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Introduction: Reading Geography Through Binary Oppositions

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Fish-eye view of the Space Shuttle Atlantis as seen from the Russian Mir space station (Source: NASA)

In this section of the *Handbook* four chapters take up the question of knowledge in cultural geography. Ulf Strohmayer explores the imbrication of knowledge and culture in the western tradition, examining key themes from the Renaissance to contemporary poststructuralist thought. Francis Harvey surveys different critical perspectives on technology, each of which stands in opposition to the naive empiricist view that technology is little more than a tool, one that is exogenous to social relations. Audrey Kobayashi offers a historical analysis of the concept of race in geography. She argues that our disciplinary knowledge is racialized, and she suggests ways to subvert the dominant whiteness that infuses Anglo-American geographic thought and practice. The section ends with a chapter by Richard Howitt and Sandra Suchet-Pearson. They criticize disciplinary knowledge from the perspective of postcolonial theory, showing how cultural geography's understanding of key concepts such

as nature and landscape are limited by the western bias of much geographic research.

In this introduction to the section, I offer a general context for these essays by exploring the evolution of Anglo-American geographic thought as seen through the lenses of its most prominent binary oppositions. These infuse both what and how we know, the study of which is, respectively, ontology and epistemology. My survey is grounded in the various 'paradigmatic' shifts enveloping geography over the past century or so. I conclude the introduction with a brief review of the chapters in this section.

What is Knowledge?

Defining knowledge is a slippery endeavor, for the concept skates back and forth between ontology and epistemology. The latter term refers to theories concerned with how we understand or know the world. It encompasses the theoretical study of science and interpretation, as well as many aspects of the metatheoretical perspectives associated with these endeavors. Of those that have been historically influential in geography, we can point to empiricism, positivism, critical realism, humanism, structuralism, and poststructuralism. In the west, our understanding of epistemology is founded upon - one might even say congealed around - a number of key binary oppositions. These include: objectivity and subjectivity; determination and uncertainty; rigor and play; explanation and description; and generality and particularity. Each of these aspects of knowing the world structures different theoretical approaches: scientific understandings typically assign positive valences to the former terms in the above binaries, while interpretive approaches typically privilege the latter terms. Different thinkers have different stances with respect to these terms, including not only their utility in helping us conduct research, but also what they mean and, even, their very possibility. Furthermore, how we know the world at the everyday, non-reflective, level is in part determined (with more or less certainty) by how we negotiate these oppositions through our experiences, language and, of course, culture (see Strohmayer, [Chapter 28](#) in this section).

		Ontology	
		Orderly	Chaotic
Epistemology	Objective	Spatial science	Critical realism
	Subjective	Humanism	Poststructuralism

Important binaries in geography and their associated meta-theoretical perspectives (adapted for geography from Burrell and Morgan, 1979)

Ontology refers to the theoretical study of what the world is like. It is similarly structured, in the western imagination, along a number of key binaries. Studies of the ontological character of the world within geography have tended to focus on the distinctions between: nature and culture; individual and society; order and chaos; space and time; space and society; and the world of ideas and discourses versus the world of material objects and concrete social processes. Even our disciplinary distinctions - between say, geography and sociology (that is, space and society) - are structured along ontological assumptions.

That knowledge is bound up in both epistemology and ontology implies that these terms are themselves interconnected. For instance, if we assume that the world comprises discrete objects and events located in time-space, and that these have measurable characteristics and

effects on others, then it seems plausible to adopt a scientific epistemology that privileges objectivity and explanation. On the other hand, if we assume that we are immersed in a world of meanings, and that we can only at best describe the world through culturally and temporally specific languages, then an interpretive approach based on a different epistemology seems more ready to the task. In general terms, then, our knowledge of what the world is like suggests how we should study it. But as we shall see below, it is not necessary to put ontology before epistemology, for it is altogether possible to focus on how we know and to use the knowledge gained to assess what we think the world is like.

A synoptic perspective on contemporary theoretical perspectives in geography and two of the pairs of binary oppositions that underwrite them is found in the figure shown (above). In this exercise, I have chosen one aspect of epistemology and ontology. The former is divided into objective and subjective approaches; the latter into whether the world is conceived as orderly or chaotic. These pairings contextualize the four most significant theoretical perspectives in contemporary geography, from the objective and orderly assumptions that authorize scientific geography to the subjective and chaotic worldview of poststructuralism. The figure is, however, simply a heuristic device: in both theory and practice things are more complicated. For one, these are not the only oppositions that distinguish contemporary theoretical perspectives; one could make equally plausible accounts of contemporary metatheories based on the idealism/materialism and generality/particularity oppositions. Second, each perspective tends to rest on different definitions of the same binary terms. For example, the definition of objectivity is not the same in spatial science and critical realism, nor do critical realists and poststructuralists have the same understanding of what is meant by a chaotic or disorderly world. Third, each term in the binaries has developed in tandem - or relationally - with its opposition; this implies that the metatheoretical perspectives are not so easily separated from one another (Dixon and Jones, 1996). Further complicating matters is the fact that the binary oppositions are subject to redefinition - both across disciplines and over time. We can, within the field of geography, discern some of this historical contingency by examining key programmatic statements in the field and asking to what extent - and what versions of - epistemology and ontology reign at different paradigmatic junctures. One such analysis, albeit greatly abbreviated, follows.

Epistemology and Ontology in Modern Geography

Historically speaking, geographers have tended to weight their programmatic injunctions about the character of the discipline on the shoulders of ontology. In part, this was because, for much of the discipline's history, geographers assumed, along with most other social and natural scientists, that their field was a science: with few exceptions, they tended not to question the value of objectivity; they sought determinations; and they aimed to rigorously explain the presumed (ontological) order of the world by providing general accounts that could be tested in different parts of the world. During the period in which an empiricist scientific epistemology held sway in geography, paradigmatic discussions and geographic practice tended to be structured around the ontological distinction between nature and culture (and with the latter, race often reigned; see Kobayashi, [Chapter 30](#) in this section). The disciplinary effects of this binary are notable in the writings characterizing the age of scientific exploration in the nineteenth century. Objects existing in the world tended to be classified into one or another category, with field mapping and travel accounts organized according to distinctions between physical aspects of the earth and the character and activities of its inhabitants. For example, George Dawson's accounts of physical and human phenomena in the Pacific Northwoods during the 1880s and 1890s were penned on separate pages of his travel log (Willems-Braun, 1997). The nature-culture binary was further codified, as

geography's *raison d'être*, in the form of environmental determinism, the programmatic charge of which was to determine cultural responses to environmental conditions. Key proponents of determinism included Halford Mackinder (1887), Ellsworth Huntington (1924), Griffith Taylor (1914), Ellen Churchill Semple (1911), and William Morris Davis (1909, first published 1906). For Davis:

any statement is of geographical quality if it contains a reasonable relation between some inorganic element of the earth on which we live, acting as a control, and some element of the existence or growth or behavior or distribution of the earth's organic inhabitants, serving as a response. (1909:8)

Geography's release from the methodological straitjacket implied by Davis' definition of geography is largely attributed to two schools of thought: the cultural landscape approach advocated by Carl Sauer and other geographers with linkages to Berkeley geography, and the regional approach, which was popular in both the United States and Europe. Importantly from the standpoint of ontology, neither of these schools challenged the nature-culture binary *per se*. They did, however, complicate matters by overlaying it with another ontological opposition: the distinction between idealism and materialism. For the Berkeley School, culture was splayed across both: it was on the one hand a mental construct, a template for interpreting social life through common values, mores, worldviews, and languages. This aspect of culture was largely left to anthropologists, while the Berkeley geographers focused their attention on the other side of the binary - on landscapes and other aspects of material culture, such as housing types and agricultural practices. In a famous phrase that incorporates both the nature-culture and idealist-materialist binaries, Sauer proclaimed: 'culture is the agent, the natural area is the medium, the cultural landscape is the result' (1925:46).

The regional school offered its own elaboration. In the beginning, the region had a concrete status: it was there that natural and cultural phenomena interacted, giving a distinctiveness to different parts of the world and legitimizing geography as the integrative science (Fenneman, 1919). Yet the certainty of the region *qua* ontological object was difficult to sustain, and later commentators had to acknowledge that the region was not so much a thing unto itself but a mental construct - a heuristic device for organizing the study of places (Hartshorne, 1939; James, 1952). With this admission, the distinction between idealist and materialist approaches was further embedded in the discipline. Hartshorne (1939: 193–201) used the opposition to criticize Sauer and others for their views that, for something to be geographic, it had to be visible (that is, materially concrete). Against this, Hartshorne argued that non-material aspects of social life varied spatially, and that these too were part of geography (see Jones, 1995, for a discussion). Thus, the idealism and materialism binary found an early portal into geography - how often we tend to assume that it is a relatively recent concern - but in no sense did it displace nature versus culture. Regional geographers were comfortable with that opposition, using it to organize both their research efforts and many an undergraduate textbook (see, for example, James, 1942).

In the three post-World War II decades, geography underwent a so-called scientific-theoretical or quantitative 'revolution' (Gould, 1979, gives the most amusing account; Barnes, 1995, the most thoughtful). As Gregory (1994) points out, there was little offered by the spatial scientific school that was not consistent with the regional school that went before it, yet it also seems gracious enough to give its practitioners credit for explicitly theorizing both ontology and epistemology, and for standing their ground on the relative merits of the binary terms that underwrite them. Ontologically speaking, they maintained a strict division between space and time and between space and society. Schaefer (1953), for example, argued that geographers

needed to discover *spatial* laws: all other laws could be left to other fields. His paper, which was largely an attack on Hartshorne's book *The Nature of Geography* (1939), can also be interpreted as an effort to insert the order versus chaos ontological binary into geography; the emphasis on laws betrays his allegiances. And epistemologically, his paper was unique for, alongside the presumption of an orderly world given over to laws, we can read a call for determination over indeterminacy and generality over particularity. Though Hartshorne had negotiated these divisions in *Nature*, he did so haltingly, without the confidence that laws would ever be found. In his view, things were simply more chaotic than that, a result of the interactions of phenomena in regional contexts.

Nystuen (1963), in a still under-appreciated ontological paper, put forth several geographic primitives: distance, direction, and connectivity were the most important. His empirical example, the spatial layout of students listening to a teacher in a mosque, is a case study in the separation of space and social relations. Nystuen did, however, offer a brief commentary on time (an 'accumulated ... legacy of the past' that continues to have effects, presaging Massey's 1984 geological metaphor). But more commonly, space-time in scientific geography tended to be conceived through 'slices' in the geographic data matrix (Berry, 1964), an ontological conceptualization of the world that rested on the strict division between space, time, and systematic characteristics. All of this theorizing was buttressed by epistemological certitude: the paradigm was characterized by a largely unquestioned faith in objectivity, the search for generalities, the determinative and rigorous discovery of orderly causal processes, and a realist approach to representation. The nature-culture opposition did not recede over the horizon, but it held less weight under spatial science, for both could be studied with the same methodology. And it wasn't until the advent of behavioral geography - an offshoot of spatial science (Golledge et al., 1972) - that those operating within this paradigmatic framework directly considered the individual versus society opposition.

Wright (1947) and Lowenthal (1961) offered the first serious challenges to scientific epistemology. The subsequent rise of humanistic geography - most of whose practitioners would not refuse the label 'cultural geographer' - deepened such reflection. They explicitly questioned the hegemony of scientific ways of knowing, and substituted in its place a hermeneutic concern for understanding and interpretation. During the 1970s, humanistic geographers made significant inroads into ontology, deploying concepts such as 'being' (*à la* Heidegger), the lifeworld, hearth and cosmos, authenticity, intentionality, and sense of place (Buttimer, 1976; Relph, 1970; Tuan, 1975; 1976; see Entrikin, 1976, for a cogent review and Pickles, 1985, for a critical evaluation). Nonetheless, much of the writing of this period continued to adhere to the idealist-materialist binary. Perhaps the humanists' most lasting contribution is the extent to which they destabilized the field's traditional adherence to objectivist epistemology.

The rise of Marxist approaches - at roughly the same time as humanistic critiques - further shook both the ontological and epistemological moorings of spatial science. Geography first saw an extended critique of the objective-subjective binary that had previously secured the foundation of scientific epistemology. The Marxist argument that all knowledge was social, and hence political, redrew the grounds upon which objectivity and subjectivity were conceived, but it did not jettison the opposition (see, for example, Harvey, [Chapter 29](#) in this section). The former was still paramount, especially when compared to what was viewed as overly subjectivist formulations in humanistic geography. Objectivity was now conceived as a practiced and, importantly, achieved stance, one that relied upon the appropriate application of dialectical materialism. Marxism also offered a relational ontology that shifted the focus from external relations to internal ones (Cox, 1981). Through dialectics geographers were able

to theorize society and space as intricately conjoined in a ceaselessly recursive and inseparable relation (Soja, 1980; 1989). The addition of a temporal dimension (Harvey, 1984) gave rise to a socio-spatial-historical 'trialectic' of sorts - which, with Marx, explicitly incorporated a dialectical approach to nature and culture (Smith, 1984).

Yet in geography as in other fields, Marxists were criticized for their neglect of still another binary: the individual versus the social. This distinction formed the foundation for most critical assessments of the differences between humanistic and Marxist geography (Gregory, 1981), with the former group being accused of volunteerism and the latter tainted with charges of structuralism (Duncan and Ley, 1982; but see Peet, 1998). An influential reconceptualization of the binary was undertaken in the 1980s under the rubric of structuration theory (Giddens, 1979; 1986). Gregory (1981), Thrift (1983), and Pred (1984) each offered dialectical accounts of the individual and society, while at the same time explicitly integrating space-time - thought together - into their formulations.

In the past decade geography has witnessed considerable ontological and epistemological debate. A few movements are especially noteworthy. Once the dust had settled on structuration theory, most political economy researchers in geography turned sympathetically - if not always explicitly - to critical realism (Sayer, 1992). This perspective is significant in that it offers something of a middle ground between epistemology and ontology. Realists recognize the hermeneutic circle, but maintain nonetheless that there is an objective world of socio-spatial relations that can be understood through interrogations of actors' practical knowledge of causal mechanisms and structures. The realist notion of contingency (Jones and Hanham, 1995), which describes the deflection of a structure's mechanisms by relations embedded in local contexts, likewise represents an attempt to straddle the chaotic-orderly binary. And Sayer (1991) has offered an especially convincing negotiation of the general versus particular binary that had befuddled both regional and scientific geographers since the 1950s, and that continued on in a conflation with local-global and progressive-regressive oppositions (see Massey, 1991).

A second prominent theoretical movement was found in feminism, and here one can point to the influence of Gillian Rose's *Feminism and Geography* (1993). Her epistemological analysis of twentieth-century geographic research identifies a pervasive masculinism, a condition in which an omniscient, detached, and self-identified 'scientific' researcher is separated from his 'subjects'. Rose also contrasts modern geography's ontology of discreteness with that of a relationally constituted - and paradoxically juxtaposed - field of socio-spatial relations. In the process of rethinking methodology in light of such critiques, feminist geographers also redrew disciplinary understandings of difference, methodology, and representation (see the essays in Jones et al., 1997).

Not lastly, the 1990s saw the rise of post-structuralist influences in geography. Above all, poststructuralism was interpreted as an epistemological critique, with advocates arguing that previously sacrosanct ontological categories lacked foundational status (Dixon and Jones, 1998; Doel, 1999). Derrida's (1988) 'constitutive outside' has been influential in this regard. He proposes an anti-foundational theory of concept construction that rejects the structuralist positivity essential to grounding philosophical approaches to God, man and self (Derrida, 1970). Instead, knowledge is only possible through an exclusionary, negating process, one that leaves a (deconstructive) 'trace' of the other within the inscribed boundaries of the categories of knowing. This formulation has been used to destabilize notions of a fixed subject, replacing an essential identity with a socially constructed category defined by the constitutive outside - the raw material for the formation of identity (Laclau and Mouffe, 1985;

Natter and Jones, 1997). Geographers have also employed Foucault's (1970; 1972) archaeological method to uncover how clusters of power/knowledge produce, fill, and maintain categories, such as nature (Willems-Braun, 1997; also see Philo, 1992). Both sorts of analysis typically dissolve ontological certainties: the point is no longer what we know, but how we came to know what we know in the first place. Such work is best done from a cross-cultural and historical perspective, one that admits that how we describe the world is constrained by the place- and time-bound languages that we have at our disposal (see Howitt and Suchet, [Chapter 31](#) in this section).

In addition to nature-culture and identity, poststructuralist geographers have also called into question the concept of scale, which, rather than being viewed as an ontological category derived from a foundational spatiality (*à la* Nystuen, 1963), can be understood as both a discourse and the spatial counterpart to the general-particular epistemological opposition (Jones, 1998). Nor did the concept of culture escape the broom-sweep of discourse: Mitchell (1995) argues that we should pay attention not to culture's attributes -which he finds chaotically conceived - but to the work done in its name. Gibson-Graham (1996) makes parallel arguments for capitalism and other tropes related to the economy. Other key concepts subject to deconstruction include representation (Deutsche, 1991; Harley, 1989; Jones and Natter, 1999) and space/place (Hooper, 2001). There have, finally, been a few attempts to theorize a poststructuralist spatial ontology (Massey, 1994; Rose, 1993; Soja, 1996). The most radical account thus far appears in Doel's *Poststructuralist Geographies* (1999). Methodologically, he rejects dialectics in favor of deconstruction, and though he claims ontological agnosticism, he is also supportive of Deleuze and Guattari's (1987) folded, rhizomatic, and flowlike spatiality -what he terms 'scrumpled geography'.

In summary, geography's own knowledge production has relied upon historically contingent deployments of a handful of key binary oppositions. Over time, the assumption of an orderly world has given way to an assumption of disorder - even within physical geography (Phillips, 1999). Nature and culture, two concepts - or facts of life, depending on your perspective - once set the parameters within which geography was practiced and organized; after a period of relative neglect, this opposition is now one of the most intense areas of theoretical reflection in the field (see Braun and Castree, 1998; Castree and Braun, 2001). The problem of integrating the individual and society (or agency-structure), long overlooked and then seemingly solved through structuration theory during the 1980s, has re-emerged with the erasure of the self under poststructuralism's assault on identity, and with the arrival of psychoanalytic approaches (Nast, 2000; Pile, 1996). And though most geographers still tend to work with an ontological division between space and place (Entrikin, 1991) - a legacy of the separation between scientific and humanistic approaches -Hooper's (2001) analysis indicates that this too might be an epistemological division. Not lastly, geography continues to be haunted, along with most other disciplines, by the discursive versus 'real world' division (see Peet, 1998). This offshoot of the idealism-materialism opposition has created a considerable barrier between cultural and economic geographers, despite numerous attempts at integration (for example, Harvey, 1996; see Barnes, introduction to [section 2](#) in this volume, for a discussion).

The Contributions to this Section

This section presents an exploration of the spaces of knowledge, from spaces apprehended through knowledge to those produced by knowledge, but with an emphasis on a critical engagement with epistemological developments in western theory. Ulf Strohmayer offers just such an account. His chapter touches upon some of the points I have addressed above, but

with a wider historical sweep and less concern for geography than for the human sciences more generally. He begins his chapter by identifying a problematic relationship between knowledge and its objects. He identifies a circularity that, through the western tradition, is complicated by the recognition that knowledge is constructed through experience, discourse, and social practices (including those of science). Nor can knowledge be grounded in the certainty of identity. These complications undercut the traditional model of representational mimesis, yet Strohmayer is reluctant to give up on the analytic value of knowledge. He proposes instead a contextual and situated - and therefore ultimately spatial - form of cultural knowledge.

The editors also felt that the time was right for a contribution on technology. It was clear to us that this is an area that, like the internet and GIS, will continue to grow in importance. In his contribution, Francis Harvey argues on behalf of a thoroughly social and political stance with respect to technology: he takes as his point of departure the naive view that technology is merely a tool, and that it is, on its own terms, neutral. In his criticism of this view he reviews various theoretical perspectives on technology, from Marxism through the Frankfurt School to poststructuralist and science studies accounts. He then surveys some of the more important geographic works on mapping, technology and communication, GIS, and the internet. Clearly technology is an area that structures epistemology and ontology -Harvey's example of the light bulb as the quintessential human-machine binary relation is but one example - and should be a rich area for critical cultural geographies of the future.

We also sought a chapter on the relationships between knowledge production and 'race' - another area of increased attention on the part of critical cultural geographers. Audrey Kobayashi's historical survey identifies three phases of racialized thinking in the discipline. The early period explicitly deployed race as perhaps the most visible dimension of the nature-culture binary (see above). She shows how, from Kant to the early-twentieth-century environmental determinists, geography had something of an obsession for racial thinking. The second period is characterized by a kind of benign neglect of race and racialization; even when it was considered, as for example in early Marxist geography, it was as supplementary to other social processes. The third, and most recent, poststructuralist phase puts long-neglected attention on the construction of difference in the name of racial categories, but it, like the rest of geography, suffers from a whiteness that continues to infuse both geographic research and disciplinary institutions. Kobayashi concludes with some theoretical and practical directions for an activist and anti-racist geography.

Finally, we sought to undo the western preoccupations of geography by including a chapter on the challenges to geographic knowledge brought from non-western, postcolonial perspectives. Richard Howitt and Sandra Suchet-Pearson offer such a chapter using the metaphor of a hall of mirrors, a condition in which Eurocentric scholars - trapped in limited ontological and epistemological frameworks -see only their own reflections. They offer a detailed critique of these biases, showing how the hall of mirrors marginalizes and exoticizes indigenous, non-western knowledge. Their critique is extended into a consideration of alternative modes of theorizing space and time; writing cultural landscapes; deploying concepts of nature and culture; and conceptualizing identity. Each of these is developed through non-western examples. They conclude by calling for an ethic of openness to alternative ontologies -replacing the hall of mirrors with a set of windows offering new perspectives.

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