The More Things Change

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Geographers have always been concerned with the interactions of human societies and the earth, with mapping, with how activities are spatially interrelated, and with what constitutes a place. Similarly, while exploring these separate grounds, the academicians among them have continually sought a unifying theme. Mankind and the earth may be a sufficient center, but only if each is expansively defined. Synthesis, often the defining word, however, ranges from once over lightly to deep understanding of complex interrelationships. Most eschew the former and are unable to do the latter well. Thus few practitioners practice geography, most practice parts, sometimes overlapping parts. Throughout the past century, geographic themes such as geopolitics, regional studies, urbanization, environmental studies, GIS, and globalization have played major roles in society. Geographers continue to be plagued by the necessity of fending off the siren song of environmental determinism in many guises. These geographic offspring have each taken on lives of their own, often leaving geography behind. The many specialty groups in the Association reflect the eclectic character of the field and the formidable task of achieving coherence. Physical geography, stepchild of the field at midcentury, now bridges earth system dynamics and political ecology.

Enrollments in geography courses have swelled. Geographic contributions are evident in the humanities and sciences and acknowledged at the core of front-page news. Will the profession thrive in this century? Perhaps not. But discourse among us may help, and, because the rewards to society can be great, the mission to practice geography must be sustained.

The professional geographer is the primary custodian of the concern for the interrelationship of human beings and the environment. Geographers are not, of course, the exclusive contributors to an understanding of this fundamental and complex relationship. But, professionally, geographers can reasonably lay claim to a scholarly tradition of seeking to understand the interaction of human society and nature. While it is easy to stake this claim, it is difficult to live up to it. Yet the effort to do so is evident in geographic scholarship from antiquity to the present. And, in the new guise of sustainability, throughout society, it is now recognized as a vital concern for the future.

While emphasized here, and perhaps the most holistic view, society and environment is one of several consistent themes evident in geography over the past hundred years. Four themes recur, traditionally characterized as: man and the land, place or region, location, and mapping. This "constancy" gives rise to my title. Certainly the world of 2004 is not the world of 1904. Yet, the French proverb notes "plus ça change, plus c'est la même chose" (The more things change, the more they remain the same). The proverb characterized my impression of important aspects of the field over the past century, primarily the last half century. *Impressions* is the appropriate word because this response to the symposium query, Where we have come from and where do we stand? is not a scholarly account of geography, or a portion of the field, during this centenary of the Association of American Geographers. Any number of books and reports collectively have done this well, including relatively recent studies such as Haggett's *The Geographers Art* (1990), Gregory's *Geographical Imaginations* (1994), and Abler, Marcus, and Olson's *Geography's Inner Worlds* (1992).

Specific names for the four recurring themes have varied with author and to some extent with the times. Separation between them waxes and wanes from complete isolation to strong interaction. Additional fractionation occurs on several other planes: human and physical geography, specialties by subject or orientation, such as political and historical geography or resources and cities. Some measure of the variety and kind of these distinctions is illustrated by the thirty-something specialty groups in the Association. Many of these subspecialties are other disciplines. The number of disciplines deemed relevant to the work of geographers contracts and expands with the fashion of the times, interests of leaders in the field, or what are viewed as commanding new ideas, frontiers of the field.

Annals of the Association of American Geographers, 94(4), 2004, pp. 723–728
Published by Blackwell Publishing, 350 Main Street, Malden, MA 02148, and 9600 Garsington Road, Oxford OX4 2DQ, U.K.

Countering the tendency of specialization to fracture the field of geography, particularly over the last century, have been the efforts to define "the field," an overarching definition. The broad statement that as history is the study of phenomena over time, so geography is the study of phenomena in space provides limited guidance. For several decades around midcentury, much attention appears to have been devoted to the matter of definition. Professor Hartshorne's treatise *The Nature of Geography* (1939) represents one of the most comprehensive and influential contributions to the debate. At an opposite pole is simply a remark (perhaps apocryphal!) attributed to another distinguished professor of geography, Lester Klimm, that "geography is synthesis, the science of once over lightly." While there is a flippant quality to the latter observation, each contains an element of truth and was presumably made with some seriousness.

Change and Persistence: The Earth and Society

The past century has been one of enormous changes in science, technology, culture, and society. Many of these are evident in the four geographic themes. In brief descriptions of each, special attention is focused here on the man-land theme, now more properly called society and environment.

Science and Technology

Because of geography's connection with the earth, any retrospective of the last hundred years must recognize three major features: one revolutionary, one instrumental, and the third topical. The concept of plate tectonics and sea-floor spreading revolutionized the field of geology in the middle of this century. Soundings of the ocean bottom during World War II revealed, instead of a nearly featureless ocean floor, a highly varied topography including regions of great relief largely explained by the revolutionary concept. Similarly, analyses of many physiographic features—distinctive differences between coastal zones on the margins of continents, the spatial distribution of many physiographic regions, as well as the location of active tectonic and volcanic zones—can be placed within the framework of plate tectonics. This framework is of major importance to geography whether one emphasizes history, geomorphology, or physiography, landform and process, terms sometimes used synonymously.

Extraordinary new technology has made possible ways of measuring time and space more precisely and has provided techniques for analyzing physical, chemical, and biological materials. Aside from the ubiquitous computer, an illustrative, perhaps symbolic, list includes satellites, isotopes, and mass spectrometers. Satellites have made possible continuous observations of land, water, and air. Isotopes have provided mechanisms for tracing the flux of materials throughout earth systems and the ability to provide absolute dating not only of stratigraphic sequences but, most recently, of the surfaces of landforms. The mass spectrometer symbolized the capacity to measure in increasingly small concentrations the chemical composition of the myriad of substances, both natural and anthropogenic, comprising the geosphere, atmosphere, hydrosphere, and biosphere of the globe.

A dominant topic in physical geography and now, significant in human geography, at least in the past half century, is climate. Climate has been among the most important factors in geographic regions and one of the most prominent factors in analyses of human use and adaptation to the environment. Although the mechanism and prospect of human contributions to greenhouse gases was described over a century ago, the distinguishing feature of public and professional interest in climate over the last forty years is the realization of the probable significant scale of the anthropogenic contribution to modern climate change. This realization has stimulated major research efforts directed at detecting the magnitude of the change, the mechanisms involved, and the potential impacts of climate change on the environment and on human affairs.

Beginning in midcentury, the quantitative revolution was a key feature of geographic study paralleling the same orientation in geology and in many of the social sciences. In physical geography, particularly in physiography, the quantitative orientation contributed to a focus on geomorphic processes as opposed to the evolution of landscapes. Measurements of the morphology of landscapes, rivers, hillslopes, and uplands, along with the topology of drainage basins, emphasized a search for order in the landscape to be revealed by consistencies or regularities in empirical measurements. While acknowledging evolution of landscapes over long geologic timescales, emphasis was placed upon the idea of process-response models in attempts to explain resulting landforms. The concept of equilibrium or quasi-equilibrium, along with mass balance of water and sediment flows, was cast in a systems framework. In some ways, emphasis on equilibrium matched similar views in ecology at that time.

As in so much of geographic inquiry, two fundamentals, time and space, posed, and continue to pose, the most challenging problems. For the most part, physiographers and geomorphologists substitute space for time

in the absence of sequential observations at a given place over long periods of time. Over very short periods of time individual events, climatic, tectonic, or human induced, may significantly alter features of the landscape or transform entire landscapes. Climate change implies a longer time scale marked by periods during which the relative importance of specific processes within suites of processes may produce very different landforms. Geologic time, in contrast, is a very much longer period of time. It presents two related but distinctive elements; some geomorphic features created in the past may persist on the modern landscape for millions of years. At the same time, many landforms over a very long period of time "melt" away, resulting in regions of low relief. Unraveling the impacts of processes associated with these different time scales is difficult in itself. Equally important, and more difficult, is the question of how the impacts of processes over these different time scales may relate to human occupancy of the land. Going back to the beginning of the twentieth century, the elegant model of landscape evolution over a very long period as a function of structure, process, and stage formulated by William Morris Davis (1899) (a participant in the founding of the Association of American Geographers) appears irrelevant to an analysis of the human landscape. On the other hand, the characterization of modern processes, for example, the occurrence of natural hazards, is clearly relevant. Equally relevant are the fluctuations of processes and landform change associated with them during periods of different climate regimes.

Spatial scale poses equally difficult problems. Studies of the rates of movement of pebbles in streams or of rills and rates of erosion of hillslopes do not automatically translate into how mountains are made. Both time and space are involved (Wilcock and Iverson 2003). Within the past several decades, computer models of landscape evolution have begun to provide a new framework for the quantitative study of landforms. Quantitative models of the evolution of the longitudinal profiles of rivers, based upon simple assumptions about uplift and erosion, can be made to mimic our conceptions of the process. More recently, models including principles of sediment transport and erosion of bedrock appear to match features associated with the morphology of mountains, piedmont, and lowland regions. Such models appear to span micro and macro scales. However, tests of the degree to which they match both process and form remain elusive. The ability to date exposed land surfaces, however, has made it possible to relate rates of uplift and erosion to field studies, for example, in the Himalayas (Burbank et al. 1996), providing some constraints on model building.

Three major trends in the earth sciences have driven many aspects of both physical and human geographic inquiry. Concomitantly, physical geography has transmogrified into earth system science, retaining the concept of an integrated approach to land, water, air, and biota. Along with the holistic view, specialties have also proliferated. Physiography and the society-nature theme provide an illustrative view. A number of aspects of this story are also applicable to many of the themes in geography.

Society and Environment

The interaction of human activities and the natural environment has been a consistent interest of geographers reflected in the explorations and writing of Herodotus in the fifth century BCE and in the nineteenth century (1769–1859) in the work of Alexander von Humboldt. More recently Glacken, in his classic treatise *Traces on the Rhodian Shore*, has reviewed the changing and varied "attitudes toward nature and man's place in it" (Glacken 1967, ix). To some extent, the interaction of human and natural processes in creating and modifying the landscape may come close to being a synthesis of many facets of geography. The character of regions or places is inseparable from their spatial distribution and, in turn, both must somehow be depicted graphically, by maps elucidating these relationships. But it is a stretch. While every human activity on earth (or in space) affects, or is affected by, the environment, important economic, social, and cultural phenomena often include many strong spatial and other components in which the physical or biological environmental component is vanishingly small. Glacken distinguishes two threads, environmental influence and man as a geographic agent. Today, more often than not, the natural landscape is seen as the setting acted upon by human beings. In contrast, although with deep historical roots (Glacken 1967, 156), the influence of the environment on human affairs propounded by Huntington (1945) and his disciples was pervasive early in the last century, in excess, culminating in the idea of environmental determinism. While recognizing the importance of geography and natural processes, geographers have amply demonstrated since that the notion of "determinism" is too simplistic to capture or explain the myriad of factors influencing the distribution of human settlements on the earth.

In the modern era, recognition of the significant role of humans as geographic agents was ushered in with the publication of George Perkins Marsh's remarkable book *Man and Nature or Physical Geography as Modified by Human Action* (1864). Citing the devastating effects of

agriculture, grazing, and deforestation on the landscape, primarily in the Middle East and in Europe, Marsh demonstrated the enormous impact of human activities. Two subsequent volumes edited by geographers, *Man's Role in Changing the Face of the Earth* (Thomas 1956) and *The Earth as Transformed by Human Action* (Turner et al. 1990), not only reflect the significance of Marsh's contribution, but recognition that the cumulative impact of human activities on the earth rivals that of natural forces.

The scale of human impact has grown exponentially as pollutants emitted to the land, air, and water have dispersed over the globe. And, in today's parlance, the "footprint" of urban agglomeration includes not only the space absorbing waste, but also land providing food and water.

To some degree, the quantitative revolution was a unifying force within geography, at least in bringing different interests within the field into common conversation. The development of computer modeling, combined with geographic information systems (GIS), however, has transformed the field and made possible more comprehensive studies of both earth surface processes and human activities and their interaction. Stimulated initially by interest in climate change, integration of models of atmospheric dynamics, variations in land cover in space and time, along with decision-making options enhances, indeed, forces cooperative inquiry by geographers and others in diverse specialties and disciplines (National Research Council 1999). The strides being made in the development of huge complex models are remarkable. Of course, the usual caveats apply: Garbage in–garbage out; Are the assumptions demanded reasonable? Do they represent reality? and, even more difficult, How does one comprehend the behavior and output of models made up of thousands of gigabytes? These are difficult questions, but the prospects are breathtaking.

Once one recognizes the scale and myriad of interactions of humans and the environment, it becomes increasingly difficult to make sharp distinctions between the influence of environment on society and humans as geographic agents. Moreover, this reciprocal relationship includes recognition that the way the land is used at a place is driven not simply by indigenous features of the landscape, but often by social forces remote from the site (Blaikie 1985). Human activities are not simply "modifying," they are transforming and creating new environments and perceiving and using landscapes in new and different ways.

Thus, bursts of enthusiasm about quantification and models properly evoke the response of many geographers, and others, who argue cogently that the infinite variety of humanistic, cultural, social, and economic drivers of human behavior cannot be captured by numbers and computer models. Indeed, attempts to quantify human behavior may obscure or mislead understanding of why and how societies use and alter the landscape. Yet it is these social attributes that are central to an explanation of how human beings perceive and create space, that is, "geography." This important conflict, between the general and the specific, appears again, below, in a brief comment on region and place.

Changing Fashions, Persistent Themes

The post-Earth Day (1970) discovery of environment by citizens and politicians is, in some ways, a fascinating illustration of the rediscovery of the human-land theme in geography. The epiphany itself has been a bit dismaying to geographers as George Perkins Marsh has been resurrected, as has environmental determinism, in the search for simple explanations of how societies flourish or, perhaps unintended, in terms of emphasizing the need to maintain the natural scene. Increasing evidence of the enormous impact of human beings on the natural systems of the earth, including impacts of climate change, has properly stimulated demands for preservation and restoration. In the extreme, these carry with them the notions that the natural environment is static and that the limits to human activities are determined by an undisturbed natural scene. They are not. But, it is hard to imagine that progressive destruction of the natural landscape is a route likely to provide a viable home for mankind.

From a professional point of view, the study of society and the environment, a traditional theme of geography, has taken on a life of its own. Programs, departments, schools, and even universities in the environment have burgeoned, many independent of geography. In many instances, these expansive programs have been initiated and shepherded into thriving institutions by geographers, occasionally not only eclipsing their origins but also leading to the demise of the geographic center. This phenomenon is not, however, unique to the theme of humans and the environment in geography.

Urban studies blossomed in the 1960s, sometimes in association with planning. Geographers were at the forefront of this effort, which saw the creation of a number of subfields such as urban economics and urban planning. Classic geographic models of Cristaller and Loesch were complemented by new models based upon the expected spatial distribution of rents. A most important influence was Isard's (1956) development of location theory and regional science, which has played a major role in regional studies.

Urban studies could be classified as an area (regional), place, or spatial theme, all geography. The urban/regional focus had a strong quantitative orientation. Hypotheses put forward to explain the motivating forces producing the social, cultural, and physical geography ranged from the economic, classical, or Marxist, to perceptions of space and race. The rich philosophic inquiry devoted to exploring alternative ways of viewing region and place, including distinctions between the theoretical scientific and the particular, has contributed not only to geography but to the broader area of social theory as seen in the work of Harvey (2003), Entrikin (1991), Tuan (1977) and many others. These inquiries may well provide the most encompassing views of geography. They reinforce the eclectic character of the field, enhancing ways of perceiving aspects of the four themes: space, place, maps, and society and the environment. Geographers made and continue to make major contributions to urban and regional studies, but the weight of inquiry, research funding, and layman's perception of these fields lies outside the academic discipline.

Foreign area studies received a large boost coming out of World War II. Led by geographers, they drew upon the broadest spectrum of scholars; linguists, historians, anthropologists, economists, political scientists, and a host of the proper suspects. While many exist, the number of programs appears to have waned, but the abysmal ignorance of the Middle East, matching the results of occasional tests of world geographic knowledge, appears to be sparking a revival of regional geography. Course enrollments are up and interest is expanding, thanks to the devoted efforts of many geographers as well as the National Geographic Society.

Spatial analysis at all scales has been transformed by the invention of GIS. Integration of a myriad of variables associated with a particular area or space on the globe, virtually impossible by paper overprints and variable grids, is now common practice. Moreover, this integration permits mathematical and statistical analysis of the data and enhanced description of spatial patterns. Combinations of remote sensing, GIS, digital terrain mapping, radar, lidar, and other imaging techniques, as well as global positioning systems, have opened vistas to spatial analysis and process studies on the ground and from above. GIS techniques have become central to the geographic enterprise, and geographers remain as major contributors. Moreover, geographers continue to contribute to the understanding and interpretation of what maps do, do well, and do not do. But the production of maps has long been a large and costly enterprise and one not dominated by those who see themselves as geographers.

The Future: The Best of La Même Chose

Given the amazing transformation of the past century, one ventures into the future with trepidation. A rehearsal of the recent past, however, suggests some likely directions of inquiry in the near future. While the topics reflect the orientation of a physical geographer, the higher geographic calling encompassing human behavior and its surroundings should be of manifest interest even in complex modeling efforts. At the same time, continuation of the pursuit of independent, qualitative, and subjective analyses maintains its importance.

Large, complex, and inclusive models of earth systems and their interaction with human activities are likely to play an increasing role in geographic inquiry. Although driven in part by interest in the environment, models also cast light on analysis of a host of separable elements such as transportation or urban design. The concomitant burden of understanding and interpreting the meaning of the output of such models must accompany their growth.

Techniques of observation at all geographic scales will allow increasing spatial coverage on the one hand and greater precision on the other. Methods of storing and manipulating data obtained by these new techniques will similarly grow.

In some ways at an opposite pole of scale and inquiry, partly driven by attempts to create models demanding understanding of processes and partly facilitated by the technologies of observation and measurement, field studies of processes will, one hopes, thrive. Smart models are not a substitute for observation and basic data; presumably, the two are complementary. Of particular importance in physical geography, and perhaps in the social sphere, are well-conceived programs of observation maintained over long periods of time.

Given the wholesale theft of turf to which the discipline of geography has been subjected, one might argue, "Who needs it?" Carl Sauer's (1956, 389) often cited observation is one response: "The interest is immemorial and universal; should we [professionals] disappear, the field will remain." For the professional, the front page of the newspaper is another response. Issues in the contemporary scene from globalization to sustainability confirm geography's relevance, if such argument is necessary. Experience indicates that as specialization of fields increases, the necessary blinders hinder interdisciplinary inquiry. Moreover, the requisite imagination needed to create something new out of a synthesis is always in short supply. Aside from the somewhat perverse reward structure within which many would-be scholars operate (not an issue to explore here), most are happy to have found a not unreasonable correlation

between several variables that link human interaction with some aspect of the earth systems, let alone the reasons that may lie behind the relationship.

A spatial or geographic point of view is essential in trying to make sense of human history and of an ever-changing present. Synthesis, aside from sounding mechanistic, is an essential task if it implies creation of something new and greater than the sum of many separate parts (ingredients in a cooking recipe but no recipe.) Once over lightly won't do. Understanding the many elements that influence the way in which humans conceive of and configure their activities on the surface of the earth requires depth and breadth, a rare combination. The puzzles and problems are fascinating and important.

Despite the inevitability of change, it is likely that the four themes of geography—place, spatial location, mapping, and the interaction of society and the environment—will remain. As noted earlier, they are, or can be, interrelated. Geography has an historical, if not a unique, claim to each. Moreover, at this moment of global awakening to the overriding importance of the reciprocal relationship between society and the environment—a truly physical-social-geographic problem—geography, building on its unique heritage, has both an opportunity and perhaps a responsibility, to provide holistic insights into the global issue. New tools of observation at many scales and ease of international communication facilitating cooperative study combined with recognition of the importance of the society-environment theme enhance the opportunity. New findings, new technology, and broad acknowledgement of the issue all represent immense change. What remains the same is the geographic theme itself.

Should the society-nature focus become the single unifying definition of geography satisfying the diverse substantive differences and perspectives of the field? Probably not. Too many facets of human activities and behavior can profit from a geographic perspective that focuses on space, or place, or on maps as ways of conceiving and describing attributes in space. At the same time, as long as the field remains inclusive and a place of spirited inquiry and debate, pursuit of the field of geography is needed both for the perspectives provided and because the aspiration to see holistically human behavior and the environmental world is a vital calling.

Acknowledgments

I am indebted to David Harvey and to Erica Schoenberger for decades of friendship and tireless efforts to educate an aspiring geographer. I am especially grateful to Erica in this instance for her critical reviews of this essay in an attempt to make it coherent and even useful. If it is neither, she bears no blame. If the reverse, she bears much praise.

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