

Contested Identities: Human-Environment Geography and Disciplinary Implications in a Restructuring Academy

B. L. Turner, II

Graduate School of Geography and George Perkins Marsh Institute, Clark University

“Now, my boy,” the well-nourished wine merchant would say, after . . . the ladies left the room, and young hopeful, freed from maternal supervision, had taken another glass of wine, “I wonder if they teach you anything useful at school. Where does port come from, eh?”

Geography, as taught to our grandfathers, caused no searchings of heart to the teacher . . . The aim was definite, and the time allotted for [it]—one hour weekly—was more than sufficient. . . . Then came the beginning of the end. . . . the time allotted remained the same, and what was sufficient for the older cramming of fact was woefully short measure for a science treating of the larger factors that condition human activity. Even if the weekly hour be expanded to two . . . the task is still packing a quart into a pint-measure. . . . [Despite the increased content, the identity and intellectual rationale were missing.] “Geography,” [teachers say] “is at present far too ambitious and wide-spreading, and more than any other subject, it needs delimiting and knocking into shape; but here you are recommending that it should be used to further the interest of other subjects. Surely this suggestion will but increase the present evil.”

—Keatinge (1901–1902, 146–47)

How little things change. If geography were so simply identified in the day of Keatinge’s grandfathers’ education, its bearing has long since been lost, at least in terms of consistent direction. Today, few would-be geographers can concisely and concretely articulate the identity of their chosen field of study. The search for this identity—and the attendant intellectual justification and rationale for the profession—invariably constitutes phase one of the education of a professional geographer, captured in the requisite introductory seminar. If the readings for this exercise are expansive in their coverage, or the students truly inquisitive, any previously held identity blurs in short order. Some great “geographical” works will appear to be marginal to that identity, and much of what passes for practice in the profession will loom in the critical mind as indifferent, even irreconcilable, with the received wisdom of the discipline. The would-be professionals are confronted with the proposition that geography is not so much a discipline,

strictly interpreted, but a way of knowing that gives rise to many geographies (e.g., Harvey 2001) and permits the clever mind to locate the work of Giddens, Foucault, or Lefebvre within “the geographic.” After all, as Bird (1989, 213) warns, identity and definition in our profession “smack of flats, party lines, and words of God.”

Perhaps more so than any other field of study with such a long and storied history, geography has invested large amounts of intellectual energy in search of its identity (e.g., Freeman 1961; Golledge 1982; Hart 1982; Abler 1987, 511). That identity may be found momentarily, as one vision ascends to professional primacy over another, but the moment will wane and the search will be resumed, invariably recapturing the very themes and discourses that echoed along the hallowed halls of yesteryear. Keatinge’s grandfathers notwithstanding, the great geographic minds of antiquity were unable to demarcate their chosen field of study within the division of knowledge of their day (Kimble 1940, 1). Situated in an ill-defined intellectual place, geography’s position increasingly became “anomalous” (Bowen 1981, 67) during the Enlightenment and the rise of science, and it has remained so ever since.

This sketch of geography’s place in the academy is not that common to the introductory seminar.¹ Its real place has been masked over the past one-half century by the hegemony of the spatial-chorological identity, in which proponents of geography as space and place captured the philosophical high ground, rewriting the discipline’s intellectual history. Agnostics and opponents were largely content to engage their practice and, from time to time, hand-wave flimsy justifications that their aspatial interests were, in fact, spatial. Geography’s identity crisis not only had passed, our professionals-in-training were told, but the field had secured an externally recognized niche within higher education and research. Both claims are illusions.

From the nineteenth-century founding of modern academia, if not earlier, the identity of geography has been highly contested (Taaffe 1974, 10; Peet 1998), with implications exceeding those of its competing perspectives

and clientele, as Livingstone (1992) would have it. Variants of two basic identities have dominated this struggle: geography as a *spatial-chorological approach* and geography as the *human-environment subject*. “False” or “unilateral resolution” has subsequently emerged only during those moments in which one vision, for whatever reason, prevails over the other. This history is especially important now that fermentations in the academy are threatening to splinter the precarious rationale that has held geography’s parts together over the last half of the twentieth century. The intellectual or pragmatic superiority of one identity over the other is neither the issue nor my message. Rather, geography’s different identities have never been unified within a logic that matches the full scholarly practice of its membership and is consistent with the rationale on which knowledge is organized. This situation has not served geography well and raises several important issues about the configuration of the formal discipline in light of the potential future restructuring of the academy.²

Several assumptions and biases that others may not share guide this assessment and the argument that follows. Few scholars would disagree with Livingstone (1992, 28) about the situatedness and negotiated character of any field of inquiry at any moment. It does not follow, however, that the academy partitions itself based on disciplinary self-definition and absent a rationale commensurate with the philosophies that guide the partitioning. “Chaotic” and “anarchic” rationales that Johnston (1997) applauds, no matter how popular within our present constituency, do not a prosperous geography make, and will likely not survive in the restructuring of knowledge that has already begun in the sciences and will surely spread (see Abler 1993). Finally, I hold little tolerance for positions that stand outside and harp about the flawed structures of the formal institutions of governance or that cannot be bothered with pragmatic concerns even as their institutional base withers. As Porter (1999, 416) notes: “Today’s is a geography more intrigued by the philosophical and the discursive than the evolution of proper academic structures and institutions.”

It is equally important to recognize that the academy’s partition between the sciences and humanities remains steadfast, in spite of the various challenges that attempt to obscure the differences or demonstrate the blurring of the two at their edges. Science is interpreted broadly, but it does not comprise everything or all forms of understanding. Geography embraces most ways of knowing, ranging from the sciences to the humanities, and for this reason, among others, claims a bridging role across the realms of understanding. The discipline struggles, however, when it de-emphasizes its science-social science

connections, attempts to redefine the meaning of science (e.g., Markusen 1999), or does both.³ Whether the bias in this observation renders my argument essentialist, I leave to the reader.

Finally, I emphasize that this assessment is about identity—the key conceptual or cognitive marker on which rationales that justify the partitioning of a “body of knowledge” into a discipline rely. Identities tend to mimic practice and may be reformulated by practice when the gap between the two grows large. Yet the distillation and articulation of practice must proceed within the principles used to structure knowledge in order to form an identity. Identities speak minimally to explanatory perspectives in which practitioners tend to cluster. Given geography’s tribal perspectives, some readers may find odd and even confusing my clustering of positivist, humanist, Marxist, realist, or some other understanding within a single identity. Aside from the science-humanities divide, however, knowledge is partitioned more by the objects or substances of study than by explanatory realms.⁴ Indeed, one strength of geography is its openness to a range of explanatory realms, each acting as a check on the excesses of the others and facilitating a science-humanities bridging function. In this sense, disciplinary quarrels over this and that discourse and metatheory seem silly to me. These views are consistent with my claim above: from its modern foundation, geography has designated itself a science, and it prospers less when this role diminishes.⁵

Practice versus Discipline

Ancient geography (Greek *geographia*, meaning writing about or description of the earth) involved descriptions of the earth, serving to compile knowledge of places not experienced in everyday life. The method—travel and exploration—required an understanding of the solar system, earth-sun relationships, and mapping of the environmental conditions to be traversed. The products, other than maps, were compendia that described, and in some cases explained, the places and peoples encountered (Glacken 1967). Two points germane to my argument can be taken from this part of geography’s history. First, for 700 years, from Strabo through Ptolemy and Idrisi to Varenius, the practice of geography—or practices to which the label geography applied—consisted of mathematical, physical, and chorographical elements (Kimble 1940; Thomson 1948; Bowen 1981).⁶ Second, notwithstanding the significance of the coinage of the term “geography,” scholars through the Middle Ages had difficulty in locating the field within the stan-

dard divisions of knowledge. “So,” as Kimble (1940, 1) notes, “[geography] came to stand for the odds and ends of knowledge not accommodated by the seven liberal arts” (see also Unwin 1992).

These qualities followed geography into the age of Enlightenment and the development of science. Bowen (1981, 124–25) argues that by the eighteenth century, a significant disconnect existed between what passed for critical themes and issues in science and the “textbook writers” of geography “who produced compilations of regional descriptions” and showed little concern for theory or the major scientific issues of the time. This disconnect posed significant consequences in the ultimate reorganization of knowledge among the European academies in the nineteenth century. Geography proved to have less than a sclerotic hold on the imagination of the intelligentsia, or at least those who reconfigured the organization of knowledge (see Kimble 1940, 240; Bowen 1981, 77; Harvey 1999, 724). Whether or not and how to include geography in the new division of knowledge was no easy task, throwing all of Western European geography into a prolonged crisis. According to Capel (1981b, 65), the discipline’s survival had little to do with the logic employed in partitioning knowledge and everything to do with the reshaping of the primary and secondary education curricula throughout Europe at the time (see also Butzer 1994, 409–10). These curricula, intended in part to serve the colonial empires (see also Freeman 1961, 16; Livingstone 1992, 196, chapter 7; Bell, Butlin, and Hefernan 1995; Cormack 1997), required teachers and their training, necessitating geography programs (usually a “chair”) in institutions of higher learning.

The geographical hierarchy had to scramble quickly to justify a place for itself at the reconstructed table of knowledge. Geography’s seat was precarious from the outset, according to Capel (1981b), because it was an institutional creation in search of an identity acceptable to the architects of the academy. Lacking a shared cognitive position, geographers created the illusion or myth of disciplinary unity (Reynaud 1974). This myth was none other than holism—that geography offered a unique or privileged means of obtaining synthesis and integration otherwise unobtainable.⁷ Holism, in turn, worked against geography’s position within the sciences, as it provided highly lenient parameters in terms of what its practitioners could research and teach. Freeman (1980, 208–9) illustrates for Britain:

Disparity of view and of practice arose not only for the varying background of the geographers themselves but also of the reasons for which different universities established courses in geography. . . . When geography entered into full University status as a subject for the Honours degree, . . .

some universities were puzzled by the apparently unlimited claims of many of its practitioners. They were also puzzled by the differences between individual geographers. And as if this was not enough, some geographers found it hard to decide what they should teach. . . . As an elderly nun expressed it to [me], “When I did my Honours course in the 1920s the staffs were keen but they did not seem to know what to teach.”

Within its false unity, Reynaud (1974) observes, geography trapped itself, believing it was an inclusive field of study—the “mother” discipline—that could be defined less in its own terms and more in terms of its relations to other fields. In his presidential address to the Association of American Geographers (AAG) in 1914, one-half the written version of which compares geography to other fields of study, Brigham (1915) illustrates Reynaud’s claim. Absent real cognitive unity, “[e]verything . . . conspires to give individual geographers the right to choose their own research,” especially in “. . . the British system [which] is excellent . . . for those who wish to work as soloists” because “[t]here are ‘no schools of geography’” (Freeman 1980, 211).⁸

Competing Identities

The newly crafted chairs of geography were far too intellectually nimble to rest their case solely on the tenuous assertion that theirs was the mother, bridging, or holistic discipline, as Reynaud (1974) would have it. They sought to locate their seats within the sciences on the basis of two visions of geography (see also Leighly 1938)—as the spatial-chorological science (an alternative approach to understanding phenomena and processes) and the human-environment science (a condition or substance of study)—that would subsequently contest one another to this day.

Nineteenth-century debate focused on which vision would privilege geography’s identity, not on the elimination of the other (e.g., Taaffe 1974, 16). The next century, however, witnessed various moments in which each vision sought to eradicate the other. For a brief moment at the beginning of the century, an extreme version of the human-environment identity (the geographic factor) dominated in the United States, only to implode and give way to a spatial-chorological identity (chorology). That identity in turn evolved, at least in practice, into another extreme interpretation (spatial geography) during the 1960s and 1970s. It, too, was subsequently challenged, but not by the human-environment identity per se. Ironically, each extreme vision of identity was proposed and defended on the grounds of strengthening geography’s position within the sciences and thus the

academy. In actuality, each moment alienated many practitioners, especially those not interested in the core themes of the dominating vision, reducing the intellectual “unity” or shared cognition among geographers (see also Peet 1998).⁹ The discipline’s twentieth century in the United States, therefore, witnessed moments of identity coherence and dominance that threatened to fracture geography’s practice, and moments of noncoherence and truce (failure of either identity to gain control?) that threatened geography’s position in the academy.

In the remainder of this essay, the spatial-chorological case receives much less attention than does the human-environment one, because the former is the well-understood stuff of most introductory seminars, whereas the latter case has been so obscured that it requires restaking. The spatial-chorological position has dominated modern geographical thought since the middle of the twentieth century and is the subject of a substantial literature, almost all of which is dedicated to the identity of geography (Hartshorne [1939] 1961; Bunge 1962; Ackerman 1963; Chorley and Haggett 1967; Berry and Marble 1968; Harvey 1969; Johnston 1991; Livingstone 1992; Unwin 1992; Sack 1997; Peet 1998). Within the United States, variants of this identity led to the placement of geography within the National Science Foundation (NRC 1965), providing critical research funds for the discipline, and were the unstated foundation of *Rediscovering Geography* (NRC 1997), which rewarded geography with its own standing committee within the U.S. National Research Council (NRC).¹⁰ During this episode of spatial-chorological hegemony, or “mainstream” identity, as Slater (1977) calls it, the human-environment vision did not fade, although its practitioners were and continue to be curiously silent in orchestrating a defense of it. With some notable exceptions, its standard bearers implicitly subsumed their practice under the spatial-chorological banner, apparently on the unstated rationale that the underlying substance of a space-place geography is the human-environment condition.

Spatial-Chorological Identity

Livingston and Harrison (1981, 359) remind us not to underestimate the influence of Immanuel Kant (1724–1803) on geography. Tatham (1951, 38) is even more emphatic:

Kant’s contribution . . . consisted of his definition of the nature of geography and its relationship to the natural sciences. This definition given in the introduction to his [physical geography] lectures describes so completely the scope of geography that it has affected . . . all succeeding

methodological discussion. One can go further and say *that confusion about the aim and content of geography has almost always only appeared when Kant’s analysis has been ignored.* (emphasis added)

Exaggeration notwithstanding, Kant maintained a place for geography within the sciences, and this place helped the discipline gain an ephemeral partition in the nineteenth-century restructuring of the German academy. Kant’s vision, shared by other philosophers and logicians of the time, recognized the systematic sciences, defined by their object or substance of study, and the synthesis sciences, defined by their integrative approach through a focus on one of two attributes of objects, spatial and temporal (May 1970, 60).¹¹ Geography’s seat at the table of higher education and research was gained, following Kant, through its *synthesis understanding* of the spatial attributes of natural phenomena on the surface of the earth, leading to descriptions of the whole earth (Tatham 1951, 40; May 1970, 56, 150).

Karl Ritter, Ferdinand von Richthofen, Alfred Hettner, and other influential spokespersons attached in one way or another to a Kantian-like vision subsequently focused this identity in such terms as the science of areal or regional differentiation, the science of region, the history and particularities of places (chorography), and distribution studies (Tatham 1951, 46; Van Valkenburg 1951, 95; Livingstone 1992, 114–55).¹² These specific or sub-identities fit a *chorological* vision because they focus on understanding by integration within a bounded areal unit. Distribution studies, however, depending on how they are formulated, merge with the later-developing *spatial* vision and its focus on spatial relations, a theme that can also be found in Kant.¹³

Claims by Schaefer (1953) to the contrary, Kant’s vision did not propose a purely idiographic, and therefore exceptionalist, chorological science.¹⁴ His synthesis contributed, in principle, to the development of concepts and theory (Hartshorne 1955; May 1970), although much of the practice claiming chorological identity was largely idiographic. Indeed, if Schaefer found Kantian-inspired chorological work to be excessively descriptive, others find reductionist spatial-theory work to have its origins in Kant. Livingston and Harrison (1981, 361; quoting Barnbrock 1974, 64, n. 23) note: “Thus, while geographers of the regional school have seen in Kant support for their idiographic geography, structuralist critics of location theory in economic geography have contended that ‘the roots of our formal-logical spatial allocation models lie in Kant’s philosophy’ . . . Kant, it seems, has fathered both idiographic and nomothetic, idealist and positivist, geography.”

More appropriately, geography was exceptional be-

cause it was the only science defined by an approach rather than an object of study (e.g., Dickinson 1976).¹⁵ This exceptionalist position can be traced through the Germans noted, as well as their counterparts elsewhere in Europe (e.g., Sommerville 1858; Herbertson 1905), to the Americas, where Fenneman (1919), in his 1918 address to the AAG, conceded all systematic subjects and understanding to other disciplines because, according to the chorological mantra, these disciplines could not adequately address their subjects absent regional approaches—geography. Hartshorne's (1939) solidification of the chorological position and its ties to Kant's use of *Raum* (area or space; Livingstone 1992, 114–15), was not to last long, however, as it gave way to an Anglo-generated, spatial geography in the middle portion of the second half of the century (Schaefer 1953; Ackerman 1963), and a redefined or broader meaning of “spatial” subsequently.

Practitioners of the chorological and spatial subidentities expressed different views on the role of human-environment relationships in geography. For example, Dickinson (1969, 278) proclaimed that geography was “fundamentally the regional or chorological science of the surface of the earth [whose] . . . essential basis lies in the study of the areal association of phenomena on the earth, not in the exclusive associations of man-land relationships. . . .” In contrast, Chorley (1973, 158) labeled “geography as human ecology,” but proceeded to characterize geography as “an inherently spatial discipline,” concerned “with the tangible *spatial manifestations* of the continuing intercourse between Man and his habitable environment” (emphasis added).¹⁶ Despite the many expressions in the literature, the spatial and chorological (sub)identities were united in at least two fundamental ways relative to the human-environment identity: (1) geography is, no matter what other qualities, an approach to understanding through spatial attributes of phenomena, and (2) this quality creates an identity that trumps all others. Various expressed, this identity would come to dominate formal justifications of geography for the next forty to fifty years, especially within Western European-North American work (e.g., Bunge 1962; Lukermann 1964; Haggett 1965; Hägerstrand 1968; Cox 1976; Gould 1979; Buttner 1983; Morrill 1993).

The Foundation of the Human-Environment Identity

Another vision of geography—the human-environment relationship or condition—found voice in the substantive interests of various practitioners drawn to the

newly crafted geography programs in Germany.¹⁷ It built upon the natural histories of Comte de Buffon and Johann R. and Johann G. A. Forster (Glacken 1960; Stoddart 1987, 333), championed an integrative approach, but gave geography a substance of study consistent with the prerequisites of the systematic sciences.¹⁸ Alexander von Humboldt may be seen as the immediate forefather of this identity, although he gave minimal attention to the justification of the field and those examining his works are provided much latitude in their interpretations. With the goal of demonstrating nature's “unity in diversity,” Humboldt focused his research on understanding how an ordered, functioning landscape (similar to landscape in contemporary ecology) arose from diverse phenomena, including humans (Kellner 1963). Humboldt recognized a division of knowledge called *geognosy* (earth science) that dealt with the spatial distribution and relationships of phenomena (Dickinson 1969, 24). This recognition, his knowledge of Kant (Tatham 1951, 53; May 1970, 77; Harvey 2000), and his approach to research—bounding the landscape (areal unit)—have led some to conclude that Humboldt championed chorology and/or to interpret his geographic imprint accordingly (e.g., Livingstone 1992, 137).¹⁹ Such interpretations, however, elevate the spatial qualities of his approach over the substance of his research, the order and function of landscape. Indeed, Humboldt envisioned a geography situated in the systematic sciences (Tatham 1951, 57; Freeman 1961, 32, 37–38) and seeking “. . . to analyze the individual parts of the natural phenomena without succumbing beneath the weight of the whole” (cited in Tatham 1951, 53). Simply put, the corpus of Humboldt's work points as much, if not more, to a human-environment identity as to a spatial-chorological one.²⁰

Humboldt was not alone in this regard. Danish geographer Joachim Schouw championed a systematic geography identified by its focus on human-environment relationships, especially the means in which society transforms nature, while being part of it and yet standing outside it—the “opposition within a fundamental unity” (Olwig 1980, 36). Human-environment identities can also be found in the works of Elisée Reclus in France (Tatham 1951, 68; Olwig 1980, 39) and Peter Kropotkin (1885) in Russia. Unlike Humboldt, these individuals were explicit in their appeals, although their impact on the deliberations within the German academy is not clear.

In contrast to Humboldt, Frederich Ratzel pushed for a systematic geographic science (Ripley 1895, 637), complete with a phenomenon of study—human-environment relationships (Tatham 1951, 64; Dickinson 1969, 65). He enlisted these reciprocal relationships to explain the distribution of cultures in terms of a Darwinian and/or

neo-Lamarckian view of the capacity of societies to adapt to changes in their physical surroundings—the landscape.²¹ Beyond his geopolitical work, Ratzel's geography was, in principle, the human-environment condition and the synergy between its two components, although various geographers interpret his favored direction of flow differently (Campbell and Livingstone 1983).

Ratzel found much support within the German academic hierarchy. Otto Schlüter identified geography as the examination of the “visible” landscape as a nature-society relationship (Livingstone 1992, 264), although he objected to the determinist orientation others took (Dickinson 1969, 126). Albrecht Penck found merit in this landscape-led identity, akin to that of Schlüter, as did others (Dickinson 1969, 110; Livingstone 1992, 264). Regardless of their differences, this cluster of geographers favored a substance-centered identity of their field—the human-environment condition, usually the landscape—and an orientation consistent with the systematic sciences.

Ties Still Bound

The European founders of modern geography confronted dual identities: chorology and human-environment. They contested these identities externally in terms of the representation of the field. Internally, however, they embraced the dualism. Proponents of the human-environment identity explicitly recognized that landscapes were bounded areal units and that any approach to understanding landscape, however defined, was chorological at its core. The works of Humboldt and Ratzel exemplify this substance-approach linkage, although the fusing of the two identities in French geography may be better known. Vidal de la Blache and, to a lesser extent, his student Jean Brunhes and others organized their geography around the human-environment relationship (Church 1951, 73; Robson 1981), emphasizing human choice to environmental conditions (possibilism) through “the regional monograph.” The human-environment substance of study required a place-based approach. It is a testament to the late-twentieth century power of the spatial-chorological position that this moment in French geography is credited in terms more of its approach than of its substance of study (see Buttimer 1971; Berdoulay 1976).²²

Complementing this link, chorologists invariably focused their approach on the human-environment themes, variously expressed as the total phenomena within a bounded unit on the earth's surface, or the landscape (Tatham 1951, 44, 67; Dickinson 1969, 4, 82, 117; Dickinson 1976, 142, 156; Hartshorne 1988, 2–4). Rit-

ter's geographic “dualism”—chorology and ecology—is illustrative of this (Tatham 1951, 45). Even Kant, as Livingstone (1992, 114) reminds us, claimed that geography examined the conditions of “earth and man.” Champions of chorology elsewhere, such as Herbertson (1910) in England and Jefferson (1917) in the United States, enlisted a similar logic.

European geographers thus shared a unity, inasmuch as they envisioned a field of study composed of earth-surface phenomena understood through areal associations, however interpreted. However, they strongly disagreed on how to frame this dualism, favoring either the means of understanding (chorological identity) or the substance to be understood (human-environment condition or landscape).²³ The implications were sufficiently large that the various debates, such as that between Hettner and Schlüter, may have been much more than “intramural fracas between proponents of a regional model” arguing over the inclusion of culture into the landscape of study (Livingstone 1992, 265). This disagreement would mark the nature of geography in the next century. With geography unable to bind the two potentially “integrated” parts of study handed down to it, its next century witnessed each part struggling to command the field.

Ties Broken: The Geographic Factor and “False Start”

With proponents elsewhere (for example, Geddes [1898], according to Campbell and Livingstone 1983, 280), the ascendancy of the human-environment identity awaited the emergence of geography in the United States at the turn of the twentieth century. This moment is tied to William Morris Davis, architect of the geography program within geology at Harvard and cofounder and three-time president of the AAG (established 1904).²⁴ He registered his dismissal of the chorological identity in his presidential address to the AAG in 1905:

There is so little support for this narrow view of the subject [location] to be found in modern geographical books that it need not be further considered [and] . . . if geography were only the science of distribution, that is, the regional aspect of other subjects, it would be hardly worth while to maintain the study of geography apart from that of the subject whose regional aspect it considers. (Davis 1906, 72)

Davis's geography evolved to a narrow subset of the human-environment condition: the study of inorganic (nature) controls over the organic (society) (see Johnson 1954). This vision harkens to an intellectual heritage linked to German influences, but the directness of these linkages is unclear. Evolutionary interests, the search for

organic analogy (Livingstone 1992, 203–5), and the desire to make geography a science coalesced to shape Davis's position, one that was shared by other American geographers who were well versed in the German traditions. Among these, Ellen Churchill Semple (1911) studied with Ratzel and championed the theme of “geographic influence” or the “geographic factor,” labels of the time for what is now known as environmental determinism.

As a group, these enormously prolific authors (e.g., Huntington 1915; Taylor 1951) used their positions in elite private institutions to create the framework for geographic education in the U.S.²⁵ A Davis-influenced Conference on Geography adopted the geographic factor as the foundation of geographic education, and its recommendation was accepted by the Committee of Ten of the National Educational Association, which defined pre-college educational programs and college entrance requirements (James and Martin 1981, 290). Geography K–12 textbooks were subsequently organized around the geographic factor and its theme of inorganic controls over the organic.

This moment of dominance was soon over, in part because its interpretation was too narrow. Rather than understanding the human-environment condition through the various applicable lenses (as proposed by Vidal de la Blache, Kropotkin,²⁶ and Marsh), including the broader concept of landscape (Sauer 1925), the geographic factor reduced the discipline to the demonstration of the hypothesis that nature creates society. The extremes of environmental determinism and its public uses were catastrophic to geography and the human-environment identity (Mikesell 1974)—a “false start,” according to Cox (1976). By the 1940s, if not before, this identity was dismissed, and geography's intellectual history began to be rewritten (Livingstone 1992, 6).

The subsequent intellectual debate within the discipline in the United States pivoted on the kind of spatial-chorological science geography should be: place-based and areal differentiation or spatial relationships. By the late 1950s, however, the Sputnik-driven re-emphasis on science within the Anglo world triggered a new attempt to forge a more focused geographical science through a spatial identity (King 1979), one largely stripped of chorological and human-environment considerations.²⁷ Schaefer's (1953, 228) opening volley championed this identity: “. . . geography [pays] attention to the spatial arrangement of phenomena in an area and not so much to the phenomena themselves. Spatial relations are the ones that matter in geography, and no others.”²⁸

The reign of the spatial view, strictly interpreted, declined within two decades or so, succumbing to chal-

lenges reinserting the role of the contingencies of places, regions, and history and reestablishing a measure of geography's tradition of breadth (Sheppard 1995). This breadth, however, did not level the playing field between the two identities: the “why of where” emphasis of the spatial-chorological identity remained favored (e.g., Sack 1972, 1980, 1997), although the nongeographical eye might find it difficult to detect this orientation amid the current discourses on globalization, scalar dynamics, metaphors, gender, and embodiment (Amin and Thrift 1994; Hanson and Pratt 1995; Barnes 1996; Cox 1997; Storper and Salais 1997; Dicken 1998; Scott 1998; Ettinger 1999; Wheeler 2000).²⁹

Alternatives to the Geographic Factor

Two human-environment alternatives challenged the geographic factor before its full collapse. Each would subsequently reshape this identity, although both would attempt to do so without serious challenge to spatial-chorological hegemony. The first vision to be followed, inspired by German scholarship and an antipathy for the geographic factor (Leighly 1963, 1976), was that sketched by Carl O. Sauer in “The Morphology of the Landscape” as a statement of his vision for geography at Berkeley (Sauer 1925).³⁰ It attempted to bring geographic focus back to the landscape, a set of interrelated phenomena whose qualities as a whole (form, structure, and function) composed a reality not captured by its constituent parts separately (Sauer 1925; Leighly 1976). The landscape was an expression of a human-environment condition, a substance of study, and the morphology constituted a method of synthesis, “a strictly geographic way . . . [of] massing and ordering . . . phenomena as forms . . . integrated into structures” (Sauer 1925, 30) through the material imprints of humankind on the environment.

Sauer (1925, 22) referred to Hettner's vision of the areal expression of lands and spoke of the synthesis of areal knowledge (see also Butzer 1989a), references that some historians of the field interpret as an acknowledgment of the chorological identity of geography (e.g., Kersten 1982, 66; Solot 1986; Kenzer 1987, 469; Livingstone 1992, 297). This interpretation is suspect for several reasons. It fails to recognize that Sauer's passing nod to chorology was not necessarily central in his explicit description of the “morphological” approach (above). It marginalizes the human-environment identity embedded in the research. It fails to reconcile the chorological approach with Sauer's documented belief that geography required an object of study (May 1970, 235; Livingstone 1992, 297), a view that brought him back to the land-

scape.³¹ And, as Kenzer (1987, 470) notes, it ignores Sauer's subsequent move on to other visions of geography in which he abandoned chorology (as an areal approach).³² Given these apparent inconsistencies, an alternative explanation for Sauer's chorological reference might be found in his distaste for determinism and the political climate within academia that necessitated a signal in opposition to the geographic factor. Use of the combined terms, areal and landscape, calls attention to "continental" geography, with which Sauer was sympathetic (Kenzer 1987, 469) and to which he felt American geographers paid too little attention.

Speculation aside, the overwhelming emphasis of Sauer's work, including his role in *Man's Role in Changing the Face of the Earth* (Thomas 1956) as well as his most creative research (that on the origins of domestication), was the human use of and impress upon the earth (Rowntree 1996).³³ Until the rise of cultural ecology (see below), "landscape morphology" would remain the signature of Berkeley and kindred research during the reign of Midwestern spatial-chorological geography. This is illustrated by Wagner's *The Human Use of Earth* (1960, 3, 229), which offers only a minimal nod to the spatial-chorological dominion and explores at great length the general lessons learned about human-environment relationships through an examination of human-made (artificial) landscapes. Geographers elsewhere, of course, shared similar interests and approaches under the label of cultural and/or historical geography (e.g., Darby 1940; Williams 1974).

Harlan Barrows (1923) laid the foundation for the second alternative to the geographic factor—human ecology, or the adjustment of humankind to the occupied environment—in his presidential address to the AAG in 1922. His identity was overtly human-environment in kind, with little reference to landscape (Koelsch 1969). Interestingly, his call had no immediate impacts, perhaps because he was anchored in the heartland of the emerging American spatial-chorological vision of geography. Implementation of human ecology awaited the return of his student, Gilbert F. White, who believed then and now that the role of higher education and research is to serve the public.³⁴ True to this belief, White has largely avoided internal disciplinary debates as entertained in this essay—which may explain the sparse attention given to him, compared with Sauer, in various assessments of geography (e.g., Johnston 1991; Livingstone 1992)—in favor of focusing on real-world problem-solving, beginning with his role in the establishment of national flood insurance in the U.S. and culminating with his leadership on an international panel seeking to resolve water conflicts in the Middle East (NRC 1999b).

Nevertheless, he and his students gave birth to the "Chicago" school of resource geography emphasizing human choice among resource options and, subsequently, environmental risk-hazards with a focus on human adjustments to environmental perturbations (Burton, Kates, and White 1978; Mitchell 1992; Cutter 1993; Kasperson and Kasperson 2001).

Thus, two important visions of human-environment geography emerged in "real-world" space and place during the middle of the twentieth century in the U.S. The two identities attracted substantial numbers of practitioners to the profession whose research suggests that they had minimal interest in a spatial-chorological geography per se (e.g., Wagner 1960; Kates 1987). However, their numbers and influence were not sufficient to elevate this identity to a position equal to that of the spatial-chorological one. Indeed, during the 1960s and 1970s, a period marked by the dominance of space in the discipline, the human-environment identity was added to various definitions of the field almost as an afterthought. For reasons not fully clear to me, most human-environment practitioners apparently conceded the identity issue, although they continued to ply their wares in a manner that was marginal, at best, to the spatial tradition.

Contemporary Human-Environment Geography

Human-environment geography grew substantially in America during the latter part of the twentieth century, corresponding with increased public awareness of environmental issues as well as the "formal" diversification of geography at large. Practitioners spread across the geographic landscape, inhabiting such niches (e.g., AAG specialty groups) as environmental hazards, environmental perception and behavioral geography, cultural ecology, contemporary agriculture and rural land use, water resources, and the human dimensions of global environmental change (Gaile and Willmott 1989; Turner 1989), to which political ecology should be added as a de facto group operating among the others. These groups partly reflect divergent substantive interests and partly reflect sympathies with emergent and competing perspectives within the academy at large, especially in the social sciences (Turner 1997). Thus, Sauer's challenge to mid-twentieth-century geography (Price and Lewis 1993) was itself challenged, first by approaches incorporating human behavior, decision-making, and systemic linkages (Brookfield 1962, 1964; Stoddart 1965; Grossman 1977; Porter 1978; Butzer 1980, 1989b; Denevan

1983; Zimmerer 1996), and second by historical approaches informed by social theory and postmodernism (e.g., Braun and Castree 1988; Cosgrove and Daniels 1988; Cronon 1991, 1995).³⁵ The Chicago risk-hazard tradition, which critiqued behavioral models based on “perfect knowledge” (Wescoat 1987), was itself appraised by critical approaches (Hewitt 1983; Watts 1983; Emel and Peet 1989), ultimately paving the way for political ecology and its hybrids (Blaikie and Brookfield 1987; Roberts and Emel 1992; Peet and Watts 1996; Rocheleau, Thomas-Slayter, and Wangari 1996; Zimmerer 2000).³⁶ The research agenda has subsequently expanded to include issues of environmental management and application (e.g., O’Riordan 1970, 1997) and global environmental change (e.g., Parry 1990; Silver and DeFries 1990; Turner et al. 1990; Wilbanks 1994; Downing 1996; Kates et al. 2001; Liverman, Yarnal, and Turner forthcoming).

Several noteworthy observations can be made about these developments. First, parts of the human-environment traditions have returned to the kinds of themes that Humboldt and Marsh (1864) advanced, the unity of nature and the human impress upon it, although they are labeled today as earth system and sustainability sciences (Kates 1995; NRC 1999a; Kates et al. 2001), focused on coupled human and environment systems and open to historical assessment (e.g., Meyer 2000). This rejuvenation of past interests has emerged largely from those practitioners, including physical geographers, strongly linked to the science community. Second, much of the research in this reinvention remains strongly empirical and increasingly quantitative, especially as it engages the use of remote sensing and GIS sciences and modeling (e.g., Lambin 1994; Liverman et al. 1998; Turner et al. 2001). Third, attempts to seek a balance between agent-based and structure-based explanatory frameworks are increasing, recognizing the roles of idiosyncratic agents and historicity (path-dependency) (e.g., Turner and Ali 1996; Robbins 1998; Zimmerer and Young 1998; Batterbury and Bebbington 1999). The emergent properties of complexity and disequilibria expressed in ecology and integrated assessment are recognized (Veblen, Kitzberger, and Lara 1992; Zimmerer 1994, 2000), although the general loss of advanced quantitative skills in the profession at large affects our abilities to engage fully the associated research communities (see also Wheeler 2000). Fourth, the barrier separating “pure” and applied research, formerly registered in the partition between the Berkeley and Chicago schools, is disappearing (e.g., Zimmerer and Young 1988; Bebbington 1993; Graf 1994; Fairhead and Leach 1996; Rocheleau, Thomas-Slayter, and Wangari 1996; Angel and Rock 2000). Unfortunately, despite

appeals for “hybrid methodologies,” new barriers may be forming in regard to quantitative-qualitative, subject-object, and other divisions in approaches, each set of which appeals to different external communities to which geographers link. In some ways, the differences and tensions between those practicing on the social science-humanistic boundary and the social science-natural science boundary have never been greater. I surmise that parties situated on one boundary expend little effort attempting to engage fruitfully those on the other. Fifth, no metatheses have emerged from the corpus of this work (Burton, Kates, and Kirkby 1974; Kates 1988), perhaps because so much effort is expended on demonstrating to geography the relevance of concepts, theories, and explanatory frameworks developed in other intellectual domains, rather than demonstrating how those ideas are reshaped in the human-environment analysis, reworked into novel ideas, or both. Alternatively, some geographers may mistakenly interpret renewed interest in place-based research (e.g., NRC 1999a; Kates et al. 2001) as a rejection of the search for generalities or lessons beyond “specificity matters.” Human-environment geographers would do well to take stock, perhaps reflecting on the direction to which Wagner (1960) pointed more than 40 years ago—seeking lessons about society and nature taken from the study of the relationships between the two. And sixth, metatheses or not, human-environment geographers are vigorously reinserting themselves within the geographic landscape, as signified by the explicit section for the human-environment identity in the restructured *Annals*.³⁷

Geography as Human-Environment Science?

Various cases were made throughout the last quarter of the twentieth century—a time of spatial-chorological hegemony—for the ascendancy of the human-environment identity, or at least for a balance of it with the spatial-chorological (or human geography). For example, Goudie (1986) invoked balance and cited as authority various geographers otherwise typically identified with the spatial-chorological view, specifically Hartshorne, Haggett, and Hägerstrand. However, Goudie’s case and those cases that he cites appear to deal as much with the nature of “space”—relational as opposed to metric—as with the object or substance of the field (see below). An illustration of this can be found in Hägerstrand’s (1976, 332) “redefinition” of geography as “[t]he study of collateral processes within bounded regions . . .” in an article entitled “Geography as the Study of the Interaction between Nature and Society,” in which he bemoans the ex-

cesses of the spatial-chorological vision. In contrast, Stoddart (1987) more boldly called for the ascendancy of human-environment geography, as did Douglas (1986) in a less direct way. Mabogunje (1984) assumed that this ascendancy had taken place. And Anuchin (1977, 145–46) claimed no need for such movement because, at least in Russia, the geographical sciences had an object of study, the landscape envelope of earth (also the noosphere; but see Matley 1982).

Is the discipline poised for another moment in which the human-environment identity ascends to dominance? Should this occur, what might be some of the implications for the discipline as a whole? The answers lie partly within and partly without the formal discipline and involve a series of connections regarding the restructuring of the academy and the implications of that restructuring for the configuration of geography as we know it.

Restructuring of the Academy?

The partitioning of knowledge undertaken some 150 years ago in Europe remains the basic architecture of higher education and research in the U.S. This partitioning never truly embraced the spatial-chorological identity, despite enlisting it to establish a geographic and regional-science presence in the NSF (but see below).³⁸ This statement will surely elicit a strong reaction from various and sundry geographers who will point to evidence beyond the NSF's geography and regional-science program to counter my claim: the impact of various spatial-chorological geographers on social science at large; NSF infrastructure awards to promote GIS (National Center for Geographic Information and Analysis, or NCGIA); and, more recently, the Center for Spatially Integrated Social Science (CSISS).³⁹ However, support for my claim (only partly polemical) follows from multiple and lengthy encounters on behalf of "the spatial discipline" among elite academic institutions, organizations, and foundations supporting scholarship and research in which geography (or explicit reference to geographic research) has been eliminated or holds a marginal presence at best.⁴⁰ Geography's best and brightest have repeatedly stepped forward and attempted to reinsert geography formally within these entities, almost always to be rebuffed. In this sense, geography's old mantra that "good work will be recognized" would appear to be only partially accurate. To it should be added "as that of the scholar, not of a discipline." Good work or not, spatial understanding has not sufficiently caught the imagination of the social sciences to warrant acclamation of the need for a spatially explicit discipline, be it geography or regional science, perhaps because "[n]o discipline can

claim space as its own" (Unwin 1992, 210). The creation of the new *Journal of Economic Geography* stands as a reality check that spatial-chorological themes are not the private reserve of a single discipline, and the rise of spatially aware economics suggests that, if considered important, the field claiming the substance of study will undertake assessments of spatial processes at work. Such an assessment should scarcely surprise an academy partitioned on the basis of "systematic" science.

The architecture of the systematic sciences has entered a major phase of revision, however, driven by the impacts of new information, tools, techniques, and modes of analysis. The natural sciences were the first to begin restructuring on the basis of the overwhelming abundance of information that narrowed the range of study required for a practitioner's earning doctoral status (e.g., from biology as it existed in 1950s to the new disciplines variously labeled molecular science, systematic and evolutionary science, and the biomedical sciences today). Now a portion of the natural sciences has begun to restructure in another way, one that abuts the human sciences. This "still-in-design" architecture is predicated on understanding gained by "integrated science"—putting the pieces of the puzzle back together again (e.g., NRC 1999a; Kates et al. 2001). Reminiscent of Kant's "synthesis science," it differs in that integration is based, not on the space-time attributes of phenomena, but on the phenomena themselves: biogeochemical flows through the biosphere, ecosystems and landscapes, and coupled human-environment systems (e.g., Lawton 2001). These "integrated sciences" are now formally recognized in the NAS (U.S.) through two new sections, Environmental Sciences and Ecology and Human Environmental Sciences. The geographers have moved en masse to this last section, suggesting that the great geographical experiment—linking the human and environmental sciences—may become more successful than Livingstone (1992) believes.⁴¹

The Conceded Synthesis "Substance"

More than thirty years ago, May (1970, 186) noted that no other field of study claims the human-environment condition as its subject of study and that many disciplines appear to concede the subject to geography.⁴² Beyond its role in the formation of the formal discipline, this identity of geography is registered by the strong involvement of human-environment geographers—out of proportion to the relative size of discipline—in establishing and participating in various interdisciplinary environmental research agendas and programs.⁴³ That Harvey and Holly (1981) grant three of geography's five paradigmatic themes—in their use of paradigm—to the

visions of Friedrich Ratzel, Vidal de la Blache, and Carl Sauer, each of whom appealed strongly, if not primarily, to the human-environment identity (as argued here), testifies to the discipline's de facto recognition of its centrality in the subject.

The human-environment condition constitutes a synthesis subject, which, unlike its spatial-chorological counterpart, requires no special justification within the framing of the systematic sciences. This condition is an aggregate phenomenon derived from a composite of natural and human phenomena and processes, logically no different from the ecosystem or landscape of ecology, the group of sociology, and the institutions and organizations of political science. Acceptance of a geography so identified rests on its explanatory relevance and usefulness for real-world problem-solving. Part of human-environment geography has performed handsomely in application (see note 34) but failed to deliver theoretically (e.g., Taaffe 1974, 5). Should the conceptual side prove to match the practical, the human-environment condition has the potential to redefine the geographic within higher education and research. That geographers will take the time to explore this possibility adequately, however, is questionable. The critical moment may have passed, given the many ongoing experiments involving new sets of integrated sciences that favor no existing systematic or synthesis science. If this observation holds, human-environment geography is likely to be overtaken by the new sciences.

Unified Practice and Disciplinary Acceptance

"Geography is what geographers do" is an old and unsatisfying (non)identity that defies intellectual unity and serves to impede disciplinary acceptance.⁴⁴ At least four substantive research traditions make claims on "what we do"—place-space, human-environment, physical geography, and the mapping sciences (see also Pattison 1964)—and our modern history confirms that a disciplinary identity excluding or relegating any of these traditions will be abandoned, no matter its intellectual integrity or external acceptance. Modern geography thus searches for intellectual coherence and acceptance but votes for diversity of practice, resisting configurations not conducive to the range of "geographic imaginations" (Johnston 1978; Smith 1979; Pickles and Watts 1992; Abler 1993).

Hettner and Hartshorne were resolute in their belief that the human-environment identity could not offer unity in practice. Hettner (1905, 548, 554) wrote and Hartshorne (1961, 123) quoted: "The 'logical unitary structure of geography [is] . . . destroyed' [by the dualism inherent in the human-environment position], whereas

'if the concept of nature and man proceeds from the chorological viewpoint, it is homogeneous in all important points.'" Hartshorne appears to have rested his case more on the negative aspects of environmental determinism and recall to Hettner (quote above) than on the implication that understanding in bounded space necessitates human and environmental considerations.⁴⁵ Yet, the modern history of geography under the spatial-chorological dominion is marked not only by the increasing separation of the discipline's human and physical components (Stoddart 1987), but by the lack of unity among human geographers (Golledge 1982; Hart 1982; Abler 1987). With physical geography ensconced in the sciences and much of human geography engaged in various experiments that challenge this way of knowing, the gulf between the two appears to have widened of late, despite the many calls against this division (see Goudie's [1986] list) and the various claims about the increasing congruence of key concepts (e.g., conceptions of space; Massey 1999) issued by both geographies.

In contrast to Hartshorne, Stoddart (1987), among others, suggests that a human-environment identity is capable of uniting the discipline (also Barrows 1923). It does so, however, by denying both human and physical geography as stand-alone research interests: ". . . there is no such thing as physical geography . . . divorced from its human geography, and even more so the other way around. A human geography divorced from the physical environment would be simply meaningless nonsense . . ." (Stoddart 1987, 333). Unity is achieved by collapsing all substantive interests into the human-environment synthesis, eliminating geography as a pure social or natural science and *placing it between the two sciences* as its practitioners have moved in the U.S. National Academy of Sciences.

From the perspectives of certain influential academic institutions and organizations in the U.S., the moment for "human-environment science" has arrived. The human-environment "condition" (our coupled natural-human systems) it addresses qualifies, in principle, as a logical division of the systematic sciences. Owing to this characteristic, it has the potential to gain a niche within the academy—one that the spatial-chorological identity has failed and is unlikely to achieve so long as the guiding principle is that of the systematic sciences. As formulated in geography, however, the human-environment identity is more restrictive in the range of geographical imaginations than that to which the discipline is accustomed: geographers may examine physical or human processes alone, but the "geographic" follows from their integration. However, disciplinary history informs us that limitations on the substantive range (or "chaos," as some

would have it) of geographical imaginations and practices have proven unacceptable in the past and will be resisted in future.

A New Reconciliation?

If geography is to gain a *full* seat at the academy's head table and retain the breadth of its traditions (practice), it must seek to reunite its two main identities in a way that is congruent with the prevailing logic by which the academy partitions knowledge. The spatial-chorological and human-environment identities must be made equitable and coherent within one logical formulation. Various geographers, even communities of geographers, now recognize this need (e.g., Unwin 1992; Hanson 1999; Gober 2000), as others have in the past (Chorley 1973; Taaffe 1974, 16; Goudie 1986). However, expressions that capture equal and integrated identities—let alone a truly integrated intellectual framework—prove difficult to develop. Too many past calls for unification have essentially insisted that the spatial-chorological position constitute the core of the discipline and the environment or human-environment position be worked around the edges (Unwin 1992, 203).

Peet (1998, 1–3) takes the challenge more seriously, at least at the surface. Geography, he tells us, is the study of human-environment relationships, but these relationships are understood only in terms of relational space. Spatial relationships, therefore, are axiomatically human-environment relationships. Peet (1998) thus reawakens the logic found in the spatial-chorological identities of nineteenth-century Germany and articulated somewhat differently in a series of works by Sack (e.g., 1972, 1980), who contends that geography's substance is relational space, one filled with human and environmental entities and processes, and that to address this space is to take on the totality of things within it.

Arguments of this nature conflate or promise to conflate the human-environment and spatial-chorological identities, such that one becomes the expression of the other. In either case, however, the intellectual rationale and outputs remain strongly biased towards the spatial-chorological identity.⁴⁶ Beyond the introductory claims, Peet's (1998) text comprises an examination of space and place understanding, whereas Sack (1997) builds a synthesis framework for geography through "place"—the locus or means by which humankind senses, interprets, and constructs the forces and processes of nature, society, and meaning without favoring explanations anchored in any of the three (see also Unwin 1992, 210–11). In either case, the real-world phenomena and processes of

the human-environment condition do not constitute the output of study. They may be hidden within abstractions of space and place, but "equality" of the identities requires that they be made overt.

Herein lies a long-standing challenge to the discipline, crystallized in the current moment of the academy's restructuring: *Can the internal logic of the two identities be joined in such a way that their respective content and abstractions are homologous, and will the understanding gained prove significant to problem-solving?* As a discipline, we may have grown comfortable in our understanding and acceptance of the connections between the two identities. However, we have failed to demonstrate that the partitioning of knowledge logically requires a field of study and research predicated on the combined interests inherent in the spatial-chorological and human-environment identities, and we have not demonstrated that useful abstractions (i.e., rules, laws, lessons) follow from the coupling of these identities. This last hurdle is critical to a geography that more or less retains its current structure and yet gains secure acceptance within the architecture of higher education and research beyond the humanities.

Review and Implications

With intellectual antecedents found in antiquity, the human-environment identity has vied with a spatial-chorological one, at least since the nineteenth century, as the formal justification of the geographic in the partitioning of the Western academies, with implications for geography's position as systematic or synthesis science. The central place of the human-environment identity was downgraded in geographic thought during the last half of the twentieth century, a time in which the spatial-chorological identity held formal dominion, and yet large numbers of practitioners were attracted to the "other" geography—integrated assessment and understanding of the human-environment condition.

Entering the new century, the questions of the human-environment relationship have been elevated throughout the academy and public at large, and geography is recognized as possessing unusual strength in integrated, human-environment science. The discipline has pragmatically taken advantage of this moment, but it has done so while maintaining various positions—sets of assumptions with different implications—in regard to geography and the academy. The first position views as resolved geography's historically contested dualism in favor of the spatial-chorological vision, the disciplinary legitimacy (partition of knowledge) of which is secure

within higher education and research. As noted above, various measures suggest to me that the spatial-chorological identity has never succeeded in its struggle to gain unquestioned acceptance as a discipline or research domain. Moreover, practitioners of the human-environment traditions appeal only minimally to a spatial-chorological framework in which to situate their work, other than to employ place or region as a means of bounding specific pieces of research. Save for the several notable exceptions cited above, these practitioners have not lobbied strongly for the *de facto* identity related to their work, but the resurgence of human-environment geography promises to rectify this muted past.

Geography's identities are reversed in the second position: the human-environment condition becomes the object of study, whereas the favored approaches to analysis are spatial-chorological in kind. This position strikes much closer to the partitioning of knowledge among the systematic sciences, making geography's external case less "unique" and remedying its internal "chaos." It leaves room for many of its traditions, although these are intellectually justifiable not in their own right but rather in terms of their contribution to understanding the human-environment condition. However, resistance and inertia in geography at large create formidable barriers to the acceptance of this position. In addition, the newly minted integrated sciences have staked out research boundaries that promise to challenge geography's historic claims on human-environment themes, as well as to explore the potential for new disciplinary status to match the various degrees that their programs already award.

A third position does not seek to retain geography's breadth simply because various traditions exist (see also Unwin 1992, 210). Rather, recalling Keatinge (1901–1902, 147), geography should be knocked into shape, rectifying what Capel (1981a) labels its long-standing false unity. Calls for a geographic information science and earth system science are now matched by calls for remote sensing science and human-environment science. Widespread recognition of these sciences would surely affect the related subfields of geography, reducing the discipline substantially to the practitioners of the "human domain." (Should recent economic and social science interest in spatial approaches continue to grow, however, it is not difficult to imagine that human geography might dissipate as well.)

An alternative position seeks to merge the spatial-chorological and human-environment identities in such a way that they are homologous, friendly to the discipline's traditions, and consistent with the rationale of the systematic sciences. This merger would enable the retention of geography's breadth and bridging qualities

and avoid the transaction costs of creating new fields of study. The discipline is likely to remain small, however, competing with various integrated and related research and teaching programs (e.g., geographical information sciences or earth sciences).

Which of these alternatives—or what other—awaits geography lies far beyond my prophetic abilities. However, different programmatic implications appear to be aligned with each alternative. If we choose the first, or *status quo*, position, geography is likely to remain a quaint, if occasionally inspirational, discipline. The second, *reversal* position requires an investment in disciplinary retooling that will probably not be forthcoming at a level sufficient to compete well against strongly developed integrated-science programs. The *partition*, or third, position typifies the history of change in the modern academy, institutional inertia notwithstanding. It would create several more narrowly defined "bridging sciences" but would impair the potential linkages of those sciences to the world of the humanities.⁴⁷ Unfortunately, the fourth, or *union*, position confronts the weight of disciplinary history—our failure to make the identities homologous. If equality in the two identities can be achieved and the usefulness of integrated science demonstrated, however, this position promises to maintain geography programmatically, if highly fused with integrated science and linked interdisciplinary fields (e.g., remote sensing). This last fusing may lead to the loss of certain programs labeled geography, but, no matter how configured and labeled, retain the essential qualities of geographic understanding (Harvey 2001, 208–35).

Acknowledgments

This essay is a revision of the 1999 Miller Lecture at Pennsylvania State University, and a subsequent 2001 Taaffe Lecture at Ohio State University. Its origins lay in the retirement from Clark University of William A. Koelsch and the Graduate School of Geography's search for a replacement to lead the required introductory seminar, "The History of Modern Geographical Thought." Undertaking this course required me to examine and elaborate carefully various ideas that I had been nurturing about geography's intellectual history, shaped from my own graduate education within a spatial-chorological vision of the "geographic," a career spent in the human-environment traditions, and involvement on behalf of geography in various agencies and organizations that influence the structure of academe. Serendipitously, Susan Hanson offered me the opportunity to write on this subject for the *International Encyclopedia of the Social and Be-*

havioral Sciences (2001). Some of the basic ideas and structure of this article appear in the encyclopedia entry, but they have undergone change and elaboration here. I thank my colleagues and students at Clark, especially Susan Hanson, Richard Peet, Peter Klepeis, Paul Laris, Eric Keys, and Rinku Roy Chowdhury, for their comments on various drafts. I also thank Robert Sack, Nicholas Entrikin, Philip Porter, Anthony deSouza, William M. Denevan, William Meyer, and Thomas Whitmore for comments from afar, and Jackie Vadjunic for editorial assistance. Four anonymous reviewers and the editors offered important insights and corrections. Finally, I thank Kent Mathewson, to whom someone sent a copy of this article during its publication and who called my attention to several mistakes.

Notes

1. Unless otherwise noted, the term “academy” refers to the formal institutional structures governing or significantly influencing the organization of higher education and research, especially at the international and national levels (e.g., universities, state and private funding organizations, research academies, and international education and research unions). One of the academy’s overarching functions is to organize (divide) knowledge into those constituent parts relevant for education and research. Several times I refer to the National Academy of Sciences (NAS) (U.S.) as an example of a formal institutional structure that affects the organization of knowledge and, hence, higher education and research in the United States.
2. My point of entry into this subject stands somewhere between polemics and historical assessment. Sympathetic to Hartshorne’s (1955, 1988) complaints about Schaefer’s loose historical connections in “Exceptionalism in Geography” (Schaefer 1953), I delve into the history of the discipline, largely that dealing with professional statements on identities. I do so fully cognizant that my depth of understanding and command of the literature consulted does not match that of those steeped in the intellectual and programmatic history of the field, on whose works I draw throughout. Owing to such shortcomings, I do not address the literature of physical geography and the mapping sciences. I hope that historians of our field will judge that I have not erred egregiously in regard to the literature that I do cover.
To the five reviewers of this article, who offered insightful advice, much of which I have attempted to follow, I note that I simply could not expand the work to include all components of geography or link geography’s history to the complementary philosophical issues. To do so would create a much longer and different article than I intend. I am aware of the conceptual and theoretical challenges to “dualisms,” but recognition of the instability of dualisms does not evaporate the reality of the two identities as I address them. Finally, I acknowledge that many geographers are intellectually comfortable with the discipline’s two identities, no matter our inability to express them in a way that makes them equal intellectual partners and coherent to the external world. These last two qualities, in part, separate those practitioners focused more on the internal world of geography from those focused on its external world.
3. In a review of British geographical research, for example, Thrift and Walling (2000, 15) speak of the impact of the increasing realization that science is “. . . a hybrid, made up of different projects, . . . [and] seeing the enterprise of science in this way means that the practices of science, including Geography, are available to study in ways which might have been considered illegitimate before.” Phrased cautiously, almost obscurely, this statement could be read to support my claims above; alternatively, and I suspect more the intent, it signals to geographers that science has succumbed to redefinition by various agendas of some parts of the social sciences and humanities. As I have noted elsewhere (Turner 1997), the demise of logical positivism, whose scriptures were rarely followed in the social sciences despite claims to the contrary, has been erroneously interpreted in some geographic circles to mean either that the academy sees little difference between science and alternative ways of knowing or that the approaches, methods, and explanatory frameworks falling within and without science are negotiated on an individual or disciplinary basis.
4. This statement is true historically, although Butzer (1994, 410) notes that what was accepted as a subject has had much to do with personalities, cumulative administrative decisions, and literate public interest. That it will remain so in the future is not certain. Some speculation about the future of the social sciences envisions a new partitioning based on broad explanatory frameworks or the “aggregation” of fields to create “perspective” disciplines (e.g., postpositivist, critical, or postmodern thought).
5. This claim is about geography’s role within the sciences and the programmatic position of the sciences within higher education and research relative to the humanities. It calls for neither an abandonment of humanistic geography nor a diminution of nonscience contributions to the field. Rather, it implies that a humanistic-dominated geography would result in humanities-sized programs of study within colleges and universities and supported research by agencies and organizations.
6. The progeny of the chorographical element in modern parlance is debatable: a case can be made for either chorology (i.e., areal differentiation, place-region studies, or, as argued below, space) or the human-environment condition.
7. Stoddart (1981a) and Glick (1984) introduced me to the work of Capel and Reynaud. Glick expressed surprise at the paucity of attention given to the works of the two authors, in Spanish and French, respectively. Almost twenty years after Glick’s comment, I find few references to the works of either author in English-language literature.
8. This “freedom” to explore virtually anything in almost any way, unencumbered by disciplinary rules or standards, may attract practitioners to geography. The resulting chaotic or ad hoc nature of the “discipline” registers in various national assessments (e.g., Hajdu 1968; Freeman 1980; Alaev 1984; Ehlers 1992; Claval and Sanguin 1996; Boots 2000; Chojnicki and Parysek 2000; Organizing Committee of the 29th International Geographical Congress 2000; Singh 2000; Vandermoeten 2000) and carries the cost of skepticism from the remainder of the academy.
9. The apparently futile search for unity may partly explain various assessments identifying the inappropriateness to ge-

ography of Kuhn's vision of change in science (Kuhn 1962). Numerous authors contend that the process of status-challenge-shift in paradigms does not fit the history of geography, even in modern times (e.g., Johnston 1978; Holt-Jensen 1982; Wheeler 1982; Mair 1986; Turner 1997). Mair (1986) observes that those invoking Kuhnian paradigms (e.g., Haggett and Chorley 1967; Harvey 1969; Berry 1978; Harvey and Holly 1981) have done so largely in a polemical way to promote their favored view of geographical research. It is difficult to understand how a nonunified discipline or those championing its identity as an approach (see below) could claim paradigmatic status (Wheeler 1982, 2). Ultimately, Kuhn's paradigms constitute not explanatory forms per se but shared convictions over the authority of metaexplanations of events and processes (e.g., plate tectonics, evolution, maximizing behavior). In this sense, Stoddart (1981b) gets it right.

Yet geographers who dismiss the relevance of Kuhn to their discipline may be missing the mark in several ways. First, even those social sciences, such as sociology, that are defined by a substance of study and possess a measure of cognitive unity are not certain that a strict Kuhnian view is applicable to them (Smelser and Badie 1994). Thus, geography does not stand alone in regard to Kuhn, inasmuch as it can be seen to be a social science. Second, one measure of the profoundness of an idea is the insight it reveals as it is extended beyond its original intent. Kuhn's ideas revealed to practitioners in various fields of study that science proceeds in a manner akin to thresholds-and-shifts, and the recall to Kuhn in discussions of such shifts is understandable. Third, in their antipositivist zeal, some geographers (see Billinge, Gregory, and Martin 1984) stretched the meaning of Kuhn's message. Kuhn (1977) never rejected "normal" science or gave up on its basic methods and explanatory schemes. His argument simply dug deeper into the social context of the operation of science (Fuller 2000), a context masked by the ideals and enthusiasm of the Vienna Circle. Kuhn's message can be interpreted as antipositivist only by caricaturizing and ignoring reformulations of positivism (e.g., Guba 1990).

This last point is especially important, I think. Geography seems to be caught in a moment of revolutionary *this-and-that* in which "new" ideas trumpet their self-proclaimed "revolutionary" or "paradigmatic" qualities that lay to rest whatever preceded them. Some geographers, for example, interpret "new ecology" to constitute a paradigm shift in ecological thinking that renders largely useless certain concepts (e.g., equilibrium) embedded within the foundation of "old ecology." I work closely with several eminent ecologists, serve on boards and panels with many others, and lecture in ecology programs. As I repeatedly ask ecologists to articulate the distinction between new and old ecology, the overwhelming response is: "What is new ecology?" This response is honest and reflects the difference between what I take to be the prevalent position among ecologists and the interpretive mood in geography. Save for a few who proclaim the paradigmatic "new" (see Zimmerer 2000), the prevalent view among ecologists is that flux, thresholds, disequilibria, and complexity are concepts developing out of the logical progress in the maturation of their field (indeed, nascent ideas for the "new" were developed by such "old" ecologists as C. S. Holling), and by no means void the relevance of equilibrium or other such older concepts, or place

ecological thinking outside nomothetic explanations (e.g., Reynolds forthcoming). Indeed, McIntosh (1987), one of the first ecologists to use the term "new ecology," argues that the better phrase is "plural ecology." Even Zimmerer (2000, 356, n. 2), who has raised geographic consciousness about the concept, cautions that new ecology is not necessarily accepted as a paradigm shift in ecology. I suspect some human-environment geographers trumpet new ecology as "revolutionary" because they view its nuances to be consistent with their favored social mechanisms and lessons.

10. I served on the NRC committee that prepared *Rediscovering Geography* and serve as the first chair of the Committee on Geography (CoG-NRC). I note these services to register two points: (1) I am not hostile to the spatial-chorological identity of geography, and (2) the impacts of *Rediscovering Geography*—the establishment of the CoG and its successes within the NRC—stand in contrast to the lukewarm reception of the volume by the discipline (e.g., *Annals of the Association of American Geographers* 1999; Johnston 1997). The book "sold out" and may be reprinted.
11. Livingstone (1992, 115) reminds us that Kant built his place for geography from an essentialist approach, defining the geographic in terms of its intrinsic character relative to other bodies of knowledge, not in terms of what geographers did. Although Livingstone is not necessarily critical of this approach, his raising the point seems odd. The reorganization of all knowledge in the Western academies, to which Kant's work was a prelude, was essentialist in kind, regardless of interpretations by Capel (1981a) or Reynaud (1974) about geography's place in that reorganization. Perhaps Livingstone is signaling that had Kant looked to practice, he might have developed a different vision of geography.
12. Countering Schaefer (1953), Hartshorne (1988) demonstrates that Hettner's direct links to Kantian thought are slim (see also May 1970), and thus Hartshorne's ([1939] 1961) recall to Hettner does not necessarily reflect a Kantian lineage. Direct lineages or not, however, these chorological positions are intellectually consistent with Kant's and constitute a vision of the geographic that can be traced through succeeding generations of practitioners. Perhaps more interesting is the claim by May (1970, 77) that the links between Kant and Ritter are tenuous, but that is another story.
13. Tatham (1951, 66) notes that Marthe defined geography "as the science of distribution" and that this vision directly affected certain geographers subsequently in the development of the chorological identity. Marthe also referred to geography as the "where of things," akin to the spatial subidentity that developed in the 1960s.
14. The term "exceptionalism," as used by Schaefer and others of the spatial tradition, connotes any "science" whose basic claim for legitimacy is idiographic or descriptive research, as opposed to the search for generalizations (concepts and theory). The Midwestern chorological tradition, invariably linked to Hartshorne's (1959) justifications of it, was viewed to be idiographic, if not in principle, surely in practice. In turn, idiographic geography was linked to Kant's "synthesis" science of chorology.
15. Exceptionalism proved less a problem for history, Kant's chronological synthesis, perhaps because this discipline, in contrast to geography, rapidly moved to take a position within higher education and research more closely tied to the humanities and its nearest neighbors in the social sciences.

16. I use the Chorley (1973, 158) example, not because he dismisses the human-environment component of geography—indeed, he championed the “ultimate concern” of geography to be the human impress on landscapes and environmental constraints on human activity—but because this component could not stand alone or independent of the spatial component. In this vision, geographers do not pursue the human-environment condition for its own sake.
17. Historically, geographers have referred to the study of “human-environment relationships.” I prefer “the human-environment condition,” as this term more firmly connotes an object of study.
18. Livingstone (1992, 189) labels this identity the “great geographical experiment” (akin to Wallace Atwood’s “great geographical institute” and the founding of the geography department at Clark University [Koelsch 1980]) because of its attempt to bridge or integrate the natural and human sciences. This experiment appears no more insurmountable in principle than that engaged by the spatial-chorological identity: that a synthesis approach would be recognized in the partitioning of science otherwise made on the basis of substances or objects. This exceptionalist position strikes me as the *greater* geographical experiment.
19. Withers and Livingstone (1999, 2) question the direct links between Kant’s call for geography and Humboldt’s synthesis efforts.
20. If geographic thought (or assessments thereof) has ignored, until recently, the sociopolitical context in which that thought arose, so too has it ignored differences between professed and practiced “identities”—that is, between the definition given and the essence of the studies undertaken. Professed identity is favored over practiced identity in the literature on geographic thought. For example, Livingstone (1992, 190–96) places Mackinder within the human-environment tradition on the basis of his defining geography as “. . . the science whose main function is to trace interaction of man and society and so much of his environment as varies locally” (Mackinder 1887, 143). Yet Mackinder’s geopolitical research contains few human-environment assessments, and his most prized work—the heartland thesis—demonstrates little human-environment understanding. Pronouncement notwithstanding, Mackinder’s work smacks of spatial-chorological geography.
21. Campbell and Livingstone (1983, 273) argue that Ratzel’s evolution was influenced by Moritz Wagner, who held a neo-Lamarckian view of evolution in which the environment itself stimulates genetic changes in species, as opposed to the Darwinian view that genetic change is random within the species. They argue that most geographers enamored with environmental determinism held a neo-Lamarckian, not Darwinian, view of evolution, as did many other social scientists of the late nineteenth and early twentieth centuries (see also Peet 1985). Included among this group was psychologist G. Stanley Hall, first president of Clark University, who turned over the reins of the institution to geographer and neo-Lamarckian Wallace W. Atwood, who founded the Graduate School of Geography there. Many geographers are probably unaware that elements of Lamarckian evolution have been demonstrated in the natural sciences over the past decade, as reported in *Science* (Balter 2000), among other outlets.
22. At least one anonymous reviewer of a previous draft of this article hinted that the French School had a few problems with the dualism of identities and that explication of their position in this regard might shed light on the identity problem. I suspect it would, but such in-depth of understanding of the French School will have to come from some other author. My point here remains steadfast: our histories portray the French School as ensconced within the spatial-chorological vision.
23. Explicit references to chorology (or place and space) as a substance or object of study are difficult to find for this period. The chorological position did not claim place and space as a synthesis or aggregate substance of study and thus a potential systematic science. Rather, geography was offered as a synthesis approach applied to the phenomena examined by the systematic sciences. The discipline more or less invoked Kant’s division of knowledge to an academy that had dismissed Kant’s synthesis.
24. Of course, both the practice of geography in the U.S. and geography’s insertion into higher education preceded this moment course. Arnold Guyot was appointed to a post at Princeton in 1854, and the public was aware of the work of George Perkins Marsh (e.g., Wartz 1981). However, geography’s place within the academy was only formalized in the early twentieth century.
25. Koelsch (2001) informs us that the “eastern” universities (many of which were private) produced the most geography Ph.D.s during the discipline’s formative years (1893–1921).
26. Rediscovered by Marxist and critical geographers, the many sides of Kropotkin are presented to geography primarily in terms of his anarchist politics and visions about society (e.g., Breitbart 1981; Galois 1986). Kropotkin (1885) had much to say about geography and its identity beyond its potential emancipatory use.
27. As remembered by King (1979, 127),

[t]he sixties . . . were heady times for the young “revolutionaries” coming out of Washington, Iowa, Northwestern and, later, Chicago. The drive to establish geography’s place among the social sciences was underway and woe betide those who stood in its path refusing to join. If reason failed to convince them of the justness of the cause, then ridicule of their inability to understand the jargon and fashionable algorithms of the day would serve to dismiss them.
- Such a *modus operandi* has been too common in most shifts in the subidentities that have followed the demise of the spatial school, be they critical, social, or postmodern interpretations (e.g., Sheppard 1995).
28. As might be expected, the spatial statement prepared by the NRC was slightly more inclusive than those offered by individual scholars. “Geographers believe that correlations of spatial distributions, considered both statistically and dynamically, may be the most ready keys to understanding existing or developing life systems, social systems, or environmental change. They further believe that geography has made a significant contribution in the past to the foundations of knowledge needed to understand subsystems of the man-environment system” (NRC 1965, 9). At least two implications of this passage are noteworthy here. First, it recognizes the human-environment condition as a “theme” that the spatial identity can help to understand. Second, it seeks to reveal geography as a systematic science but makes no claim that “spatial relationships” constitutes a substance or object equivalent to that held by other disciplines.

29. Despite David Stoddart, Michael Williams, Andrew Goudie, David Lowenthal, David Harris, Ian Simmons, Ian Douglas, Anthony Bebbington, Timothy Forsyth, Simon Batterbury, and others who have created a rich literature on the human-environment condition, British geography seems hesitant to distinguish the discipline's human-environment component (as well as that of the mapping sciences) as equivalent to physical and human, where the "human" invariably assumes the spatial-chorological position, albeit from many views (e.g., Unwin 1992). In all fairness, however, Thrift and Walling (2000) allude to this issue in their recent review of geographical research in the United Kingdom.
30. Williams (1983) informs us that Sauer detested geography's obsession with its identity and disciplinary justification. I have no basis to dispute this claim. For one so disposed, however, it is interesting that Sauer offered several works highly related to these subjects throughout his career (Sauer 1924, 1925, 1941), leading Entrikin (1984) to identify him as "a philosopher in spite of himself." Livingstone (1992, 260) concurs.
31. Livingstone (1992, 308) also places Sauer within the chorological tradition, despite explicit recognition of Sauer's belief (similar to Schlüter's) that an object of study was required for disciplinary status and that this object was the cultural landscape. That Sauer found Richthofen's chorology intellectually congenial seems insufficient grounds to apply the chorological label to his vision of geographic problem solving.
32. I suspect that this move reflects, in part, Sauer's disapproval of positivist orientations (Entrikin 1984), to which the social sciences were overwhelmingly moving. In my opinion, Sauer moved from the natural sciences towards a humanist orientation during the course of his professional career.
33. Sauer's (1969) approach in his domestication work involved a series of conceptual overlays that provided a location—interior southeastern Asia—that he believed would hold the evidence for the earliest domestication. However, the approach does not supersede the principal intellectual contribution—the character of the human-environment conditions that gave rise to domestication.
34. And serve he has. Among his many honors, White has received the Public Welfare Medal of the National Academy of Sciences in 2000, the highest award given by the Academy and one rarely bestowed upon one of its own, and the National Medal of Science in 2001. He and his former students, such as Ian Burton, have received wide recognition for public service, including the award of the National Medal of Science (U.S.) awarded to Robert W. Kates in 1991.
35. The move from the cultural geography of "landscape morphology" to cultural ecology was far more profound than various assessments of geography indicate, and was not the simple progression of the Berkeley School, as Price and Lewis (1993) imply. Rather, as Butzer (1989b) and Turner (1989) argue, it represented the maintenance of Sauerian landscape (including historical) interests, refocused within a science-friendly template. This template emphasized theory-informed problems, systematic data collection (and to a lesser extent, standardized data), and the attempt to contribute to general concepts and explanations, although most cultural ecological work tended to demonstrate the nuances in concepts and explanations. According to Butzer (1994, 412–13), these works took on three main approaches: functional, behavioral, and structural. Harold Brookfield, Karl Butzer, and William M. Denevan were especially instrumental in moving U.S. geographers towards cultural ecology, their self-labeled research and specific interests and approaches notwithstanding (see Butzer 1989b), as was anthropologist Robert Mc. Netting. Cultural ecology was subsequently pushed in different directions by the next generation of students (see Butzer 1989b; Turner 1989, 1997; Zimmerer 1996), ultimately leading to strong structural orientations, influenced early on by Michael Watts, among others. It is interesting to me that this "school" or "sub-school" of human-environment geography never claimed formal status through a series of books with the title "cultural ecology," in contrast to the large number of such works appearing in anthropology.
36. The original Marxian-inspired critiques of human-environment research were directed to research labeled "human ecology" (e.g., Hewitt 1983), although almost all the concepts and work identified directly or through references, as in other critiques of human-environment work (Emel and Peet 1989), were those of risk-hazard research associated with the Chicago School. The rationale for the label would appear to be the Barrows lineage of this School, given that risk-hazard practitioners themselves made sparing reference to human ecology. Subsequently, however, inferences abound that the critique was also directed to cultural ecology, whose principal practitioners paid little, if any, heed to risk-hazard research (Turner 1989) and whose intellectual contributions were and remain virtually ignored in the "critical" literature.
37. It is noteworthy, however, that this tradition and domain of geography had to make its point to the decision makers in question. The original partitioning recognized only three of geography's four traditions (see below): physical geography, mapping sciences, and human geography. I suspect, but have no evidence, that the omission followed partly from fifty years of spatial-chorological hegemony, which led to an uncritical acceptance of the view that human-environment geography logically falls under the spatial-chorological umbrella. The omission had little to do with the numbers of practitioners in each geographic domain, more or less captured by membership in AAG specialty groups.
38. Why the social sciences at large have undervalued spatial and place-based geography is a complex subject that I do not address here. Perhaps part of the answer lies in American geography's academic origins in the sciences and the tardy push, which did not begin to take hold until the 1960s, to make the discipline resonate within the social sciences (Cox 1976).
39. Geography as a discipline does not sufficiently understand and appreciate the significance of large, institutional efforts such as the NCGIA and CSISS, and the visibility they bring to disciplines.
40. A few examples will suffice: (1) few doctoral and only a handful of undergraduate programs in the elite private universities and liberal arts colleges in the United States; (2) the resistance of the social sciences in the honorific societies of the United States to recognize the need for a section designating spatial or place-based expertise; and (3) the opposition of the Social Science Research Council to establishing geography as a constituent social science within the organization. The reader is also directed to Ullman (1980,

126), who addressed the status of geography at Harvard during the closure of the program there. To my European and Russian colleagues, who repeatedly point out that the U.S. experience is unique, at least in regard to disciplinary presence in elite universities, I note the paucity of geographers in their own honorific academies and the marginal role given to the formal discipline in charting the major research agendas for European science. In these latter roles, U.S. geography equals or surpasses its European and Russian counterparts.

41. Geographers, of course, moved to the new section for various reasons and not necessarily in support for the human-environment condition as the favored identity of the discipline. The “integrated” or “tweener” quality of the section and the strong support given to it by the environmental sciences, especially the ecologists in the adjacent new section, signal opportunities that never really developed for geography in its former location within the social sciences proper.
42. Hartshorne (1961, 124–25) took exception to this logic. He argued that the human-environment theme “must” be addressed “. . . to understand the different social conditions of different lands and places.” All the other sciences, therefore, had to examine the human-environment relationship, making that identity inappropriate for the discipline. Practice within higher education and research, especially within the social sciences, fails to support Hartshorne.
43. These agendas and programs are framed at the administrative apex of research under the aegis of the International Council of Scientific Unions (ICSU), the U.S. NRC, the Social Science Research Council (U.S.), and similar international and national organizations and programs.
44. In most seminars, my students encounter the following statements from Gilbert White (1972, 102–4):

One of the common and commonly destructive questions about research runs “But is it geography?” I would like to see us substitute “Is it significant?” and “Are you competent to deal with it?” . . . Let it not be said that geographers have become so habituated to talking about the world that they are reluctant to make themselves a vital instrument for changing the world . . . What shall profit a profession if it fabricates a nifty discipline about the world while that world and the human spirit are degraded?

Few practitioners would take issue with the moral and pragmatic rationale articulated by White. Real-world practice, however, is not the primary basis on which knowledge is partitioned in higher education and research. Indeed, I suspect White would concur that significant disconnects exist between the organization of effective practice and the organization of knowledge (disciplines) and research (funding divisions).

45. Butzer (1989a) takes issue with Hartshorne’s reading of Hettner, arguing that Hettner was not an archregionalist and that he opposed the view of geography as the study of distribution. Indeed, Butzer interprets Hettner’s position as closer to Sauer’s than to Hartshorne’s! In effect, Butzer (1989a, 45–46) suggests that Hartshorne’s interpretation of Hettner was self-serving—to justify Hartshorne’s views of Midwestern chorology more than to articulate Hettner’s view of geography. In this sense, Hartshorne may have engaged in the very act he lamented in the arguments of Schaefer (1953).
46. Although Sack (1972, 1980, 1997) has searched throughout

his career for an intellectual logic inclusive of most, if not all, geography as practiced, he consistently favors the spatial-chorological identity and makes no overt attempt to join it with the human-environment. In contrast, Peet (1998) makes an explicit claim concerning the merger of the two identities.

47. I have not developed this last bridging function in this article. I find the science-to-humanities range of interests and approaches in geography to be one of the discipline’s intellectually emancipating characteristics, despite my own earlier claim in this article about the adverse programmatic implications of a geography too strongly weighted towards the humanities. It is not evident, however, that geography as whole retains a strong appreciation for such a bridging function beyond our individual and tribal self-interests in retaining posts in institutions and organizations. Perhaps the most common complaint directed to me in my travels to geography programs in the U.S. and abroad is the dissipating interchange and appreciation of different teaching and research interests within the discipline. A wide array of practice apparently does not integration or bridging make.

References

- Abler, R. F. 1987. What shall we say? To whom shall we speak? *Annals of the Association of American Geographers* 77:511–24.
- . 1993. Desiderata for geography: An institutional view from the United States. In *The challenge for geography: A changing world, a changing discipline*, ed. R. J. Johnston, 215–38. Cambridge, MA: Blackwell.
- Ackerman, E. A. 1963. Where is a research frontier? *Annals of the Association of American Geographers* 53:429–40.
- Alaev, E. B. 1984. *Soviet geography today: Social and economic geography*. Moscow: Progress Publishers.
- Amin, A., and N. Thrift, eds. 1994. *Globalization, institutions and regional development in Europe*. Oxford: Oxford University Press.
- Angel, D., and M. T. Rock, eds. 2000. *Asia’s clean revolution: Industry, growth and the environment*. Sheffield: Greenleaf.
- Annals of the Association of American Geographers*. 1999. Book review forum. 89:144–59.
- Anuchin, V. A. 1977. *Theoretical problems of geography*. Columbus: Ohio State University Press.
- Balter, M. 2000. Was Lamarck just a little bit right? *Science* 288:38.
- Barnbrock, J. 1974. Prolegomenon to a methodological debate on location theory: A critical inquiry into the work of J. H. von Thünen. *Antipode* 6:59–64.
- Barnes, T. 1996. *Logics of dislocation: Models, metaphors and leanings of economic space*. New York: Guilford Publications.
- Barrows, H. H. 1923. Geography as human ecology. *Annals of the Association of American Geographers* 13:1–14.
- Batterbury, S., and A. Bebbington. 1999. Environmental histories, access to resources, and landscape change. *Land Degradation and Development* 10:279–88.
- Bebbington, A. 1993. Modernization from below: An alternative indigenous development. *Economic Geography* 69:274–92.
- Bell, M., R. A. Butlin, and M. Heffernan, eds. 1995. *Geography and imperialism, 1820–1940*. Manchester: Manchester University Press.
- Berdoulay, V. 1976. French possibilism as a form of neo-Kantian

- philosophy. *Proceedings of the Association of American Geographers* 8:176–79.
- Berry, B. J. L. 1978. Introduction: A Kuhnian perspective. In *Perspectives in geography 3: The nature of change in geographical ideas*, ed. B. J. L. Berry, vii–x. DeKalb: Northern Illinois University Press.
- Berry, B. J. L., and D. F. Marble, eds. 1968. *Spatial analysis: A reader in statistical geography*. Englewood Cliffs, NJ: Prentice-Hall.
- Billinge, M., D. Gregory, and R. Martin, eds. 1984. *Recollections of a revolution: Geography as spatial science*. London: Macmillan.
- Bird, J. 1989. *The changing worlds of geography: A critical guide to concepts and methods*. Oxford: Oxford University Press.
- Blaikie, P., and H. C. Brookfield, eds. 1987. *Land degradation and society*. London: Methuen.
- Boots, B. 2000. Canadian geography/Géographie canadienne: 1996–2000. *The Canadian Geographer* 44:2–3.
- Bowen, M. 1981. *Empiricism and geographical thought from Francis Bacon to Alexander von Humboldt*. Cambridge, U.K.: Cambridge University Press.
- Braun, B., and N. Castree, eds. 1998. *Remaking reality: Nature at the millennium*. London: Routledge.
- Breitbart, M. M. 1981. Peter Kropotkin, the anarchist geographer. In *Geography, ideology, and social concern*, ed. D. R. Stoddart, 143–53. Totowa, NJ: Barnes and Noble.
- Brigham, A. P. 1915. Problems of geographic influence. *Annals of the Association of American Geographers* 5:3–25.
- Brookfield, H. C. 1962. Local study and comparative method: An example from Central New Guinea. *Annals of the Association of American Geographers* 52:242–54.
- . 1964. Questions on the human frontiers of geography. *Economic Geography* 40:283–303.
- Bunge, W. 1962. *Theoretical geography*. Lund: Gleerup.
- Burton, I., R. W. Kates, and A. Kirkby. 1974. Geography. In *Interdisciplinary environmental approaches*, ed. A. E. Utton and D. H. Henning, 100–126. Costa Mesa, CA: Educational Media Press.
- Burton, I., R. W. Kates, and G. F. White. 1978. *The environment as hazard*. New York: Oxford University Press.
- Buttimer, A. 1971. *Society and milieu in the French geographic tradition*. Chicago: Rand McNally for the Association of American Geographers.
- . 1983. *The practice of geography*. London: Longman.
- Butzer, K. W. 1980. Civilizations: Organisms or systems. *American Scientist* 68:517–23.
- . 1989a. Hartshorne, Hettner, and *The nature of geography*. In *Reflections on Richard Hartshorne's The nature of geography*, ed. J. N. Entrikin and S. D. Brunn, 35–52. Washington, DC: Association of American Geographers.
- . 1989b. Cultural ecology. In *Geography in America*, ed. G. L. Gaile and C. Willmott, 192–217. Columbus, OH: Merrill.
- . 1994. Toward a cultural curriculum for the future: A first approximation. In *Rereading cultural geography*, ed. K. E. Foote, P. J. Hugill, K. Mathewson, and J. M. Smith, 409–36. Austin: University of Texas Press.
- Campbell, J. A., and D. N. Livingstone. 1983. Neo-Lamarckism and the development of geography in the United States and Great Britain. *Transactions, Institute of British Geographers* N.S. 8:267–94.
- Capel, H. 1981a. *Filosofía y ciencia en la geografía contemporánea* (Philosophy and science in contemporary geography). Barcelona: Barcanova.
- . 1981b. Institutionalization of geography and strategies of change. In *Geography, ideology and social concern*, ed. D. R. Stoddart, 37–69. Totowa, NJ: Barnes and Noble.
- Chojnicki, Z., and J. J. Parysek, eds. 2000. *Polish geography: Problems, researches, applications*. Poznan, Poland: Bogucki Wydawnictwo Naukowe S. C.
- Chorley, R. J. 1973. Geography as human ecology. In *Directions in geography*, ed. R. J. Chorley, 155–69. London: Methuen.
- Chorley, R. J., and P. Haggett. 1967. *Socioeconomic models in geography*. London: Methuen.
- Church, R. J. H. 1951. The French school of geography. In *Geography in the twentieth century*, ed. G. Taylor, 70–90. New York: Philosophical Library.
- Claval, P., and A.-L. Sanguin, eds. 1996. *La géographie française à l'époque classique (1918–1968)* (French geography in the classical period, 1918–1968). Paris: Harmattan.
- Cormack, L. B. 1997. *Charting an empire: Geography at the English universities, 1580–1620*. Chicago: University of Chicago Press.
- Cosgrove, D., and S. Daniels, eds. 1988. *The iconography of landscape: Essays on the symbolic representation design, and use of past environments*. Cambridge, U.K.: Cambridge University Press.
- Cox, K. R. 1976. American geography: Social science emergent. *Social Science Quarterly* 57:182–207.
- . ed. 1997. *Spaces of globalization: Reasserting the power of the local*. New York: Guilford.
- Cronon, W. 1991. *Nature's metropolis: Chicago and the Great West*. New York: W. W. Norton.
- . ed. 1995. *Uncommon ground: Toward reinventing nature*. New York: W. W. Norton.
- Cutter, S. L., ed. 1993. *Living with risk*. London: Arnold.
- Darby, H. C. 1940. *The draining of the fens*. Cambridge, U.K.: Cambridge University Press.
- Davis, W. M. 1906. An inductive study of the content of geography. *Bulletin of the American Geographical Society* 38:67–84.
- Denevan, W. M. 1983. Adaptation, variation, and cultural geography. *The Professional Geographer* 35:399–407.
- Dicken, P. 1998. *Global shift*. 3rd ed. London: Paul Chapman.
- Dickinson, R. E. 1969. *The makers of modern geography*. New York: Frederick A. Praeger.
- . 1976. *Regional concept: The Anglo-American leaders*. London: Routledge and Kegan Paul.
- Douglas, I. 1986. The unity of geography is obvious. *Transactions, Institute of British Geographers* N.S. 11:459–63.
- Downing, T. E., ed. 1996. *Climate change and world food security*. NATO ASI Series: Series I: Global Environmental Change, vol. 37. Berlin: Springer-Verlag.
- Ehlers, E., ed. 1992. *Forty years after: German geography, developments, trends, and prospects 1952–1992*. Bonn: Geographische Institut der Universität Bonn.
- Emel, J., and R. Peet. 1989. Resource management and natural hazards. In *New models in geography: The political economy perspective*, ed. N. Thrift and R. Peet, 49–76. London: Unwin-Hyman.
- Entrikin, J. N. 1984. Carl O. Sauer: Philosopher in spite of himself. *Geographical Review* 74:387–408.
- Ettlinger, N. 1999. Local trajectories in the global economy. *Progress in Human Geography* 23:335–58.
- Fairhead, J., and M. Leach. 1996. *Misreading the African landscape: Society and ecology in the forest savanna mosaic*. Cambridge, U.K.: Cambridge University Press.

- Fenneman, N. M. 1919. The circumference of geography. *Annals of the Association of American Geographers* 9:3–11.
- Freeman, T. W. 1961. *A hundred years of geography*. Chicago: Aldine.
- . 1980. The British school of geography. *Organon* 14:205–16.
- Fuller, S. 2000. *Thomas Kuhn: A philosophical history for our times*. Chicago: University of Chicago Press.
- Gaile, G. L., and C. J. Willmott, eds. 1989. *Geography in America*. Columbus, OH: Merrill.
- Galois, B. 1976. Ideology and the idea of nature: The case of Peter Kropotkin. *Antipode* 8:1–16.
- Geddes, P. 1898. The influence of geographical conditions on social development. *The Geographical Journal* 12:580–87.
- Glacken, C. J. 1960. Count Buffon on cultural changes of the physical environment. *Annals of the Association of American Geographers* 50:1–21.
- . 1967. *Traces on the Rhodian shore: Nature and culture in Western thought from ancient times to the end of the eighteenth century*. Berkeley: University of California Press.
- Glick, T. F. 1984. History and philosophy of geography. *Progress in Human Geography* 8:275–83.
- Gober, P. 2000. In search of synthesis. *Annals of the Association of American Geographers* 90:1–11.
- Golledge, R. 1982. Fundamental conflicts and the search for geographic knowledge. In *A search for common ground*, ed. P. Gould and G. Olsson, 11–23. London: Pion.
- Goudie, A. S. 1986. The interaction of human and physical geography. *Transactions, Institute of British Geographers* N.S. 11:454–58.
- Gould, P. R. 1979. Geography 1957–1977: The Augean period. *Annals of the Association of American Geographers* 69:139–51.
- Graf, W. L. 1994. *Plutonium and the Rio Grande*. New York: Oxford University Press.
- Grossman, L. 1977. Man-environment relationships in anthropology and geography. *Annals of the Association of American Geographers* 67:126–44.
- Guba, E. G., ed. 1990. *The paradigm dialog*. Newbury Park, CA: Sage.
- Hägerstrand, T. 1968. *Innovation diffusion as a spatial process*. Chicago: University of Chicago Press.
- . 1976. Geography as the study of interaction between nature and society. *Geoforum* 7:329–34.
- Haggett, P. 1965. *Locational analysis in human geography*. London: Edward Arnold.
- Haggett, P., and P. Chorley. 1967. Models, paradigms and the new geography. In *Socioeconomic models in geography*, ed. P. Chorley and P. Haggett, 19–41. London: Methuen.
- Hajdu, J. G. 1968. Toward a definition of postwar German social geography. *Annals of the Association of American Geographers* 58:397–410.
- Hanson, S. 1999. Isms and schisms: Healing the rift between the nature-society and space-society traditions in human geography. *Annals of the Association of American Geographers* 89:133–43.
- Hanson, S., and G. Pratt. 1995. *Gender, work, and space*. New York: Routledge.
- Hart, J. F. 1982. The highest form of the geographer's art. *Annals of the Association of American Geographers* 72:1–29.
- Hartshorne, R. [1939] 1961. *The nature of geography: A critical survey of current thought in the light of the past*. Lancaster, PA: Association of American Geographers.
- . 1955. Exceptionalism in geography re-examined. *Annals of the Association of American Geographers* 45:205–44.
- . 1959. *Perspective on the nature of geography*. London: John Murray.
- . 1988. Hettner's exceptionalism: Fact or fiction? *History of Geography Journal* 6:1–4.
- Harvey, D. W. 1969. *Explanation in geography*. London: St. Martin's Press.
- . 1999. The Humboldt connection. *Annals of the Association of American Geographers* 88:723–30.
- . 2000. Cosmopolitanism and the banality of geographic evils. *Public Culture* 12:529–64.
- . 2001. *Spaces of capital: Towards a critical geography*. Edinburgh: Edinburgh University Press.
- Harvey, M. E., and P. B. Holly. 1981. Paradigm, philosophy and geographic thought. In *Themes in geographic thought*, ed. M. E. Harvey and P. B. Holly, 11–37. London: Croom Helm.
- Herbertson, A. J. 1905. The major natural regions: An essay in systematic geography. *Geography Journal* 25:300–12.
- . 1910. Geography and some of its present needs. *The Journal of Geography* 35:468–79.
- Hettner, A. 1905. Das Wesen und die Methoden der Geographie. *Geographische Zeitschrift* 11:545–64, 615–29, 671–86.
- Hewitt, K., ed. 1983. *Interpretations of calamity*. Boston: Allen and Unwin.
- Holt-Jensen, A. 1982. *Geography: Its history and concepts: A student's guide*. Totowa, NJ: Barnes and Noble.
- Huntington, E. 1915. *Civilization and climate*. New Haven, CT: Yale University Press.
- James, P. E., and G. J. Martin. 1981. *All possible worlds: A history of geographical ideas*. 2nd ed. New York: John Wiley and Sons.
- Jefferson, M. 1917. Some considerations of the geographic provinces of the United States. *Annals of the Association of American Geographers* 7:3–15.
- Johnson, D. W., ed. 1954. *Geographical essays by William Morris Davis*. New York: Dover.
- Johnston, R. J. 1978. Paradigms and revolutions or evolution? Observations on human geography since the Second World War. *Progress in Human Geography* 2:189–206.
- . 1991. *Geography and geographers: Anglo-American human geography since 1945*. London: Arnold.
- . 1997. Where's my bit gone? Reflections on *Rediscovering geography*. *Urban Geography* 18:353–59.
- Kasperson, J. X., and R. E. Kasperson, eds. 2001. *Global environmental risk*. Tokyo: United Nations University Press; London: Earthscan.
- Kates, R. W. 1987. The human environment: The road not taken, the road still beckoning. *Annals of the Association of American Geographers* 77:525–34.
- . 1988. Theories of nature, society, and technology. In *Man, nature, and technology: Essays on the role of ideological perceptions*, ed. E. Baark and U. Svedin, 7–36. Basingstoke: Macmillan.
- . 1995. Lab notes from the Jeremiah experiment: Hope for a sustainable transition. *Annals of the Association of American Geographers* 85:623–40.
- Kates, R. W., W. C. Clark, R. Corell, J. M. Hall, C. C. Jaeger, I. Lowe, J. J. McCarthy, H. J. Schellnhuber, B. Bolin, N. M. Dickson, S. Faucheux, G. C. Gallopin, A. Grübler, B. Huntley, J. Jäger, N. S. Jodha, R. E. Kasperson, A. Mabogunje, P. Matson, H. Mooney, B. Moore, III, T. O'Riordan,

- and U. Svedin. 2001. Sustainability science. *Science* 292: 641–42.
- Keatinge, M. W. 1901–1902. Geography as a correlating subject. *The Geographical Teacher* 1:145–49.
- Kellner, L. 1963. *Alexander von Humboldt*. Oxford: Oxford University Press.
- Kenzer, M. S. 1987. Tracking Sauer across sour terrain. *Annals of the Association of American Geographers* 77:469–74.
- Kersten, E. W. 1982. Sauer and geographic influences. *Yearbook of the Association of Pacific Coast Geographers* 44:47–73.
- Kimble, G. H. T. 1940. *Geography in the Middle Ages*. London: Methuen.
- King, L. J. 1979. Areal associations and regressions. *Annals of the Association of American Geographers* 69:124–28.
- Koelsch, W. A. 1969. The historical geography of Harlan H. Barrows. *Annals of the Association of American Geographers* 59:632–51.
- . 1980. Wallace Atwood's "Great Geographical Institute." *Annals of the Association of American Geographers* 70:567–82.
- . 2001. East and Midwest in American academic geography: Two prosopographic notes. *The Professional Geographer* 53:97–105.
- Kropotkin, P. 1885. What ought to be geography? *The Nineteenth Century* 21:238–58.
- Kuhn, T. J. 1962. *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- . 1977. Second thoughts on paradigms. In *Structure of scientific theories*, ed. F. Suppe, 459–82. Urbana, IL: University of Illinois Press.
- Lambin, E. 1994. *Modeling deforestation processes: A review*. Trees Series B: Research Report 1. Luxembourg: Publications of the European Community.
- Lawton, J. 2001. Earth system science. *Science* 292:1965.
- Leighly, J. 1938. Methodological controversies in nineteenth-century German geography. *Annals of the Association of American Geographers* 28:238–58.
- , ed. 1963. *Land and life: A selection from the writings of Carl Ortwin Sauer*. Berkeley: University of California Press.
- . 1976. Carl Ortwin Sauer, 1889–1975. *Annals of the Association of American Geographers* 66:337–48.
- Liverman, D. M., E. F. Moran, R. R. Rindfuss, and P. C. Stern, eds. 1998. *People and pixels: Linking remote sensing and social science*. Washington, DC: National Academy Press.
- Liverman, D. M., B. Yarnal, and B. L. Turner, II. Forthcoming. The human dimensions of global change geography. In *American geography at the dawn of the 21st century*, ed. C. Willmott and G. Gaile. Oxford: Oxford University Press.
- Livingstone, D. N. 1992. *The geographical tradition: Episodes in the history of a contested enterprise*. Oxford: Blackwell.
- Livingstone, D. N., and R. T. Harrison. 1981. Immanuel Kant, subjectivism, and human geography: A preliminary investigation. *Transactions, Institute of British Geographers* N.S. 6: 359–74.
- Lukermann, F. 1964. Geography as a formal intellectual discipline and the way in which it contributes to human knowledge. *The Canadian Geographer* 8:167–72.
- Mabogunje, A. L. 1984. Geography as a bridge between natural and social sciences. *Nature and Resources* 20:2–6.
- Mackinder, H. J. 1887. On the scope and methods of geography. *Proceedings, Royal Geographical Society* 9:141–60.
- Mair, A. 1986. Thomas Kuhn and understanding geography. *Progress in Human Geography* 10:345–69.
- Markusen, A. 1999. Fuzzy concepts, scanty evidence, policy distance: The case for rigor and policy relevance in critical regional studies. *Regional Studies* 33:869–84.
- Marsh, G. P. 1864. *Man and nature, Or, physical geography as modified by human action*. New York: Charles Scribner.
- Massey, D. 1999. Space-time, science, and the relationship between physical geography and human geography. *Transactions, Institute of British Geographers* 24:261–76.
- Matley, I. M. 1982. Nature and society: The continuing Soviet debate. *Progress in Human Geography* 6:367–96.
- May, J. A. 1970. *Kant's concept of geography and its relation to recent geographical thought*. Toronto: University of Toronto Press.
- McIntosh, R. P. 1987. Pluralism in ecology. *Annual Review of Ecology and Systematics* 18:321–41.
- Meyer, W. B. 2000. *Americans and their weather*. Oxford: Oxford University Press.
- Mikesell, M. W. 1974. Geography as the study of environment: An assessment of some old and new commitments. In *Perspectives on environment*, ed. I. R. Manners and M. W. Mikesell, 1–23. Publication no. 13. Washington, DC: Association of American Geographers.
- Mitchell, R. 1992. Hazards research. In *Geography in America*, ed. G. Gaile and C. Willmott, 410–24. Columbus, OH: Merrill.
- Morrill, R. 1993. Geography, spatial analysis, and social science. *Urban Geography* 14:155–80.
- National Research Council (NRC). 1965. *The science of geography*. Washington, DC: National Academy of Sciences.
- . 1997. *Rediscovering geography: New relevance for science and society*. Washington, DC: National Academy Press.
- . 1999a. *Our common journey: A transition toward sustainability*. Washington, DC: National Academy Press.
- . 1999b. *Water for the future: The West Bank and Gaza Strip, Israel, and Jordan*. Washington, DC: National Academy Press.
- Olwig, K. R. 1980. Historical geography and the society/nature "problematic": The perspective of J. F. Schouw, G. P. Marsh and E. Reclus. *Journal of Historical Geography* 6:29–45.
- Organizing Committee of the 29th International Geographical Congress. 2000. *Korean geography and geographers*. Seoul: Hanul Academy.
- O'Riordan, T. 1970. New conservation and geography. *Area* 2:33–36.
- , ed. 1997. *Ecotaxation*. New York: St. Martin's Press.
- Parry, M. L. 1990. *Climate change and world agriculture*. London: Earthscan.
- Pattison, W. D. 1964. The four traditions of geography. *Journal of Geography* 63:211–16.
- Peet, R. 1985. The social origins of environmental determinism. *Annals of the Association of American Geographers* 75:309–33.
- . 1998. *Modern geographical thought*. Oxford: Blackwell.
- Peet, R., and M. Watts, eds. 1996. *Liberation ecologies: Environment, development, social movements*. London: Routledge.
- Pickles, J., and M. J. Watts. 1992. Paradigms for inquiry? In *Geography's inner worlds: Pervasive themes in contemporary American geography*, ed. R. Abler, M. G. Marcus, and J. M. Olson, 301–26. New Brunswick, NJ: Rutgers University Press.
- Porter, P. W. 1978. Geography as human ecology: A decade of

- progress in a quarter century. *American Behavioral Scientist* 22:15–39.
- Porter, R. 1999. Afterword. In *Geography and the enlightenment*, ed. D. N. Livingstone and C. W. J. Withers, 415–31. Chicago: University of Chicago Press.
- Price, M., and M. Lewis. 1993. The reinvention of cultural geography. *Annals of the Association of American Geographers* 83:1–17.
- Reynaud, A. 1974. *La géographie entre le mythe et la science: Essai d'épistémologie* (Geography between myth and science: Essay on epistemology). Reims: Travaux de Institut de Géographie.
- Reynolds, J. F. Forthcoming. Nonequilibrium ecology. In *Encyclopedia of Global Environmental Change*, vol. 2. New York: John Wiley.
- Ripley, W. Z. 1895. Geography as a sociological study. *Political Science Quarterly* 10:636–65.
- Robbins, P. 1998. Authority and environment: Institutional landscapes in Rajasthan, India. *Annals of the Association of American Geographers* 88:410–45.
- Roberts, R. S., and J. Emel. 1992. Uneven development and the tragedy of the commons: competing images for nature-society analysis. *Economic Geography* 68:249–71.
- Robson, B. T. 1981. Geography and social science: The role of Patrick Geddes. In *Geography, ideology, and social concern*, ed. D. R. Stoddart, 186–207. Totowa, NJ: Barnes and Noble.
- Rocheleau, D., B. Thomas-Slayter, and E. Wangari, eds. 1996. *Feminist political ecology: Global perspectives and local expressions*. New York: Routledge.
- Rowntree, L. 1996. The cultural landscape concept in human geography. In *Concepts in human geography*, ed. C. Earle, K. Mathewson, and M. S. Kenzer, 127–59. Latham, MD: Rowman and Littlefield.
- Sack, R. D. 1972. Geography, geometry, and explanation. *Annals of the Association of American Geographers* 62:61–78.
- . 1980. *Conceptions of space in social thought: A geographic perspective*. Minneapolis: University of Minnesota Press.
- . 1997. *Homo geographicus: A framework for action, awareness, and moral concern*. Baltimore, MD: Johns Hopkins University Press.
- Sauer, C. O. 1924. The survey method in geography and its objectives. *Annals of the Association of American Geographers* 14:17–33.
- . 1925. The morphology of the landscape. *University of California Publications in Geography* 2:19–53.
- . 1941. Forward to historical geography. *Annals of the Association of American Geographers* 31:11–24.
- . 1969. *Seeds, spades, hearth, and herds: The domestication of animals and foodstuffs*. Cambridge, MA: MIT Press.
- Schaefer, F. K. 1953. Exceptionalism in geography: A methodological examination. *Annals of the Association of American Geographers* 43:226–49.
- Scott, A. J. 1998. *Regions and the world economy*. Oxford: Oxford University Press.
- Semple, E. C. 1911. *Influences of geographic environment on the basis of Ratzel's system of anthropogeography*. New York: Henry Holt.
- Sheppard, E. 1995. Dissenting from spatial analysis. *Urban Geography* 16:283–303.
- Silver, C. S., and R. S. DeFries. 1990. *One earth, one future: Our changing global environment*. Washington, DC: National Academy Press.
- Singh, J., ed. 2000. *Progress in Indian geography, 1996–2000*. New Delhi: Bahadur Shas Zafar Marg.
- Slater, D. 1977. The poverty of modern geographical enquiry. In *Radical geography: Alternative viewpoints on contemporary social issues*, ed. R. Peet, 40–57. Chicago, IL: Maaroufa Press.
- Smelser, N., and B. Badie. 1994. *Sociology*. Oxford: Blackwell.
- Smith, N. 1979. Geography, science, and postpositivist modes of explanation. *Progress in Human Geography* 3:356–83.
- Solot, C. O. 1986. Carl Sauer and cultural evolution. *Annals of the Association of American Geographers* 7:508–20.
- Sommerville, M. 1858. *Physical geography*. London: Murray.
- Stoddart, D. R. 1965. Geography and the ecological approach: The ecosystem as a geographical principle and method. *Geography* 50:242–51.
- . ed. 1981a. *Geography, ideology, and social concern*. Totowa, NJ: Barnes and Noble.
- . 1981b. The paradigm concept and the history of geography. In *Geography, ideology and social concern*, ed. D. R. Stoddart, 70–80. Totowa, NJ: Barnes and Noble.
- . 1987. To claim the high ground: Geography for the end of the century. *Transactions, Institute of British Geographers* N.S. 12:327–36.
- Storper, M., and R. Salais. 1997. *Worlds of production*. Cambridge, MA: Harvard University Press.
- Taaffe, E. J. 1974. The spatial view in context. *Annals of the Association of American Geographers* 64:1–16.
- Tatham, G. 1951. Geography in the nineteenth century. In *Geography in the twentieth century*, ed. G. Taylor, 28–69. London: Methuen.
- Taylor, G., ed. 1951. *Geography in the twentieth century*. London: Methuen.
- Thomas, W. M., Jr., ed. 1956. *Man's role in changing the face of the earth*. Chicago: University of Chicago Press.
- Thomson, J. O. 1948. *History of ancient geography*. Cambridge, U.K.: Cambridge University Press.
- Thrift, N., and D. Walling. 2000. Geography in the United Kingdom, 1996–2000. *Geographical Journal* 166:1–29.
- Turner, B. L., II. 1989. The specialist-synthesis approach to the revival of geography: The case of cultural ecology. *Annals of the Association of American Geographers* 79:88–100.
- . 1997. Spirals, bridges, and tunnels: Engaging human-environment perspectives in geography. *Ecumene* 4:196–217.
- Turner, B. L., II, and A. M. S. Ali. 1996. Induced intensification: Agricultural change in Bangladesh with implications for Malthus and Boserup. *Proceedings of the National Academy of Sciences of the United States of America* 93:14984–91.
- Turner, B. L., II, W. C. Clark, R. W. Kates, J. F. Richards, J. T. Mathews, and W. B. Meyer, eds. 1990. *The earth as transformed by human action: Global and regional changes in the biosphere over the past 300 years*. Cambridge, U.K.: Cambridge University Press.
- Turner, B. L., II, S. Cortina Villar, D. Foster, J. Geoghegan, E. Keys, P. Klepeis, D. Lawrence, P. Macario Mendoza, S. Manson, Y. Ogneva-Himmelberger, A. B. Plotkin, D. Pérez Salicrup, R. Roy Chowdhury, B. Savitsky, L. Schneider, B. Schmoock, and C. Vance. 2001. Deforestation in the southern Yucatán peninsular region: An integrative approach. *Forest Ecology and Management* 154:353–370.
- Ullman, E. L. 1980. *Geography as spatial interaction*. Seattle: University of Washington Press.
- Unwin, T. 1992. *The place of geography*. Harlow: Longman.
- Van Valkenburg, S. 1951. The German school of geography. In

- Geography in the twentieth century*, ed. G. Taylor, 91–115. New York: Philosophical Library.
- Vandermooten, E., ed. 2000. Special issues: 29th International Geographical Congress. *Belgeo* 1–4.
- Veblen, T. T., T. Kitzberger, and A. Lara. 1992. Disturbance and forest dynamics along a transect from Andean rain forest to Patagonian shrublands. *Journal of Vegetation Science* 3:507–20.
- Wagner, P. L. 1960. *The human use of the earth: An examination of the interaction between man and his physical environment*. Glencoe, IL: Free Press.
- Wartzt, W. 1981. *Geographia generalis* and the earliest development of American academic geography. In *The origins of academic geography in the United States*, ed. B. W. Blouet, 245–263. Hamden: Archon Books.
- Watts, M. 1983. *Silent violence: Food, famine and peasantry in Northern Nigeria*. Berkeley: University of California Press.
- Wescoat, J. L., Jr. 1987. The practical range of choice in water resource management. *Progress in Human Geography* 11: 41–59.
- Wheeler, J. O. 2000. Have we lost a generation of urban geographers? *Urban Geography* 21:377–79.
- Wheeler, P. B. 1982. Revolutions, research programmes, and human geography. *Area* 14:1–6.
- White, G. F. 1972. Geography and public policy. *The Professional Geographer* 24:101–4.
- Wilbanks, T. J. 1994. Sustainable development in geographic context. *Annals of the Association of American Geographers* 84:541–57.
- Williams, M. 1974. *The making of the South Australian landscape: A study in the historical geography of Australia*. London: Academic Press.
- . 1983. The apple of my eye: Carl Sauer and historical geography. *Journal of Historical Geography* 9:1–28.
- Withers, C. W. J., and D. N. Livingstone. 1999. Introduction: On geography and the Enlightenment. In *Geography and the Enlightenment*, ed. D. N. Livingstone and C. W. J. Withers, 1–28. Chicago: University of Chicago Press.
- Zimmerer, K. 1994. Human geography and the new ecology: The prospects and promise of integration. *Annals of the Association of American Geographers* 84:108–25.
- . 1996. Ecology as cornerstone and chimera in human ecology. In *Concepts in human geography*, ed. C. Earle, K. Mathewson, and M. S. Kenzer, 161–88. Latham, MD: Rowman and Littlefield.
- . 2000. The reworking of conservation geographies: Nonequilibrium landscapes and nature-society hybrids. *Annals of the Association of American Geographers* 90:356–69.
- Zimmerer, K. S., and K. R. Young, eds. 1998. *Nature's geography: New lessons for conservation in developing countries*. Madison: University of Wisconsin Press.

Correspondence: Graduate School of Geography and George Perkins Marsh Institute, Clark University, Worcester, MA 01610-1477, e-mail: Bturner@clarku.edu.