truth.

Within the broad swathe of ancient geographical writings, this chapter will focus on the work of Strabo and Ptolemy, partly due to limitations of space, partly as they are often seen as the twin colossi of ancient geographical writing. Indeed, Strabo at one point likens his *Geography* to 'colossal statues' suggesting his is 'a colossal work' (Strabo 1917–32: 1:49; 1.1.23; see also Pothecary 2005).⁶ A century later, in the second century CE, Claudius Ptolemy penned a tract also now known as *Geography*, although it should be noted that this work was more commonly known as '*Chorographia*' than '*Geographia*' in the Renaissance (Edson 2007: 195), suggesting as with the title of Strabo's work that the disciplining of ancient inquiries under the singular label of 'geography' is non-contemporaneous with the production of the text at which time a more diverse terminology was deployed. For its sophistication and influence, Ptolemy's work has been depicted by many commentators using similar imagery. Thus Dilke argues 'Ptolemy ... stride[s] like a colossus over the cartographic knowledge of the later Greco-Roman world' (1987: 277–8).

The first point to note is that neither Strabo nor Ptolemy could be depicted as a 'pure' origin for the geographical tradition. On the contrary, each depicts himself as *in medias res*, as part of an ongoing tradition rather than starting *de novo*. Thus from Strabo, we get a dizzying list at the beginning of the *Geography* of predecessors 'who in earliest times ventured to treat the subject' including Homer, Anaximander of Miletus, Hecataeus, Eratosthenes, Polybius and Posidonius

amongst others (Strabo 1917–32 1:3; 1.1). Unlike Strabo, Ptolemy does not create a full ancestry for his project, mentioning Hipparchus and a few others, but he does play his own work off against that of Marinus of Tyre at some length. Marinus clearly set himself the task of producing a mathematically rigorous projection of the globe, but his work is only known to us through Ptolemy's *Geography*. Marinus plays to Ptolemy's work the role that Eratosthenes does to Strabo's, being his most methodical predecessor:

Marinus of Tyre seems to be the latest [author] in our time to have undertaken this subject, and he has done it with absolute diligence. He has clearly laid his hands on numerous records of research ... and treated those of nearly all his predecessors with care, giving appropriate correction to everything that he found that either they or he himself, at first, had trusted without good reason. Ptolemy 2000: 63–4; 1.6.⁷

As we only know of Marinus through Ptolemy's citations, so for Strabo if he is indeed the 'father of geography' it is in good part because of something entirely outside his control: his *Geography* survived intact,⁸ whilst those of all the others he names as predecessors in the tradition of describing the earth are known almost entirely through their citation in his work. Strabo is, then, an originating point for our *knowledge* of ancient geographical description, even though he was self-confessedly not the founder of that tradition. And of course, this means that we do not know from a Nietzschean perspective the intricacies of the violence by which both Strabo and Ptolemy appropriated the work of their predecessors to create a pedigree for their own labours, but we can see that each of our originators creates a pedigree for themselves, legitimating their work by showing it to carry forward a bigger project not merely driven by their will. Here the archive does not allow us to go back any further, but Geuss's point still stands: if we found our modern pedigrees on Strabo and Ptolemy, first, they immediately point us backward; second, they are moments in the history of

the appropriation of predecessors – our invented traditions are built out of the remains fortuitously surviving by means of their invented traditions. They are arbitrary starting points determined by the exigencies of evidentiary survival.

Moreover, neither is a pure origin in the other sense set out earlier, in that both forged their geographical works in contexts 'drenched in blood'. The common context in which all this activity emerged was not a non-specific and universal 'curiosity' as the accounts of Sauer and Martin allege, but rather the expansion of geographical horizons caused by ancient exploration and imperialism. This brought ancient thinkers into direct or mediated contact with geographical difference in both the human and the natural worlds, and it was this difference which drove attempts to both describe and to understand spatial variation. Cultural contact and encounter with geographical difference through the medium of imperial expansion and conflict was central to the biographies of Ptolemy, Strabo and a host of ancient geographers. Thus, both Herodotus and Strabo came from Asia Minor, where the Persian, Greek and (in Strabo's case) Roman cultures came together. Ptolemy's very name – Claudius Ptolemaeus – shows the impact of culture contact: "Claudius" indicates Roman citizenship ... "Ptolemaeus" shows that he was an inhabitant of Egypt, descended from Greek – or at least Hellenized – stock' (North 2000: 731).

Further, neither Strabo nor Ptolemy can adequately be depicted as a pure disciplinary starting point for geography. Again, the contingencies of what has survived matter here as twinning Strabo with Polybius can show. We think of Strabo as 'a geographer' and Polybius as 'an historian', but this is driven by what has survived, not by what we know both men actually wrote and were known for in their lifetimes. Polybius (200–118 BCE) in his *History* argues for several levels of geographical awareness in the historian. First, the historian needs to understand the causes of natural events relevant to their

narrative. Secondly, topography is seen as essential in explaining the progress of battles. Thirdly, Polybius flirts (as does Herodotus) with the idea that the geographical environment determines the character of peoples (Clarke 1999: 79–97). Polybius included a geographical description of the entire known world as Book XXXIV of his *History*. This book is now lost except for a few fragments preserved in Strabo's *Geography*. Thus Polybius is normally viewed as a historian and Strabo as a geographer, but Strabo reveals to us the depth of Polybius's engagement with geography that has otherwise not been preserved, and by the same token Strabo was best known in the ancient world not for his *Geography* but for his historical continuation of Polybius. Indeed there is little evidence that Strabo's *Geography* was widely known of in the ancient world itself: Dionysius Periegetes almost certainly does allude to Strabo's work at one point in his geographical poem of the second century CE, but after that it only resurfaces in the sixth century CE in Stephanus Byzantium's list of geographical proper names, *Ethnica* (Diller 1975: 3–24). It is our modern conditions of scholarly production that tend to produce writers who can be labelled under one disciplinary rubric, not those of the ancient world. Similar points could be made about Ptolemy, given that we can only label him as a geographer by ignoring the broader context of his astronomical and astrological labours, as codified in the *Almagest* and *Tetrabiblos*. As both texts survive into the present day, there is less of a tendency to forget Ptolemy's broader project than has been the case for Strabo, but to the extent that geographical histories focus only on his *Geography*, they too truncate his achievement to create a pure and simple origin for geographical inquiry.

In addition, just as the intellectual endeavours of Strabo and Ptolemy are poorly represented by bringing them under a singular disciplinary label, so the disciplinary label of 'geography' itself reduces multiplicity to an unhistorical singularity. Strabo's protean terminology as discussed above is part of a

wider pattern in the ancient world: while we tend to dragoon authors under the classification of 'ancient geography', their own terminology was far less restrictive and has a decidedly less rigid and 'disciplinary' flavour (van Paassen 1957: 1). Furthermore, this point does not just apply to those like Strabo and Ptolemy writing in Greek, but also to Latin 'geography', in good part because Greek terminology such as *chorographia* and *geographika* was naturalized into Latin. Thus, Pomponius Mela's description of the world (before 44 CE) was entitled *de Chorographia* and often known in the Renaissance as *de Situ Orbis* ('on sites on the globe') (Mela 1998: 5–9), while the survey of the world in Books III–VI of Pliny's *Natural History* is termed by him *spectando terrarum situ* ('a viewing of the places of the earth') and *de terris* ('of the land'), both of which are translated as 'geography' in the Loeb edition (Pliny 1938–63: 2: 495, 503). Simply put, where we tend to use the term 'geography' to cover all these works, their authors were far less bound to any single term in describing their enterprise, a point which applies with equal force to the related term 'cartography' (Jacob 2006: 18–21). As Nietzsche suggests, an attention to language use and etymology unpicks the singularities and simplicities of our received origin stories.

Do Strabo and Ptolemy provide a site for an 'untimely meditation' on the nature of geography? In general, they have been taken as an uncomplicated starting point for geographical inquiry. Furthermore, in the half century after the proselytizing of spatial science, they have been taken – as in Martin's account in *All Possible Worlds* – as prefiguring the schism between a literary/humanistic and a mathematical/scientific form of geography, thereby lending value and dignity to that divide by giving it a pedigree. Yet from a genealogical perspective Strabo and Ptolemy can be made to speak some far more untimely thoughts about geography, and this by pointing to what their geographical projects shared rather than the all-too-neat binary opposition under which they have generally been understood.⁹

In both Strabo and Ptolemy's hands geography was a matter of textual collation. This point should not need further elaboration for Strabo but runs counter to the simple pigeonholing of Ptolemy as a mathematical writer and cartographer. Ptolemy's work in compiling his catalogue of places relied upon collating and adjudicating as to the reliability of travellers' accounts, just as did the descriptive geography of Strabo. Thus when Ptolemy describes the methods by which his catalogue has been produced, he emphasizes the role of textual collation, not mathematical calculation:

The first step in a proceeding of this kind is systematic research, assembling the maximum of knowledge from the reports of people with scientific training who have toured the individual countries. Ptolemy 2000: 59; 1.2.

Obviously, Ptolemy assesses the worth of the findings of travellers by their scientific competence, which in this case means their ability to survey and determine location by mathematical means, but his task as a geographer is to assess and adjudicate the reliability of evidence which comes to him. As it transpires, then, the task of the geographer is not simply nor even primarily mathematical, being instead a textual one. As Ptolemy's recent translators put it:

The localities eventually transcribed in ... Ptolemy's map would have originally been recorded in some kind of text. Few if any of these textual sources would have been composed in the first instance with the cartographer in mind. 2000: 26.

Just as Strabo (1917–32: 1 451–3; 2.5.11) clearly divides what he has seen from what he has heard and believed, and this in turn from what he has merely heard, a procedure in accord with that set out by Herodotus (Hartog 1988; Thomas 2000), so behind Ptolemy's catalogue of longitudes and latitudes, which appears so objective and mathematical in its final form, lies the self-same process of developing a 'grammar of assent' (to borrow a phrase from Newman) by which

to determine which recordings of longitude and latitude to credit, which to adjust and which to reject (Clarke 1999: 142). Furthermore, we cannot ignore the substantial role Ptolemy accorded to the development of a textual apparatus to support his maps. This textual apparatus came in the form of what Ptolemy called 'captions', descriptive summaries of what could be seen in a map. Indeed, while we have directions for and examples of how to produce captions and while the *Geography* contains details on how construct maps, there is no evidence that Ptolemy's original work was accompanied by maps (Ptolemy 2000: 45–50). Ptolemy wrote such captions both for his general map of the entire *oikumene* and for the larger scale regional maps. The caption Ptolemy wrote to accompany his map of the *oikumene* starts by giving some sense of the boundaries of the known world, then lists the seas of the known world. After this, the known world is broken down into three continents, whose boundaries are sketched, before a listing is given of the major bays and islands. Finally, Ptolemy attempts to give a mathematical reckoning of the dimensions of the *oikumene* he has just described in prose (2000: 108–11; 7.7). What is most noticeable here is that Ptolemy does see a descriptive catalogue of the *oikumene* as part of the task of a geographer, and whilst his catalogue is brief, its focus on bounding, enumerating and naming space is very much akin to that of Strabo's summary depiction of the globe at the close of Book II of his *Geography*. The affinity is only deepened by looking at the captions which Ptolemy appended to his larger scale regional maps. For each regional map, Ptolemy recommends that the caption states which continent is being depicted, which particular countries from that continent are displayed, and then gives the boundaries of the map (2000: 120; 8.2). In other words, Ptolemy's regional captions show him to be keenly aware of the interrelations between three spatial scales: the *oikumene*, the continent and the region. This clearly parallels the descriptive strategy Strabo deployed

in his *Geography*, where each regional description in Books III–XVII is related back to the oikumene as a whole.

Furthermore, for both writers geography was a descriptive practice far more than one which sought causal explanation (Romm 1992). For Strabo, geography relied upon the findings of mathematics and physics, but the geographer needed no more scientific bent than merely to understand those findings:

As for the matters which he regards as fundamental principles of his science, the geographer must rely upon the geometers who have measured the earth as a whole; and in their turn the geometers must rely upon the astronomers; and again the astronomers upon the physicists. Strabo 1917–32: 1 423; 2.5.2.

As such, Strabo does not depict geography as a science in any discernible modern sense, but as ‘scientia’, or organized knowledge. The description of the inhabited world is predicated on a scientifically sustainable worldview, but does not actively draw upon or demand comprehension of the inquiries that have generated that worldview. Furthermore, geography is a descriptive not a causal analysis of the earth for Strabo, the latter being the preserve of physics, something which becomes clear in his criticism of Posidonius (Strabo 1917–32: 1 397–99; 2.3.8). Finally, for Strabo description was not just – as he tends to be pigeonholed today – in prose, but also relied on maps. Strabo takes as read from geometers and physicists that the earth is spherical and then seeks to locate the inhabited portion of the earth as a ‘quadrilateral’ or as a mantle-shaped segment of the northern hemisphere (1917–32: 1 431–3; 2.5.5; and 1 435; 2.5.6). As such ‘visual’ references to quadrilaterals and mantles suggest, Strabo assumes the reader of his description uses it in conjunction with a map or globe, and the visual prompts in the *Geography* clearly show Strabo possessed a cartographic imagination (1 447–53; 2.5.10–11). Indeed, he says that ‘in what I have to say hereafter I shall assume that our drawing has been made on a

plane chart’ (1 451; 2.5.11), in other words that the reader will possess a two-dimensional map to accompany their reading.

Putting Strabo’s cartographic side together with Ptolemy’s textual side, we can see in them a shared sense of geography as a structured, descriptive, non-scientific and non-causal inquiry that aimed at the encyclopaedic cataloguing of the known world. The intellectual complex comprised by combining these five characteristics of ancient geography is, it seems, at some considerable distance from modern geographical practice and from the ways in which ancient geography has been presented by modern geographers. In sum, the present analysis of ancient geography amounts to an untimely meditation on diverse possible visions for the practice of geography rather than reassuring testament to the continuity of a geographical tradition handed down from antiquity to ourselves.

From a genealogical perspective, then, ancient geography emerges drenched in the blood of imperial aggrandisement and the anxieties of cultural contact. Its origins are beyond our ken, being available to us only through the contingencies of evidentiary survival, these contingencies granting a central place to the appropriations effected by Strabo and Ptolemy in particular. Looking at those two authors, we find that ‘geography’ was one of a constellation of terms deployed to vaguely delimit inquiries describing the earth’s surface and that to explain the pre-eminence of that term is to look to later projects of self-definition which simplified multiplicitous ancient descriptors into a singular disciplinary label. Furthermore, from a genealogical perspective we can see in Strabo and Ptolemy a very ‘untimely geography’. Seen in these terms, Strabo and Ptolemy point to a mode of earth description driven by textual collation, eschewing causation and scientific procedure. Where they have normally been positioned either as twin founders of a singular geographical tradition, or more recently as the singular origins of a discipline divided, they can in fact be deployed to emphasize the alterity of the ancient, that

antiquity speaks to entirely different practices of earth description from which we are separated by the ruptures of subsequent shaping wills rather than united with by the passing on of a disciplinary baton.

1.6 A CONSENSUAL CODA

A genealogical approach to the history of geography can, as just exemplified, lead us to some very different understandings of the shapes of geography's history, taking the same evidence and focusing on different elements, perceived through different eyes. This does not just change the narratives we tell of the history of geography, but also questions our evaluative frameworks. This is clear with regard to the stories of our origins we tell, the focus of this chapter, but also applies more broadly. Thus where historians of geography have made much heavy weather of the implied guilt of their subject's history and whether it should, in Livingstone's felicitous phrase, be 'X-rated' (1992: 1), a Nietzschean perspective would suggest the naivety of expecting anything other than a genesis drenched in blood. It would also warn us of the self-seeking nature of the historico-moral framework which positions ourselves as superior in moral terms to our predecessors on the basis of our 'objective' historical practices: 'Does it perhaps seduce one to a harmful, because all too flattering, prejudice as to the virtues of modern man?' (Nietzsche 1997: 88) Likewise, genealogy suggests history simply is the tracing of the appropriations of past acts of will by subsequent wills moulding their world; if that is the case, then charges of whiggery levelled against the prescriptive uses of geographical evidence canvassed earlier in this chapter miss the point (Livingstone 1992: 4–12; Mayhew 2001), or rather repeat the same structure of argument. Such charges empower the accuser, laying the grounds on which they can assert their will about the definition of geography's nature and history, thereby recapitulating the assertion of power of 'whig' histories to different ends. Those

seeking to shape geography will continue to draw pedigrees to justify their visions; those engaged in various forms of grey documentary historical analysis will continue to pick these pedigrees apart. To the extent that the dialectic between these processes gives geography energy and vision, they are in Nietzschean terms mutually affirming of the life of the set of willed appropriations we label 'geography'.

NOTES

1 For critiques of the historiography of these two texts, see Porter (1983) on Bowen, and Mayhew (2000) on Godlewska.

2 In what follows I am deeply indebted to Geuss's reading.

3 For Nietzsche's relationships with historians and history, see Brobjer (2007) and Emden (2008).

4 All references to this work incorporate both page numbers from the Clark and Swensen translation and section numbers for those using other editions and translations. Most discussions render Nietzsche's title, *Zur Genealogie der Moral*, as *The Genealogy of Morals*, following the title used in Kaufman and Hollingdale's 1967 translation. More recent translations prefer to render this as *On the Genealogy of Morality*.

5 Interestingly, the recent work of Catherine Nash suggests that traditional modes of genealogy – the tracing of family history (for geography and genealogy in this sense, see Timothy and Guelke 2008) – can likewise, if undertaken with sufficient archival rigour, undermine pedigree thinking about pure lines of descent even if that is what the historian had hoped to uncover (Nash 2002, 2008).

6 References to Strabo include both English page numbers from the Loeb edition and section numbers.

7 References to Ptolemy include both the English page numbers from the Beggren and Jones translation and section numbers.

8 Book VII has a number of caesurae.

9 For a parallel, non-genealogical project to find untimely truths in Strabo, see Koelsch (2004).

REFERENCES

- Abler, Ronald, Adams, John and Gould, Peter (1971) *Spatial Organization: The Geographer's View of the World*. Englewood Cliffs, NJ: Prentice-Hall.

- Acampora Christa Davis (ed.) (2006) *Nietzsche's On The Genealogy of Morals: Critical Essays*. Lanham, MD: Rowman and Littlefield.
- Bowen, Margarita (1981) *Empiricism and Geographical Thought: From Francis Bacon to Alexander von Humboldt*. Cambridge: Cambridge University Press.
- Brobjer, Thomas, H. (2007) 'Nietzsche's relation to historical methods and nineteenth century German historiography', *History and Theory*, 46: 155–179.
- Cannon, Susan Faye (1978) *Science in Culture: the Early Victorian Period*. New York: Dawson.
- Casey, Edward, S. (1997) *The Fate of Place: A Philosophical History*. Berkeley: University of California Press.
- Clarke, Katherine (1999) *Between Geography and History: Hellenistic Constructions of the Roman World*. Oxford: Clarendon Press.
- Cosgrove, Denis (2001) *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination*. Baltimore: Johns Hopkins University Press.
- Curry, Michael, R. (2005) 'Towards a geography of a world without maps: lessons from Ptolemy and postal codes', *Annals of the Association of American Geographers*, 95: 680–691.
- Dilke, O.A.W. (1987) 'Cartography in the ancient world: a conclusion' in J.B. Harley and David Woodward (eds), *The History of Cartography: Volume 1: Cartography in Prehistoric, Ancient and Medieval Europe and the Mediterranean*. Chicago: University of Chicago Press, pp. 276–279.
- Diller, Aubrey (1975) *The Textual Tradition of Strabo's Geography*. Amsterdam: Hakkert.
- Dueck, Daniela (2000) *Strabo of Amasia: A Greek Man of Letters in Augustan Rome*. London: Routledge.
- Dunbar, Gary, S. (2005) 'Introduction' in Gary S. Dunbar (ed.), *Geography: Discipline, Profession and Subject since (1870) An International Survey*. Dordrecht: Kluwer Academic Publishers, pp. 1–7.
- Edson, Evelyn (2007) *The Map of the World, (1300)1492: The Persistence of Tradition and Transformation*. Baltimore: Johns Hopkins University Press.
- Emden, Christian, J. (2008) *Friedrich Nietzsche and the Politics of History*. Cambridge: Cambridge University Press.
- Entriken, J. Nicholas and Brunn, Stanley (1989) *Reflections on Richard Hartshorne's The Nature of Geography*. Washington, DC: Association of American Geographers.
- Geuss, Raymond (1999) 'Nietzsche and Genealogy' in Raymond Geuss (ed.), *Morality, Culture and History: Essays on German Philosophy*. Cambridge: Cambridge University Press, pp. 1–28.
- Godlewska, Anne Marie-Claire (1999) *Geography Unbound: French Geographic Science from Cassini to Humboldt*. Chicago: University of Chicago Press.
- Hartog, François (1988) *The Mirror of Herodotus: the Representation of the Other in the Writing of History*, trans. Janet Lloyd. Berkeley: University of California Press.
- Hartshorne, Richard (1961) *The Nature of Geography: A Critical Survey of Current Thought in the Light of the Past*, corrected edn. Lancaster, PA: Association of American Geographers.
- Humboldt, Alexander (1997) *Cosmos: A Sketch of the Physical Description of the Universe*, trans. E.C. Otté. Baltimore: Johns Hopkins University Press.
- Jacob, Christian (2006) *The Sovereign Map: Theoretical Approaches in Cartography Throughout History*, trans. Tom Conley; Edward Dahl (ed.). Chicago: University of Chicago Press.
- Jones, Rhys, A. (2004) 'What time human geography?', *Progress in Human Geography*, 28: 287–304.
- Kenzer, Martin, S. (1987) *Carl O. Sauer: A Tribute*. Corvallis: Oregon State University Press.
- Koelsch, William A. (2004) 'Squinting back at Strabo', *Geographical Review*, 94: 502–518.
- Livingstone, David, N. (1992) *The Geographical Tradition: Episodes in the History of a Contested Enterprise*. Oxford: Blackwell.
- Lukermann, Fred (1999) 'The *Praecognita* of Varenius: Seven Ways of Knowing' in Anne Buttner, Stanley D. Brunn and Ute Wardenga (eds), *Text and Image: Social Construction of Regional Knowledge*. Leipzig: Institute für Länderkunde, pp. 7–27.
- Martin, Geoffrey, J. (2005) *All Possible Worlds: A History of Geographical Ideas*, 4th edn. New York: Oxford University Press.
- Mayhew, Robert J. (2000) 'Proleptic locations: charting the birth of modern geography', *History of European Ideas*, 26: 67–73.
- Mayhew, Robert, J. (2001) 'The effacement of early modern geography (c. 1600–1850): A historiographical essay', *Progress in Human Geography*, 25: 383–401.
- Mela, Pomponius (1998) *Description of the World*, trans. F.E. Romer. Ann Arbor: Michigan University Press.
- Nash, Catherine (2002) 'Genealogical identities', *Environment and Planning D: Society and Space*, 20: 27–52.
- Nash, Catherine (2008) *Of Irish Descent: Origin Stories, Genealogy, and the Politics of Belonging*. Syracuse: Syracuse University Press.
- Nietzsche, Friedrich (1997) *Untimely Meditations*, trans. R.J. Hollingdale; Daniel Breazeale (ed.). Cambridge: Cambridge University Press.

- Nietzsche, Friedrich (1998) *On the Genealogy of Morality*, trans. with intro and notes Maudemarie Clark and Alan, J. Swensen. Indianapolis: Hackett Publishing.
- North, John David (2000) 'Ptolemy' in Jacques Brunschwig and Geoffrey Lloyd (eds), *Greek Thought: A Guide to Classical Knowledge*. Cambridge, MA: Harvard University Press, pp. 731–738.
- Olwig, Kenneth, R. (2008) 'Has "Geography" always been modern?: Choros, (Non)representation, performance, and the landscape', *Environment and Planning A*, 40: (1843)1861.
- Pliny the Elder (1938–1962) *Natural History*, trans. H. Rackham, 10 volumes. Cambridge MA: Harvard University Press.
- Porter, Roy (1983) 'Review', *British Journal for the History of Science*, 15: 301–302.
- Pothecary, Sarah (2005) 'Kolossourgia: "A Colossal Statue of a Work"' in Daniela Dueck, Hugh Lindsay and Sarah Pothecary (eds), *Strabo's Cultural Geography: The Making of a Kolossourgia*. Cambridge: Cambridge University Press, pp. 5–26.
- Ptolemy (2000) *Geography*, trans. J. Lennart Berggren and Alexander Jones. Princeton: Princeton University Press.
- Romm, James (1992) *The Edges of the Earth in Ancient Thought: Geography, Exploration and Fiction*. Princeton: Princeton University Press.
- Sauer, Carl (1969) 'The Morphology of Landscape', in John Leighly (ed.), *Land and Life: A Selection from the Writings of Carl Ortwin Sauer*. Berkeley: University of California Press, pp. 315–350.
- Schaefer, Fred, K. (1953) 'Exceptionalism in geography: a methodological examination', *Annals of the Association of American Geographers*, 43: 226–249.
- Stoddart, David (1986) *On Geography and its History*. Oxford: Blackwell.
- Strabo of Amasia (1917–1932) *Geography*, trans. Horace L. Jones, 8 volumes. Cambridge, MA: Harvard University Press.
- Tang, Chenxi (2008) *The Geographic Imagination of Modernity: Geography, Literature, and Philosophy in German Romanticism*. Stanford: Stanford University Press.
- Thomas, Rosalind (2000) *Herodotus in Context: Ethnography, Science and the Art of Persuasion*. Cambridge: Cambridge University Press.
- Timothy, Dallen and Guelke, Jeanne Kay (eds) (2008) *Geography and Genealogy: Locating Personal Pasts*. Aldershot: Ashgate.
- Van Paassen, C. (1957) *The Classical Tradition of Geography*. Groningen: J.B. Wolters.
- Warntz, William (1989) 'Newton, the Newtonians and the Geographia Generalis Varenii', *Annals of the Association of American Geographers*, 79: 165–191.

Geography's Narratives and Intellectual History

Charles W.J. Withers

INTRODUCTION

'Geography' is easy to define literally. From the Greek, '*geos*', the Earth, and '*graphos*', or '*graphein*', 'to write', geography means 'Earth description' or 'writing about the Earth'. Yet even a moment's glance at the modern subject of geography, with its principal division into human and physical and its many specialist sub-divisions, reveals that the practical expression of this definition varies considerably. Moreover, what has been understood as 'geography' has changed over time. Where the literal definition has been constant, differing interpretations have been offered at different times in different places by different people as to geography's content and purpose, over what it does and for whom. Modern professional geographers and students commonly refer, for example to 'regional geography' or to 'physical geography', but the meanings they attach to these and other terms bear little relation to others' usage of them in the past. It is now commonplace to speak of 'professional geographers', of geography departments,

geography students and of a geographical curriculum. It was not always so. Most aspects of the professionalisation and institutionalisation of geography date, in Europe and North America anyway, from the late nineteenth century. If, then, 'the 'nature' of geography is always negotiated' (Livingstone 1992: 28), so too are the educational and narrative structures, intellectual procedures and material means for geography's production and dissemination – its books and journals, its expedition guides and mapping manuals, conferences, university departments, popular magazines, school prizes and so on.

Acknowledging the diversity behind geography's 'definition', this chapter considers some of the ways in which, over time and in different ways, geography has been undertaken. In here contributing to geography's orientation, my concern is not with the history of geography's cognitive content, nor with a narrative of geography's history. My concern is with geography's 'epistemic cultures' (Knorr Cetina 1999); that is, with the narrative practices and procedures by which geography

has been carried out and, from that, to show how geography's intellectual history is also a practical and discursive history. Where others have revealed geography's history to be an account of geography's 'what' and 'when' and, often, its 'who' – its changing 'nature' and subject matter told in relation to key disciplinary figures (in a rich literature see, e.g. Livingstone 1992; Dunbar 2001; Schulten 2001; Hubbard *et al.* 2004; Johnston and Sidaway 2004) – my focus is with geography's 'how' and 'why'. To use modern parlance, this is an essay in geography's methods with an historical focus.

Eight themes and the inter-relationships between them are considered under five headings: writing and reading, mapping and depicting, exploring and trusting, experimenting and gesturing and conversing. Other themes, such as teaching or institutionalising the subject could have been included although the history of geographical education is relatively well covered, for Britain at least (Stoddart 1986; Walford 2001). Practices such as agitating – geography as direct activism – might also have been incorporated since it is a feature of contemporary critical geography (Blomley 2007), and there is a rich historical tradition of 'radical' geography (Peet 1977). Of necessity, my attention to the practices selected is relatively brief and my method historical in order to illuminate their differences and connections and changes over time in the hands of different geographers. I am not arguing here for the interpretation of geography's methods as a narrative of 'progress', not least given uncertainties over that term (Livingstone 2006), nor am I assuming any simple equation between geography's intellectual practices and those material transformations on which they depend, such as printing technologies, the invention of photography or of the computer (Headrick 2000). My concern is to show how, at different times, the *art* of doing geography (including within that term the science in and of geography) has always also been, in different ways, the *act* of doing geography.

GEOGRAPHY'S NARRATIVE FORMS: WRITING, READING AND ARITHMETIC

Geography is not just a matter of writing about or describing the Earth. It is also a matter of scale in terms of the object of its writing and of the type and purpose of writing. Scale is crucial to geography's definition and utility. In being from the Classical period concerned with the Earth, geography was distinguished from 'cosmography', the study of the Earth in relation to other planetary bodies, and from 'chorography', the study of portions or regions of the Earth. Yet these textual distinctions, while long-running, were never strictly observed: astronomical discussions formed part of geography's teaching texts until well into the nineteenth century. Modern concerns with planetary geomorphology mark a return to geography's cosmographic brief. At the same time, the narrative forms used by geographers to write about the Earth have always involved a mixture of words, numbers (words' mathematical equivalences) and abstract symbols.

In early modern Europe, geography took three forms: mathematical geography, descriptive geography and chorography (Cormack 1997). Mathematical geography was influenced by the textual and numerical practices of Classical authorities such as Ptolemy. But it crystallised as a distinctive form of earth description given enduring concerns to fix the absolute geometric location of places on the Earth's surface in terms of latitude and longitude and because of the rise of mathematics in Europe's universities, itself a consequence of the mathematicisation of natural philosophy from the later seventeenth century in what is now known as the Scientific Revolution (Shapin 1996). Mathematical geography was closely linked with the emergence of what we would today call geodesy, the science of Earth measurement, and importantly, with practical advances in map making, surveying and navigation. Here, geography's writing was largely in numbers as coordinates

and stylised symbols on maps. Mathematical geography was, socially and intellectually, the preserve of a few, none of whom would have termed themselves professional geographers.

Descriptive geography, by contrast, focused on the political and physical structures of other lands and territories, incorporated maps as illustrations not as accurate representations and was far from rigorous: 'It encompassed everything from practical descriptions of European road conditions to outlandish yarns of exotic locales, providing intriguing reading and practical information alike' (Cormack 1997: 38). Chorography was the most wide ranging geographical sub-discipline and form of geographical writing and was so because it embraced genealogy, local history, even poetry and depictions of antiquities in presenting an essentially qualitative textual account of a region.

These different practices of geographical writing – and of reading, since poring over maps with a view to safe navigation is not the same as reading connected prose for private educational benefit – were lent support from the later seventeenth century by two related trends. The first was that rise in instructional rhetoric from people concerned to give order to the written description of the Earth as scientific and geographical discoveries brought new data to light. One such, John Woodward's 1696 pamphlet *Brief Instructions for Making Observations in All Parts of the World*, was with others a precedent to later more specialised guides on how to travel and undertake geographical field-work. These printed concerns about writing were echoed in the words of practitioners within emergent scientific institutions, such as London's Royal Society, calling for a 'proper plainness' of speech and prose in debating new findings. The second trend was the development of what contemporaries called 'natural' and 'political arithmetic': discourses concerned to enumerate, respectively, the diversity of nature and the circumstances of human affairs. These discourses were closely connected with the emergence

of the nation state and, thus, with statistics as state knowledge (Poovey 1998).

In geography, statistics as a form of numerical testing of recorded observations in natural and social phenomena is thus only one form of writing, albeit that it is now prevalent in association with particular quantitative methods. Statistics as a form of writing became geographical because mathematical writing was associated with the politics of state surveillance, with developments in scientific methodology, with the numerical representation of the unseen and with attempts at prediction. In geography's history as a discipline, the statistical formulation of space appears only belatedly: in connection with that moment in the 1960s, and with those of its proponents interested in the modelling of spatial relations, known as the 'Quantitative Revolution' (Gregory 1976; Barnes 2001).

The writing *of* geography differently and writing *about* geographical difference have thus always been matters of different writing *in* geography. This is so whether one looks at book-keeping as a practice of seventeenth-century English commercial and geographical imperialism (Ogborn 2004, 2007), at geographical writing as a call to national identity in late eighteenth-century America (Brückner 2006), at numerical glacial modelling (Sugden *et al.* 2002), or at those new inscriptive forms such as computer software codes transforming the contemporary geographies of everyday life (Dodge and Kitchin 2005). And since different types of geography demand different strategies in writing (Darby 1962) and because different strategies reflect different purposes, writing about geography's history ought not to overlook the fact that geographical writing is never a disembodied practice, never without political consequences (Keith 1992; Kitchin 2005).

Neither, if we want to understand how different geographical narratives are received and worked with in an intellectual context, can we ignore the practices of reading. Like writing, reading takes different forms – silent private reading is a relatively modern practice, for example – and the interpretation of

these forms can highlight how ideas move differently within society and within given intellectual communities (Cavallo and Chartier 1999). Much exciting work remains to be done in this context. For it is clear not only that *where* scientific texts were read had an important bearing on *how* they were read, on *what* meanings were ascribed to the work (Livingstone 2005), but that reading prompts writing – in the interpretive form of marginalia for instance – which can detail how geography's ideas were received and by whom (Daston 2004; Keighren 2006).

IMAGING AND IMAGINING THE WORLD: MAPPING AND DEPICTING

Maps are, arguably, the most prevalent form of geographical writing. Maps incorporate words and other symbols – mathematical representations, lines depicting boundaries or common values, even artistic cartouches aimed at patrons and indications of cartographic prestige – in stylistically representing the Earth or portions of it. Mapping as a practice – as for 'cartography', a more modern term dating from the later 1830s in association with the rise of the inductive sciences – thus has its own languages and sub-practices.

This point, if obvious, matters in respect of maps and mapping as one narrative within geography's intellectual history since there has been, until recently, a powerful and persistent interpretation of progressive development within the narrative history of mapping and map making. Maps, that is, were held not only to be mirrors to the world, accurate (if stylised) scaled representations of the real, but got progressively better – freer from error, less 'artistic' and more 'scientific' – over time. Recent work within map history has decisively challenged this understanding of the map, arguing that notions of accuracy and of meaning in maps are always contingent, always contextual (Harley 1987; Jacob 2006). Similarly, understanding the place of

other depictive traditions within geography – sketching, photography, even filming and satellite remote sensing – needs to be attentive to historical context and geographical difference, and not straightforwardly assume that enhanced technical capability in imaging and imagining the world affords closer approximation to its truthful 'objective' comprehension (Daston and Galison 2007; Rose 2007).

The different forms taken in mapping and map making and the connections with geography's other practices may be illustrated by example. The promotion of mathematical geography in the early modern period, for instance, was associated with advances in navigational charts, the development of portolan charts, rhumb lines and, notably, with the adoption of Mercator's projection as a 'standard' way of depicting the Earth's continental shape and dimensions (Cormack 1997). But these things featured hardly at all in chorography or in descriptive geography where topographic maps, or sketches, accompanied regional description. Similarly, the development of triangulation as the basis to mapping was a consequence of the use of trigonometry and mathematics in figuring the Earth, and began, in national terms anyway, in seventeenth-century France before becoming a feature of Enlightenment cartography throughout Europe and North America (Withers 2007).

The development of 'modern geography' or, better, of 'modernising geography' – taking the latter term to signal that geography is always a 'becoming' subject – is intimately connected with the development of mapping, with its mathematicisation and instrumentalisation and with the political importance of knowing one's geographical limits – or those of one's enemies. In the nineteenth century especially, geography's connections in many European nations with the promotion of empire was most apparent in the power of maps and of mapping in delimiting territory, inscribing peoples and, in atlases, colouring the Earth in imperial shades. But geography's mapping practices

had different locational and discursive expression. In India, large-scale schemes of triangulation and trigonometric mapping depended on smaller-scale chorographical work to 'fill in' local detail (Edney 1997). In British Guiana, the lie of the land did not permit triangulation: there, traverse mapping following river valleys was the norm (Burnett 2000). In Siam, mapping was a form of narrative depiction symbolising royal authority as the embodiment of the nation (Winichakul 1994). In nineteenth-century Tibet and Nepal, mapping 'the edge of empire' involved not large-scale triangulation and standard instruments, but the regulation of individual human bodies, a cartography done in secret and in disguise (Raj 2003).

Arguments that, from the eighteenth century onwards, geographers with others such as naturalists everywhere embraced new practices of depictive realism in sketching people and nature likewise falter in the face of geographical difference and the evidence for different languages of visualisation: in geology and 'mineralogical geography', for example, with its stylisation of subterranean topographies; in anthropology – sometimes called 'moral geography' – where Pacific islanders and others were often sketched according to European artistic conventions; or in plant geography with its new graphic forms of representation (Withers 2007). These languages speak to questions of specialisation and different practices within the emergent sciences, trends in which the diverse art *in* geography has always been vital to the art *of* geography. Similarly, the geography in and of art, notably in landscape painting, has allowed insight into changing sensitivities toward the environment and its aesthetic portrayal (Kaufman 2005).

In the nineteenth century, photography was heralded as a modern art and an accurate science. Photography in the field was essential to the depiction of geographical diversity, natural richness and ethnographic difference. Photographs were presumed to be able to 'say' more than lengthy written descriptions. Photographs provided – or so it was

assumed – accurate images. And, because in books and printed pamphlets, they also afforded a view of the far away for geographical audiences who could not easily see these things for themselves, photography provided new images of natural processes and powerful imaginative geographies (Schwartz 1996; Tucker 1997). But as modern scholars have shown of photography's place in geography's intellectual history, it is also a practice of classification and of limitation, not of holistic truthful representation (Ryan 1997; Schwartz and Ryan 2003). Photographs of the whole Earth, for example, affirm the importance of seeing as a geographical practice and connect us historiographically with geography's cosmographic concerns in doing so, and, in presenting arresting images of planetary fragility, they have been used to illustrate discourses of 'one-world' humanism (Cosgrove 1994). Whether it be with pen or camera, via film (Aitken and Zonn 1994), in remote sensing and geographic information systems (Pickles 1995) or via the surveillance cameras in our streets, geography's practices of depiction are always also about authority, authoritativeness and (more presumed than tested) 'accuracy' and 'authenticity' in different contexts.

EXPLORING AND TRUSTING: GEOGRAPHY AS FIELDWORK

Fieldwork is a familiar term and an established practice. Yet, for one commentator, '[I]t's striking how rarely we have reflected on the place of field-work in our collective disciplinary imagination' (Driver 2000: 267). Driver's claim is both true and untrue since as he also noted, considerable attention has been paid to the methodological and ethical implications of field research, especially in human geography. At the same time, 'surprisingly little attention has been paid to the specifically geographical dimensions of field-work or to its history within the discipline' (Driver 2000: 267).

Distinctions between the place of fieldwork within geography (Marsden 2000), the nature of fieldwork as a form of knowing and the construction of 'the field' that is geography are helpful, but they are not absolute. Fieldwork has a prominent place in modern geography, a critical literature devoted to its pedagogy and, as the attention of feminist geographers and others has turned to the subject, so critiques about fieldwork as a masculinist and able-bodied practice have mirrored larger debates within geography (Katz 1994; Kent *et al.* 1997; Job 1999; Gerber and Goh 2000; Hall *et al.* 2002; Greenhough 2006). Engaging work has been done on fieldwork as a teaching practice and lived experience (Lorimer 2003; Lorimer *et al.* 2005). For most students and many academics, fieldwork is geography's epistemological warrant, an irreplaceable experience, their encounter with the real. 'The field' is where proper work is done, in contrast to philosophical speculation or textual exegesis, geographical things done in other spaces (like libraries or laboratories): as that leading geomorphologist Richard Chorley once observed, 'Whenever someone mentions theory to a geomorphologist, he instinctively reaches for his soil auger' (Chorley 1978: 1). For some, fieldwork in geography *is* geography, exploration in geography the very lifeblood of the subject (Stoddart 1986: 157).

My focus here is on the epistemological procedures intrinsic to fieldwork, such as regulating observation, reliance upon others, the advantages and problems of transience in real world encounters. Below, I also pay attention to some of the methodological matters that underline conversing with others 'in the field'. Fieldwork is at heart, I suggest, a matter of regulation and of correspondence, a practice itself embodying practices in which, in effect, claims about an ontologically real world are subject to relative epistemological examination. One element of fieldwork involves the testing of theory. Another involves – indeed, requires – direct empirical encounter. Yet another involves the testing through comparison of one representation

of reality against another. As another distinguished geomorphologist noted, 'Field work for the geographer consists essentially in comparing the map with the actual ground. ... The fundamental principle is that the ground not the map is the primary document' (Wooldridge 1955: 78–9). But in order to know how to manage being in and dealing with 'the actual ground', and whether knowledge gained in the field corresponds or not with knowledge gained elsewhere, fieldwork needs to be regulated.

The production of regulatory practices in geographical fieldwork is closely associated with that rise in instructional literature and rhetorical precision we have noted from the later seventeenth century. Advances in scientific methodology included rejecting the uncritical acceptance of ancient authority and accumulating new knowledge by seeing things for one's self (Shapin 1996). In order that others elsewhere should believe what they were told about things they had not seen by people they did not know, conduct in the field had to be appropriate, one's standing as a gentleman beyond reproach, and in particular certain practices – such as collecting, naming and preserving – had to be standardised or at least acknowledged and declared. Regulatory practices are about ensuring comprehension of the non-visible – the too small and the out-of-sight – in ways which presume (even if they do not at once establish) agreed standards in their measurement and reporting. Correspondence is at once a narrative practice and an epistemological concern. Above all else, the credibility of claims to secure knowledge through empirical encounters depended on accurate observation, on training the eye. That is why, as Driver has shown, the rise of geography in the nineteenth century was paralleled by the production of guides to fieldwork which stressed the importance of proper observation. From proper observation, all else followed – map work, sketching, instrumental measurement, describing the geographical content of places. *Hints to Travellers*, first published in 1854 by the Royal Geographical Society, was intended

to define the geographer's field of vision, to discipline observation and so to promote the discipline itself (Driver 2001: 49–67).

Yet, precisely because fieldwork with its attendant practices of exploring, trusting, observing and regulating is so central a part of geography's practice and history, we need to be better aware of its historical particularities and epistemological limitations. Fieldwork and exploring does not always distinguish the geographer. In the eighteenth century, for example, such things helped produce geographical knowledge but a geographer then was marked out as such precisely because he did *not* explore: his was a world of textual compilation, a direct encounter of the work of, in English, explorers and, in French, *voyageurs-naturalistes* (Withers 2007). More importantly, fieldwork is by its nature suspect as a geographical practice since, in the field, one is subject in several ways to limits to one's effectiveness. Fieldwork is often about mobility – with being mobile or studying dynamic processes. Yet most fieldwork is time-limited. Bad weather restricts one's exposure in (and to) the field. Instruments break and fail. Things dazzle by their diversity and connectedness. The real world presents no guides for its own interrogation: sampling, access to 'type sites', trusting your colleagues (or the locals or one's students) is vital but problematic. In encountering the novel, memory is no guide to perception. It is, arguably, far better not to travel or be in the field at all, but to be sedentary. With immobility comes the capacity for reflection, measured comparison of reported difference, and time. In discussing these questions in relation to the fieldwork of the German geographer–scientist Alexander von Humboldt and the sedentary work of his contemporary the French naturalist Georges Cuvier, Outram not only makes clear that 'Exploration is not merely metropolitan experimental and observational science carried out rather a long way from home' (Outram 1996: 289), but that movement in and across space – fieldwork – is not the only route or place to secure knowledge.

'TRUTH SPOTS': EXPERIMENTING AND LABORATORY CULTURES

Questions in geography concerning the making, practice and reception of experiment, notably within that particular site for doing geography, the laboratory, have not figured as importantly as they might (but see Powell 2007). This *lacuna* is noteworthy given the insistence upon 'lab work' in certain forms of geographical enquiry, what we have seen about fieldwork as a form of experiential culture in geography, and the fact that the laboratory, the experiment and experimentation figure centrally in the history and philosophy of science. Elsewhere, for example, attention has been paid to the role of particular instruments, to the links between experiment and argument, to the connections between representing and realising, the move from 'doing' to 'displaying' experimental knowledge and what have been called the 'hallmarks of experiment', namely matters of reliability, claims to rationality and ideas of tolerance and accuracy (Gooding *et al.* 1989; Gooding 1990). The laboratory is a significant 'witness box', a 'truth spot' for modern science (Gieryn 1999: 55).

Experimenting, especially in laboratories, is now in geography an established epistemic culture. But just as it is unclear as to when we may first properly talk of experiments in the general sense of a repeated (and repeatable) and instrumentalised 'time trial', so it is hard to date geography's presence in the laboratory with any precision and to know when geographical curricula regularly incorporated lab work or through what social and intellectual authority laboratory practices became a means of acquiring geographical knowledge. There is work to be done here in providing a fuller history of geography's narratives, both for physical geography (however understood) and of the use of laboratories in a wider sense – computer labs, map laboratories and so on – in establishing geography's epistemic legitimacy.

To be successful, experiments depend in part upon delimiting, then restricting, the

'free play' of instruments and calibrating devices. But in experiential and experimental cultures such as geography the instruments are the human operators; what needs regulating is working practice, not instrumental 'play', and the scale of calibration is moral. As for fieldwork, 'tolerance' is the ability to withstand exposure to one's environment whilst working, putting up with less-able colleagues and unreliable machinery, truculent locals and the vagaries of politicians. If fieldwork is about trust and tolerance, so too is work in the laboratory where truth claims made there must travel securely to wider audiences, where experimentation requires tolerance and tolerance requires regulation: of one's self, of others, of other 'things' and of error. We might make a working distinction, then, between *moral tolerance* (in one's fellow geographical operators), *instrumental tolerance* (in devices other than humans), *political tolerance* (in regard to funding, for example) and *epistemic tolerance* (What can we say from these results? How much error was allowed in their interpretation?).

Laboratories thus demand our attention as sites of geographical practice but not because they are closed venues for the making of certainty. As Lenoir argues, 'The focus on practice shifts our gaze to the mundane: to the construction of instruments, the manipulation of experimental apparatus in the time and space of the laboratory, and the relationship of these practical activities both to the 'object' and to its theoretical representation' (Lenoir 1997: 9). This matters because narratives of messiness and contingency, not of the rationalist pursuit of exemplary law-like behaviour in the natural and social worlds, come closer to what geography actually does than do progressivist narratives which highlight, falsely, science as the infallible pursuit of certainty.

TALKING GEOGRAPHY: GESTURING AND CONVERSING

We talk a lot about geography. Talk in geography and its different forms – instructive

rhetoric in classrooms, quizzical asides out of class, empathetic 'in-depth' interviewing as an ethnographic method and so on – is in one sense a form of performance rather than, like writing or mapping, an inscriptive practice designed to represent the Earth or a theme within its study. Talking as performing might then be bracketed within geography's non-representational realms (Thrift 2007). Geography, like other things, is worked with – made, defended, argued over – in different conversational and rhetorical spaces (Livingstone 2007).

And there is nothing novel about talking as a performative practice in geography's historical making. Take as an example the case of the French *voyageur-naturaliste* and geographer Jean-François de Galaup, Comte de Lapérouse, whose late eighteenth-century voyage to the Pacific in search of the Northwest Passage involved knowing about Sakhalin in the Russian Far East. At that time, this was a major geographical conundrum, an enduring cartographic curiosity – it was shown as both island and peninsula on different maps – and the locus of competing mercantile and political interests between China, Russia, Japan and Europe's colonial powers. Encountering a Sakhalin native on the shore, Lapérouse and his crew could not communicate their questions so as to be understood. As spoken words failed, gestures about geographical dimensions were enacted. The native sketched a map of sorts in the sand, only for it to be washed away by the tide: Lapérouse was lost, and lost for words. As Bravo notes, 'The episodes of sketching by local people, anxiously observed by the European navigators, were ... language performances in which listening, speaking, writing, gesturing, and drawing were each important ingredients in soliciting a geographical gift' [namely, knowledge about Sakhalin] (Bravo 1999: 211). Such instances were repeated on innumerable occasions in geography's history: geography's practices in this regard have been about overcoming in different ways and places moments of incommensurability and different claims to epistemological legitimacy.

It is for just these reasons, of course, that attention is paid to interviewing as regulated talk acts in geography's guides to practice (Barbour 2007). Concerns with articulating one's own voice, with listening and giving voice to others, are central to such work. There is a difference, however, between voices *in* geography – with whose pedagogic strictures we are generally familiar – and voices *about* geography, those narratives of geography's history that are bound up with geographers' lives (see, for example, Gould and Pitts 2002). In this context, as with several of geography's practices, there is much to know yet of geography's intellectual history by listening to and talking with those who also wrote, read and mapped 'the field'.

CONCLUSION: THE GEOGRAPHER'S ART AND GEOGRAPHERS' ACTS

'Geography begins only when geographers begin writing it' (Wooldridge and East 1951: 161). Geography may, for some, begin in writing, but it does not end there. As this chapter has indicated, one way of interpreting geography's intellectual history is through its epistemic cultures rather than through a chronology of its changing cognitive content. To do so more completely than is the case here would demand attention to the connections between such cognitive content and geography's practical expression, and between the technical and productive elements of geography's practices and geography's various audiences. The material and metaphorical nature of our different practices demand our continuing attention (Baker 2000). In general terms, however, I hope here to have shown that the geographer's art – as Haggett's book to that title illustrated in commenting on the nature of geography and the growth of its delivery structures (geographical journals and departments) (Haggett 1990) – is always a matter of geographers' acts.

Several more specific points may be made in conclusion. Geography's practices ought not to be studied in isolation since

whatever geography has been taken to be, its nature has depended upon more than one epistemic practice: to be done in the field, to gain a foothold in the curriculum, in being understood through popular magazines. Attention to geography's practices must recognise their non-essential nature. Consider, for instance, 'modelling'. The term now commonly embraces large-scale numerical work in which, as data resolution increases, so the modellers' presumption is of closer correspondence to real-world complexity. But in the nineteenth century, the term meant working in the classroom with wood and clay to produce three-dimensional miniatures of landscape forms. In the seventeenth and eighteenth centuries, geography's models were 'dissected maps' – jigsaws – through whose use geography, political awareness and politeness were all taught. Attending to practices can disclose not just *how* geography developed but *who* acted to do geography and with what consequences. Lastly, if it is the case that geography's intellectual history is, in these strong senses, a history of epistemic practice, matters of disciplinary history in which geographers agonise about their subject's distinctiveness become less important than understanding that geography shares its concerns, as well as much of its content, with other arts and sciences.

REFERENCES

- Aitken, Stuart, and Zonn, L.E. (eds) (1994) *Place, Power, and Spectacle: A Geography of Film*. Lanham: Rowman and Littlefield.
- Baker, Victor (2000) 'Conversing with the Earth: the geological approach to understanding' in R. Frodemann, (ed.), *Earth Matters: The Earth Sciences: Philosophy, and the Claims of Community*. New Jersey: Prentice Hall, pp. 1–10.
- Barbour, R. (2007) *Introducing Qualitative Research: A Student Guide to the Craft of Doing Qualitative Research*. London: Sage.
- Barnes, Trevor (2001) 'Lives lived and lives told: biographies of geography's quantitative revolution', *Environment and Planning D: Society and Space*, 19: 409–430.

- Blomley, Nicholas (2007) 'Critical geography: Anger and hope,' *Progress in Human Geography*, 31: 53–65.
- Bravo, Michael (1999) 'Ethnographic navigation and the geographical gift', in D. Livingstone and C. Withers (eds), *Geography and Enlightenment*. Chicago: University of Chicago Press, pp. 199–235.
- Brückner, Martin (2006) *The Geographic Revolution in Early America: Maps, Literacy, & National Identity*. Chapel Hill: University of North Carolina Press.
- Burnett, Graham (2000) *Masters of All They Surveyed: Exploration, Geography, and a British El Dorado*. Chicago: University of Chicago Press.
- Cavallo, Guglielmo, and Chartier, R. (eds) (1999) *A History of Reading in the West*, trans. Lydia G. Cochrane. Cambridge: Polity Press.
- Chorley, Richard (1978) 'Bases for theory in geomorphology' in C. Embleton, D. Brunson and D.K.C. Jones (eds), *Geomorphology: Present Problems and Future Prospects*. Oxford: Oxford University Press, pp. 1–13.
- Cormack, Lesley (1997) *Charting an Empire: Geography at the English Universities, 1580–1620*. Chicago: University of Chicago Press.
- Cosgrove, Denis (1994) 'Contested global visions: One-World, Whole-Earth, and the Apollo space photographs', *Annals of the Association of American Geographers*, 84: 270–294.
- Darby, H.C. (1962) 'The problem of geographical description', *Transactions of the Institute of British Geographers*, 30: 1–14.
- Daston, Lorraine (2004) 'Taking note(s)', *Isis*, 95: 443–448.
- Daston, Lorraine, and Galison, P. (2007) *Objectivity*. New York: Zone Books.
- Dodge, Martin, and Kitchin, P. (2005) 'Code and the transduction of space', *Annals of the Association of American Geographers*, 95: 162–180.
- Driver, Felix (2000) 'Editorial: field-work in geography', *Transactions of the Institute of British Geographers*, NS 25: 267–268.
- Driver, Felix (2001) *Geography Militant: Cultures of Exploration and Empire*. Oxford: Blackwell.
- Dunbar, Gary (ed) (2001) *Geography: Discipline, Profession and Subject Since 1870*. Dordrecht: Kluwer Academic.
- Edney, Matthew (1997) *Mapping an Empire: The Geographical Construction of British India, 1765–1843*. Chicago: University of Chicago Press.
- Gerber, Rodney, and Goh, K.C. (eds) (2000) *Fieldwork in Geography: Reflections, Perspectives and Actions*. Berlin: Springer.
- Gieryn, Thomas (1999) *Cultural Boundaries of Science*. Chicago: University of Chicago Press.
- Gooding, David (1990) *Experiment and the Making of Meaning*. Dordrecht: Kluwer Academic.
- Gooding, David, Pinch, R. and Schaffer, S. (eds) (1989) *The Uses of Experiment*. Cambridge: Cambridge University Press.
- Gould, Peter, and Pitts, F.R. (eds) (2002) *Geographical Voices: Fourteen Autobiographical Essays*. Syracuse: Syracuse University Press.
- Greenhough, Beth (2006) 'Tales of an island-laboratory: defining the field in geography and science studies', *Transactions of the Institute of British Geographers*, NS 31: 224–237.
- Gregory, Stan (1976) 'On geographical myths and statistical fables', *Transactions of the Institute of British Geographers*, NS 1: 385–400.
- Haggett, Peter (1990) *The Geographer's Art*. Oxford: Blackwell.
- Hall, Tim, Healey, M. and Harrison, M. (2002) 'Fieldwork and disabled students: discourses of exclusion and inclusion', *Transactions of the Institute of British Geographers*, NS 27: 213–231.
- Harley, Brian (1987) 'The map and the development of the history of cartography', in J. Brian Harley and David Woodward (eds), *The History of Cartography. Volume 1: Cartography in Prehistoric, Ancient and Medieval Europe and the Mediterranean*. Chicago: University of Chicago Press, pp. 1–42.
- Headrick, Daniel (2000) *When Information Came of Age: Technologies of Knowledge in the Age of Reason and Revolution, 1700–1850*. Oxford: Oxford University Press.
- Hubbard, Phil, Kitchin, R. and Valentine, G. (eds) (2004) *Key Thinkers on Space and Place*. London: Sage.
- Jacob, Christian (2006) *The Sovereign Map: Theoretical Approaches in Cartography Throughout History*, trans. Tom Conley; Edward H. Dahl (ed.). Chicago: University of Chicago Press.
- Job, David (1999) *New Directions in Geographical Fieldwork*. Cambridge: Cambridge University Press.
- Johnston, Ron and Sidaway, J. (2004) *Geography and Geographers: Anglo-American Human Geography Since 1945*. London: Hodder Arnold.
- Katz, Cindy (1994) 'Playing the field: questions of field-work in geography', *The Professional Geographer*, 46: 67–72.
- Kaufmann, Thomas (2005) *Toward a Geography of Art*. Chicago: University of Chicago Press.
- Keighren, Innes (2006) 'Bringing geography to the book: charting the reception of *Influences of*

- Geographic Environment*, *Transactions of the Institute of British Geographers*, NS 31: 525–540.
- Keith, Michael (1992) 'Angry writing: (re)presenting the unethical world of the ethnographer', *Environment and Planning D: Society and Space*, 10: 551–568.
- Kent, M., Gilbertson, D. and Hunt, C. (1997) 'Fieldwork in geographical teaching: a critical review of the literature and approaches', *Journal of Geography in Higher Education*, 21: 313–332.
- Kitchin, Rob (2005) 'Disrupting and destabilizing Anglo-American and English-language hegemony in geography', *Social & Cultural Geography*, 6: 1–15.
- Knorr Cetina, Karen (1999) *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge MA: Harvard University Press.
- Lenoir, Timothy (1997) *Instituting Science: The Cultural Production of Scientific Disciplines*. Stanford, CA: Stanford University Press.
- Livingstone, David (1992) *The Geographical Tradition*. Oxford: Blackwell.
- Livingstone, David (2005) 'Science, text and space: thoughts on the geography of reading', *Transactions of the Institute of British Geographers*, NS 30: 391–401.
- Livingstone, David (2006) 'Putting progress in its place', *Progress in Human Geography*, 30: 559–579.
- Livingstone, David (2007) 'Science, site and speech: scientific knowledge and the spaces of rhetoric', *History of the Human Sciences*, 20: 71–98.
- Lorimer, Hayden (2003) 'The geographical field course as active archive', *Cultural Geographies*, 10: 278–308.
- Lorimer, Hayden, and Spedding, N. (2005) 'Locating field science: a geographical family expedition to Glen Roy, Scotland', *British Journal for the History of Science*, 38: 13–34.
- Marsden, Bill (2000) 'A British Historical Perspective on Fieldwork from the 1820s to the 1970s,' in Rod Gerber and Goh Kim Chuan (eds) 2000: *Fieldwork in Geography: Reflections, Perspectives and Actions*. Boston: Kluwer Academic Publishers, pp. 15–36.
- Ogborn, Miles (2004) 'Geographia's pen: writing, geography and the arts of commerce, 1660–1760', *Journal of Historical Geography*, 30: 294–315.
- Ogborn, Miles (2007) *Indian Ink: Script and Print in the Making of the English East Indian Company*. Chicago: University of Chicago Press.
- Outram, Dorinda (1996) 'New Spaces in Natural History,' in Nick Jardine, James A. Secord and Emma C. Spary (eds) *Cultures of Natural History*. Cambridge: Cambridge University Press, pp. 249–265.
- Peet, Richard (ed.) (1977) *Radical Geography: Alternative Viewpoints on Contemporary Social Issues*. London: Methuen.
- Pickles, John (ed.) (1995) *Ground Truth: The Social Implications of Geographic Information Systems*. New York: Guilford.
- Poovey, Mary (1998) *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. Chicago: University of Chicago Press.
- Powell, Richard (2007) 'Geographies of science: histories, localities, practices, futures', *Progress in Human Geography*, 31: 309–330.
- Raj, Kapil (2003) 'When human travellers become instruments: the Indo-British exploration of Central Asia in the nineteenth century' in M.-N. Bourguet, C. Licoppe and H.O. Sibum (eds), *Instruments, Travel and Science: Itineraries of Precision from the Seventeenth to the Twentieth Century*. London: Routledge, pp. 156–188.
- Rose, Gillian (2007) *Visual Methodologies: An Introduction to the Interpretation of Visual Materials*. London: Sage.
- Ryan, James (1997) *Picturing Empire: Photography and the Visualization of the British Empire*. London: Reaktion.
- Schulten, Susan (2001) *The Geographical Imagination in America, 1880–1950*. Chicago: University of Chicago Press.
- Schwartz, Joan (1996) 'The geography lesson: photographs and the construction of imaginative geographies', *Journal of Historical Geography*, 22: 16–45.
- Schwartz, Joan, and Ryan, J. (eds) (2003) *Picturing Place: Photography and the Geographical Imagination*. London: I.B. Tauris.
- Shapin, Steven (1996) *The Scientific Revolution*. Chicago: University of Chicago Press.
- Stoddart, David (1986) *On Geography and its History*. Oxford: Blackwell.
- Sugden, David, Hulton, N.R.J. and Purves, R.S. (2002) 'Modelling the inception of the Patagonian ice sheet', *Quaternary International*, 96/6: 55–64.
- Thrift, Nigel (2007) *Non-Representational Theory: Space, Politics, Affect*. London: Routledge.
- Tucker, Joan (1997) 'Photography as witness, detective, and imposter: visual representation in Victorian science', in B. Lightman ed. *Victorian Science in Context*. Chicago: University of Chicago Press, pp. 378–408.
- Walford, Rex (2001) *Geography in British Schools 1850–2000*. London: Woburn.