Presidential Address

In Search of Synthesis

Patricia Gober

Department of Geography, Arizona State University

The American scientific community currently is being challenged to provide the basic and applied research that is necessary for the nation to make better decisions related to the environment. Concern with the environment has led to the demand for a more synthetic perspective, one that identifies linkages among the cultural, social, political, economic, physical, biological, chemical, and geological systems that govern our world. Geography has a historic opportunity to position itself at the nexus of the natural sciences, the social sciences, and the humanities, and to lead the search for synthesis. In order to achieve this goal, however, we must leave the isolated intellectual realms into which we have retreated, dampen the fires of criticism that have polarized us, rethink the way graduate education is structured, foster new networks of communication, and develop a disciplinary culture that values both specialized analytical research and broader integrative research. Key Words: synthesis, science policy, disciplinary specialization, habits of the mind.

In preparing for this address, I reviewed the statements of my predecessors, noting that some chose to address discipline-wide issues while others spoke about their own personal research agendas (Brunn 1998). I decided to follow the former course and explore the current culture of American geography and how it might be reshaped to respond more effectively to strategic national initiatives. Among previous presidential addresses, I draw particular inspiration from one published forty-six years ago, in 1953, by Glenn Trewartha, a climatologist and regional geographer from the University of Wisconsin–Madison who wrote about the geography of Japan and whose textbooks, *The Earth’s Problem Climates* and *An Introduction to Climate*, introduced many young geographers of the 1960s, 1970s, and 1980s to the basics of climatology (Trewartha 1953, 1961, 1968). What is significant to me about Trewartha’s address is that, despite his status as a physical geographer, he used his presidential statement to lament the neglect of population in the discipline of geography, which, at that time, was bifurcated into the subdivisions of physical and cultural geography. He argued for a new, threefold structure organized around population, the physical earth, and the cultural landscape. My subdiscipline of population geography traces its beginnings to Trewartha’s powerful and eloquent message (Jones 1981; White et al. 1989). This statement, hopefully in the Trewarthian tradition, challenges the discipline of geography to develop new intellectual habits that are open to opportunities in disparate parts of the discipline. My thesis is, very simply, that the future of geography lies in the search for synthesis.

These comments about synthesis grow out of my experiences as Association of American Geographers President. Shortly after my election in 1996, I reorganized some of my professional activities with an eye toward gaining a more discipline-wide perspective. In one of my early presidential columns, I described my bewilderment and dismay at attending sessions outside my specialty of population geography at the Charlotte AAG meetings. I noted the meeting-within-a-meeting concept in which members of our profession interact only with those geographers who share their interests, philosophies, methods, and specialized language (Gober 1997a). Fragmentation and compartmentalization come at an extraordinarily inopportune time for our discipline because they limit our ability to re-
spond effectively to the growing demand in science and society for a more synthetic perspective, one that identifies creative linkages between the human and natural systems that govern our world. While geography is not alone today in its search for synthesis, we are exceptionally well positioned by tradition and by our intellectual makeup to bridge the major branches of knowledge in the sciences, social sciences, and humanities. To be leaders in the search for synthesis, however, we must pull out of the isolated realms into which many of us have retreated, dampen the fires of criticism that threaten to polarize us, and confront together the complex geographic problems facing our society.

I offer these comments with considerable humility because my credentials in synthesis are very recent. This statement is not the culmination of a long research and teaching career in building bridges between the human and the natural world. Indeed, I have cringed on a number of recent occasions when colleagues and former graduate students have reminded me of past words and deeds that are at odds with my current observations and exhortations. To them, I can only say that the world of geography looks different to me now than it did fifteen or twenty years ago. My training, experience, and past research are those of a geographic specialist—someone who early on identified a network of like-minded social scientists, internalized its specialized dialect, and learned how to publish in its journals. Only recently, I have come to think less about my individual subfield and more about American geography as a whole and where it fits in the nation’s scientific and intellectual enterprise.

I recently reviewed Peter Haggett’s Geography: A Modern Synthesis, first published in 1972. Haggett challenged students to “abandon familiar and comfortable ‘straightjackets’ and to focus on relationships between man and his environment, their spatial consequences, and the resulting regional structures that have emerged on the earth’s surface” (Haggett 1975: xi–xii). The process of geographic synthesis really is not much different today. What is different is the societal context in which our discipline is practiced. Although we did not, as a discipline, heed Haggett’s call for synthesis twenty-seven years ago, we can ill afford to ignore his message today.

My subsequent remarks will be organized into four sections. In the first, I will describe recent trends in American science policy and indicate what they mean for a more synthetic perspective in geography. In the second section, I will identify the barriers to synthesis in our field. Overcoming these barriers will require new habits of the mind which I will describe in the third section. In the fourth and final section, I will sum up with remarks about the need for greater balance in our departments and discipline.

The National Imperative

Let me begin on a high note and make the point that American geography is currently in a period of growth and prosperity. Our presence in precollegiate education is at an all-time high, thanks in large part to the network of National Geographic Society-sponsored State Geographic Alliances; the College Board recently announced that it will add a geography course and exam to its Advanced Placement program beginning in 2000-01; and we are in the midst of a bull market for new geographers in which the number of new bachelor’s degrees is higher than at any previous time in our history. The recent establishment of five new Ph.D. programs (University of Connecticut, Florida State University, Kansas State University, Southwest Texas State University, and Hunter College) is testament to a growing demand for training in geography and for the basic and applied research that Ph.D. programs generate. Geographic Information Systems (GIS) have spawned industries and career tracks in fields ranging from natural resource development and urban planning to commercial marketing. Geography, I believe, has prospered during the 1990s because we have linked our expertise to national policy initiatives in technology, education, and global and environmental issues. We are doing, or we are perceived to be doing, what society deems important.

Our current case to the public about what geography contributes to science and society is based heavily on synthesis. Let me quote from the National Research Council’s (NRC) Rediscovering Geography, the landmark volume on the status of geography:

The value of these activities derives from geography’s focus on the evolving character and organization of the Earth’s surface; on the ways in which interactions of physical and human phenomena in space create distinctive places and regions,
the influences those places and regions have on a wide range of natural and human events and processes (NRC 1997:16).

We have positioned ourselves publicly as a synthetic discipline operating at the triple junction of science, social science, and the humanities. But are we really? For the sake of argument, I assert that we have these components in our discipline, but that they operate largely in isolation from one another, more akin to a confederation of feudal fiefdoms than to a union of mutually interdependent states. Far from a synthetic discipline, we are a discipline that, in the struggle for respectability from our cognate peers, has lost much of its former power to reach across branches of knowledge to create a common groundwork of explanation. This strategy may have served us well in the past, but it seriously hinders our ability to capitalize on current and future opportunities.

American Science Policy

Historic discussions are now underway about changing the longstanding relationship between American science and society. Too many geographers and too many social scientists are oblivious to these discussions. This point hit home to me last year as Congressman Vernon Ehlers of Ohio, Vice-Chair of the U.S. House of Representatives Committee on Science, visited my university to present an early-draft report of the Committee's study of the nation's science and technology policy. Although Congressman Ehlers's remarks were of sufficient interest to merit the attention of almost the entire life and physical scientific communities on the Arizona State University campus, I was, to the best of my knowledge, the only geographer and the only social scientist in an audience of some three hundred people.

And yet, there are important messages for us in the text of Ehlers's remarks; in the Committee on Science's report to Congress, Unlocking Our Future: Toward a New National Science Policy; and in subsequent discussion in Washington and the media. First and foremost, concern over the environment has been elevated to a very short list of high-priority national concerns along with national security, health, and the economy. The latter three are longstanding priorities that date back to Vannevar Bush’s 1945 report to the President, Science: The Endless Frontier, which laid the foundation for our post-war science policy (Bush 1946). While acknowledging the continued need for research that contributes to national security, health, and the economy, the Committee on Science states that “the challenges we face today cause us to propose that the scientific and engineering enterprise ought to move towards center stage in a fourth role: that of helping society make good decisions. We believe this role for science will take on increasing importance, particularly as we face difficult decisions related to the environment” (U.S. House of Representatives 1998:2). There is a clear acknowledgment that the Earth’s natural and human environments are being modified at increasing rates, over larger scales, and in fundamentally new ways, and that research into these processes is needed to help society’s institutions make better decisions. Surely, this is important news for geographers whose interests in the environment are longstanding and deep (White 1945; Burton et al. 1968; Turner et al. 1990; Palm 1990; Cutter 1993; Kates 1994).

A second message is that business as usual, in which the scientific community has almost complete autonomy over what research projects do and do not deserve support, is likely to change. In fact, the model of scientific autonomy is a relatively recent phenomenon stemming from Vannevar Bush’s vision of the relationship between science and society. Bush directed the Office of Science Research and Development during the Second World War. After the war, he and his advisors sought to find a way to continue to support science while curtailing government control over the science effort. Bush’s 1945 report made a compelling case for the importance of basic research as an engine for technological and economic development (Bush 1946). His linear model linking science to society held that the social benefits of basic research often appear many years after the work is started, and thus there is no certainty as to which, if any, of the many national needs will benefit from any particular piece of work. His vision of science and society led to the widespread acceptance of the federal government’s role in funding basic research and in training new scientists, to dramatic across-the-board increases in science funding, and to the establishment of the National Science Foundation (NSF). It also gave the scientific community free rein in picking and choosing what was to be studied from
the infinite list of possibilities and led to an elitist isolation of science from the society that supports its work.

More recently, the American public and elected officials have questioned Bush's linear model and have asked those who conduct federally funded research to show a more direct connection between their research and societal needs; there is, in other words, "a new social contract for science" (Byerly and Pielke 1995; Pielke 1997; Pielke and Byerly 1998). The Science Committee's Report demands that the scientific community forge stronger ties with the American people by engaging in more "mission-directed research" and by communicating more effectively with educators, journalists, and the public (U.S. House of Representatives 1998). Subsequent discussion argues that the committee did not go far enough to ensure public participation in deciding research priorities (Sclove 1998). While I do not believe that geographers should simply pander to popular opinion and whim in choosing what to study, we would be foolish to ignore altogether society's growing expectation that we devote our talents and energies to what it perceives as the nation's most pressing problems. Nobody had to tell that to the three hundred scientists in attendance at Ehlers's remarks in Tempe.

Science Initiatives

There is plenty of other evidence that the scientific community has started to "get it." I offer as evidence the 1997 Presidential Address to the American Association for the Advancement of Science (AAAS), in which zoologist Jane Lubchenco argues that the new challenges of science lie in the linkages among social, political, economic, physical, biological, chemical, and geological systems. "The roles of science—to discover, communicate, and use knowledge and train the next generation of scientists—have not changed, but the needs of society have been altered dramatically. The current and growing extent of human domination of the planet will require new kinds of knowledge and applications from science—knowledge to reduce the rate at which we alter the Earth systems, knowledge to understand Earth's ecosystems and how they interact with the numerous components of human-caused global change, and knowledge to manage the planet" (Lubchenco 1998: 495). I read this as a call for more environmental research, more action-oriented research, and the need to reach across previously disconnected branches of knowledge to solve society's complex problems.

The latter mandate is also central to biologist E. O. Wilson's new book, Consilience: The Unity of Knowledge (1998). Using the environmental sciences as an example, Wilson shows that most real-world problems lie at the intersection of biology, social science, environmental policy, and ethics. The closer one moves toward consilience or conceptual unity at the intersection point, the more disorienting and unstable the world becomes. Disciplinary boundaries must be crossed, different languages spoken, new methods learned, and world views changed. And yet here, according to Wilson, is where future intellectual challenges lie. While reductionist science has advanced by taking things apart—by dissecting brains into neurons, and neurons into molecules—the next logical step is to reassemble them, using a more synthetic process. Geography's reductionist bent has divided places into their aesthetic, cultural, social, economic, and physical components. The challenge of synthesis is in recreating them through greater understanding of the connections among disparate parts. There is much in Wilson's book that geographers will find controversial and troubling, most notably his view of biological imperialism (Berry 1998) and the simplistic assumption that the scientific method can work in the human arena just as it works in the physical arena. What is significant is his unabashed faith in connections between nature and society and his belief that we will discover them and articulate them only when we begin to look for them.

Several recent personal experiences jibe with what I am reading and hearing in the science and policy communities. Two years ago, I was invited to join a team of Arizona State University faculty on a National Science Foundation grant proposal to establish a new Long-Term Ecological Research site (LTER) in Central Arizona. Previous LTERs were located exclusively in pristine environments where ecological change could be monitored without the messy influence of human activity (Magnuson 1990; Swanson and Sparks 1990; Franklin et al. 1990). Recognizing that humans, and their products and efforts, are already part of most ecosystems, the two LTERs named in 1997 were earmarked for urban locations. Ultimately, our team was suc-
cessful, and the two new urban LTERs are in Phoenix and Baltimore.

I was a reluctant participant in early LTER discussions because I viewed the study of the urban environment as outside of my parochial expertise and because I was skeptical that the products of the LTER would contribute in any meaningful way to current paradigms in either population or urban geography. In the end, I saw the value of interacting more intensively with scientists, and I have tried to represent social science at the ecology table. On many occasions, I have felt first-hand the dissonance that Wilson describes. Perhaps a brief anecdote will convey my situation. Its larger goal of synthesis notwithstanding, the first act of the Central Arizona-Phoenix LTER was to organize participants into task forces defined according to specialties. I was assigned to the land-use change team, not to the populations team, whose mission is to census birds, bugs, snakes, and other desert animals. Every time the populations team is called upon for a report, I get ready to speak, only to realize a split second later that, oh no, they don’t mean people when they talk about population.

Nearly two years of LTER experience has been both frustrating and rewarding. It is frustrating because ecologists, geologists, and engineers mean different things when they use words like population, disturbance, network, system, and hierarchy; because social science-based research questions that are exciting to them often seem overly applied and mundane to me; because complicated human systems are often reduced to little boxes titled “human activities” or “social and economic impacts,” and because I am often put in the position of sublimating my personal research agenda to the greater good of collaborative research. The rewarding part comes from the observation that geographers are much in demand and more successful than most in these settings. A deep and abiding interest in place is a powerful beginning in the search for common ground between the natural and human worlds.

At the same time, I was invited to sit on the National Oceanic and Atmospheric Administration’s (NOAA) Science Advisory Board. My first words to James Baker, the Department of Commerce’s Undersecretary for Oceans and Atmosphere, were, “I am not a climatologist, but I do belong to the same discipline that many of them do.” He assured me that NOAA already had enough atmospheric and oceanic scientists, and that they needed social scientists who could bridge the science-social science divide. Once an organization devoted exclusively to environmental assessment, NOAA recently recast its mission to encompass environmental stewardship. Its goals of building sustainable fisheries, recovering protected species, maintaining healthy coastlines, and delivering better forecasts are ripe for social science input (NOAA 1996). My experiences with NOAA and others like it have convinced me that geography in the U.S. increasingly is seen and valued as a “bridge discipline”—one that can connect the study of human and natural systems and one that is capable of intellectual synthesis.

Barriers to Synthesis

Unfortunately, this view from outside the academy does not quite match my insider’s perspective of a discipline unprepared for the challenge of synthesis. We face, at this time, three daunting barriers to synthesis: (1) the more general trend toward academic specialization, (2) the deepening divide between human and physical geography, and (3) the nature of geographic education.

Specialization

Specialization is an inevitable outcome of the modern scientific/intellectual enterprise. In the 1940s and 1950s, it was still possible to be a general, all-purpose geographer. There was a sufficiently common set of core ideas, and the body of research was small enough that a single individual like Glenn Trewartha could make significant contributions to two subfields like climatology and population geography, and speak authoritatively about the field as a whole (Dogan and Pahre 1990). Today, that accomplishment is far more difficult. In a world where information is increasing exponentially, it is virtually impossible for one person to keep abreast of all disciplinary trends. A search of articles indexed in Geographical Abstracts, including both human and physical geography, reveals more than 17,000 geography articles published in 1997, and this does not include geographers’ works in interdisciplinary and cognate fields. Because no geographer could possibly read all
this material or grasp its meaning, we have gravitated to narrower and narrower specialties. Although there are notable exceptions of scholars who migrate from one subfield to another and contribute to more than one field simultaneously, most exhibit a high level of persistence within a given area of knowledge. Such persistence is strongly reinforced by career considerations, such as the desire to gain reputation, recognition, and promotion (Ziman 1987). A major criterion for promotion from assistant to associate professor in many American universities is whether the individual has established a “program” of research in one area of knowledge. Contributions across a broad spectrum of knowledge raises red flags in many promotion committees.

The AAG codified increasing specialization with the establishment of its Specialty Groups in 1978. Specialty Groups were intended to foster better communication in a diverse discipline, to facilitate a sense of identity and belonging, keep specialties from forming separate professional societies, and to take responsibility for organizing sessions at the annual meeting (Goodchild and Janelle 1988). The number of Specialty Groups, now at forty-eight and climbing, has exceeded the ten to thirty envisioned by original architects of the system who, in fact, worried about the balance between “overspecialized fragmentation at one extreme and monolithic confinement at the other” (Conzen 1978: 309). At last year’s meeting in Honolulu, Specialty Groups sponsored 250 of 510 sessions, and another hundred were specially organized by individuals and organizations.

There are two schools of thought about the effect of specialization and Specialty Groups on disciplinary discourse. The first holds that specialization fosters intellectual isolation and the common perception that we are no longer a discipline but a multiplicity of separate fields, held together by history and administrative convenience (Eliot Hurst 1985; Goudie 1986). As the annual meeting grows larger (e.g., at the 1998 Boston meeting, there were thirty-eight concurrent sessions; last year, in Honolulu, there were twenty-eight), it is increasingly difficult to keep abreast of the current thinking in our own subfields, let alone related fields. Jointly sponsored sessions are as much harbingers of ever-finer specialization as they are evidence of intellectual synthesis.

An alternative view is that specialization and resulting fragmentation are only the first stage in the process of innovation. The continuous reintegration of specialties across and within disciplines is the next (Dogan and Pahre 1990). Andrew Bodman (1995) argues that, far from being a highly fragmented discipline in intellectual disarray, human geography is more integrated than generally thought, as scholars are acquiring multiple identities to those inside and outside their traditional fields of training and areas of specialization. His study of citation patterns revealed the limits of this integration process, however, as there was not a single citation that linked a physical and human geographer in his sample. These new networks of communication and identity exist within human geography (between cultural and social geography for example, or between medical and population geography), within physical geography (for example, in the new fields of biogeomorphology and hydroclimatology), and within the technical realm, but rarely do they stretch across these major branches of knowledge.

Diverging Paths of Human and Physical Geography

The growing disengagement of physical and human geography is both mystifying and irksome to me. I spent my entire undergraduate, graduate, and faculty careers working shoulder-to-shoulder with physical geographers, never seriously questioning the logic of our mutual goals. Although it is fair to say that our research and teaching followed parallel but distinct courses, I always felt we were equal partners in seeking to understand the nature of places, in our spatial perspective, and in our shared methods. With a heavy heart, I have come recently to realize that this perspective is not shared by a majority of my colleagues in human geography, many of whom were trained in departments where physical geography was marginalized or absent altogether.

Even though geography’s early founders were largely physical geographers, the discipline pulled away from its roots and soon came to be dominated by the practice of human geography. In his 1979 Presidential Address, Mel Marcus described physical geography’s long-running struggle for legitimacy, even survival, in a discipline focused on the human use of the landscape. In response, physical geographers formed close connections to allied fields, for example,
geomorphologists with geology and biogeographers with ecology. Because of their small numbers and marginalized role in the discipline, physical geographers, Marcus believed, have always worked harder to engage their counterparts in human geography in an integrated mainstream of research and teaching than vice versa (Marcus 1979). This is still the case as I review recent job announcements in *Jobs In Geography*. It is clear that we expect physical geographers to fill the rapidly growing niche at the human-physical interface far more often than human geographers. The typical job ad reads: “we seek a broadly trained physical geographer working in human-environment relationships.” Although there is some evidence of demand for human geographers who can transcend the human/physical divide (witness calls for an "environmental social scientist" and “a geographer working at the intersection of culture and environment”), these are far fewer in number than calls for physical geographers who can work at the creative margins.

Physical geography is much stronger today than it was even fifteen or twenty years ago. Physical geography accounts for forty-seven percent of the students taught in introductory service courses (Walker 1996), garners forty percent of the funding from NSF’s Geography and Regional Science Program,1 and accounts for forty-three percent of new faculty positions in geography departments.2 After fifty years of persistence and patience, physical geography has emerged as a full partner in the discipline, ready to assume its rightful role in our leadership, in our journals, and most important, in our vision of ourselves. Human geographers can no longer afford to characterize geography as exclusively or mainly a social science discipline. We are today a hybrid of science, technology, social science, and the humanities. We should think of ourselves that way and depict ourselves to the rest of the world that way.

Geographic Education

It has been my experience that many undergraduate and graduate students choose geography as a field of study because they share our fascination with places and because they are attracted by the breadth of our interests in both human and natural systems. Instead of nurturing these qualities, the nature of geographic education forces students into specialized boxes where they soon learn to conform to survive.

Nowhere is this more evident than in Ph.D. education in geography where, with certain notable exceptions, we train our students almost exclusively for academic careers (Gober 1997b). Ph.D. programs are geared toward perpetuating themselves by producing graduates who are well trained for the highly specialized research and teaching requirements of other Ph.D. programs, even though eighty percent of our Ph.D. graduates will find themselves in community colleges; in undergraduate and master’s institutions; in joint departments where geography is combined with geology, planning, or anthropology; in interdisciplinary programs; or outside the academy altogether in government and business. In adopting this model of graduate education—one that emphasizes a narrow research experience—we serve the goals of reductionist science and intellectual exclusivity and foster practices that preclude synthesis. I had a conversation recently with a colleague who asserted that specialization is a normal part of early-stage professional development and that broadening occurs later when people are freed from the confining bonds of the promotion and tenure process and when they are exposed to a wider array of ideas and traditions. I hope he is right, but I fear he is not. Graduate programs are places where we socialize the new members of our profession. When we socialize them to a narrow intellectual world, to harsh and relentless criticism of alternative perspectives, and to a world where physical and human geography coexist merely for critical mass and administrative convenience, we should not be surprised when they find synthesis difficult.

I examined the titles of the 151 dissertations from geography programs in the U.S. in 1998 and found only sixteen, or slightly more than ten percent, that dealt with issues of nature-society relations (AAG 1998). As you might expect, these titles come from geography departments at California at Berkeley, Clark, and Texas—places with long traditions in bridging the physical/human geography divide. Now, maybe it is unfair to characterize an entire graduate experience from the title of a dissertation, but it does appear that the vast majority of our Ph.D. students are pursuing research careers that are oriented primarily toward human geography, physical geography, and technical issues, rather than toward the interrelationships among them.
At both the graduate and undergraduate levels, our curriculum is one inherited from the 1950s, with course titles equivalent to chapter titles in *American Geography: Inventory and Prospect* (James and Jones 1954). Titles like cultural, economic, political, population, and urban are differentiated from climatology and geomorphology, which in turn are differentiated from cartography, air photo interpretation, and remote sensing. We have added quantitative methods and GIS, of course; but these are treated as discrete sets of subject matter rather than as an integral part of what geographers do. Thankfully, few of us teach the content of the 1950s, but rarely do we relate what we do with locational problems in the economic geography course with locational issues in the political geography or the geomorphology course, or the remote sensing and GIS courses, and so on. As a result, students see geography not as a synthetic discipline but as an amalgamation of specialized subjects and technical skills disconnected from our substantive work.

The Path to Synthesis

Having established the obstacles in the path to synthesis, I’d like to explore how geography can reshape itself to respond more effectively to the national call for greater synthesis. Let me emphasize that I am not calling for a return to the we-can-do-it-all kind of integration that led Fred Schaefer to level his charge of exceptionalism against the discipline some forty-five years ago (Schaefer 1953). Modern synthesis is organized around ideas, concepts, and theories. It emphasizes discovering strategic connections, not in returning to the general all-purpose geographies of the 1940s and 1950s. Let me also say that any discipline-wide shift toward greater synthesis will be a long-term endeavor, fraught with trial and error. It has taken many years for us to evolve into our current highly fragmented state, and it will take many years for a more balanced perspective to emerge.

Synthesis for the next century involves new “habits of the mind,” in other words, practices and training in ways of thinking (Pickett 1999). These new intellectual habits value both specialized analytical research and broader integrative research; embrace the pluralism of our discipline; dampen the criticism that undermines pluralism; foster new networks of communication; struggle with, rather than ignore, the epistemological problems associated with the different methods of science, social science, and the humanities; and promote a culture change in the way research is rewarded and students are trained.

Steward Pickett, an ecologist from the Baltimore LTER site, in describing how ecology can improve its readiness to take advantage of new opportunities for synthesis, stresses the need for greater balance between analysis-based investigation and synthetic activities. Reductionism, the traditional hallmark of analysis, advances by taking apart the whole to study its constituent parts. When taken to an extreme, reductionism is the antithesis of synthesis and is unsuitable for the study of large-scale phenomena and complex systems (Pickett 1999). Like Pickett, I envision a discipline that values both analysis and synthesis, in which students are trained not only in analytical thinking but in linking already-discovered ideas in innovative ways, in grappling with large and complicated human and natural systems, and in looking for analogies in seemingly unconnected fields.

I reject the claim that geography is in a state of intellectual disarray because we lack an overriding paradigm to guide our thinking and our research. The plurality of contemporary geography offers the potential for the radical putting together of ideas that is so critical to synthesis. There are many different ways to understand places. Would anyone seriously argue that a census-based analysis cannot be informed by ethnography, that quantitative and qualitative methods are mutually exclusive, or that humanists have little to say to physical geographers and vice versa? I am reminded here of a truly brilliant session that I attended at the AAG meetings in Boston. This session explored the role of the American West in shaping geographic thought. Presentations dealt with the subfields of biogeography, geomorphology, and cultural and historical geography. Participants described how the West’s wide open spaces and majestic landscapes, its natural wealth, and the rootlessness of its population shaped the development of their subfields. Humanists and physical geographers offered complementary, not conflicting, observations, and the standing-room-only audience came away with a more integrated view of the West as a region and geography as a discipline. Synthesis demands that we function, at least some of the time, in settings such as this.

Synthesis can be stymied by an environment
of hypercriticism. Criticism is the ultimate means of resolving controversy, but unbridled and unbalanced criticism stifles new ideas, new approaches, and new methods (Pickett 1999). Synthetic activities have a hard time passing muster from reductionist-minded specialists who tear away at them because they do not include sufficient detail, and therefore are prone to error. In addition, all too frequently, criticism is based on the failure to mimic our own specialized research methods rather than on the creativity of the ideas, their centrality to geography’s larger strategic vision, and their potential to link fields rather than home in on one. Synthetic habits of the mind look past narrow-minded criticisms, evaluate the strengths and weaknesses of alternative approaches, and search for common ground and the value in alternative approaches.

Synthetic habits of the mind will not evolve from a highly fragmented discipline in which students are socialized into and persist in narrow specialties. New ideas will emerge when entirely new networks of geographers are organized around topics such as the American West and other regions, the environment, health, cities, gender, social justice, technological issues, and philosophical debates. Networks of interaction will change in composition and size through time, will bring different groups together for specific interactions, and will involve different and shifting perspectives. Innovations in electronic communication can greatly facilitate these short-term intellectual crossovers and pull people out of their comfortable but isolating niches, at least some of the time (Brunn and O’Lear 1999).

The need to communicate across a wider range of specialties necessitates that we return to jargon-free and acronym-free English as the medium of discourse in our discipline. Specialization has bred mutually exclusive dialects of English. Current modes of communication intimidate newcomers and discourage experienced geographers from sampling across subfields. Earlier this year, I attended scientific papers at the AAAS meetings and at my local LTER site, and I understood every word because the speakers, all very distinguished scientists, communicated in plain English.

The diversity of geography offers special challenges as well as special opportunities for synthesis. We must confront the challenge of integrating not only a variety of subject matter, but also a variety of methods. It is clear that the scientific method, however powerful and compelling, cannot simply be applied to the humanities. Prevailing wisdom is to withdraw from these epistemological controversies and adopt a live-and-let-live policy. I fear such a strategy will, in the long run, lead to the quiet disintegration of our discipline, and with it, our unique and valuable perspective. Geography, because we include, within our membership and our curriculum, elements of the humanities, social sciences, and sciences, has the opportunity to demonstrate that these tensions, far from being destructive, are at the very nature of the search for modern knowledge.

Finally, and most important, the path to synthesis will involve a culture change for geography. Our current culture has evolved to reinforce the value of narrowness, individuality, and original research. The pattern of citation favors scientists who are visible in narrow, specialized fields (Ziman 1987: 85). Reward structures emphasize sole or first-authored publications. The original research article is valued over the comprehensive review piece. Promotion committees are far more likely to ask whether an individual is an independent scholar than whether she or he has contributed in a meaningful way to larger collaborative efforts. Even in collaborative work, we insist on being able to decipher an individual’s contribution from the whole, particularly in the case of Ph.D. candidates when, in fact, it is the ability to contribute seamlessly to a larger intellectual enterprise that is required to understand large, complex systems.

In a more synthetic discipline, our values would change to accommodate contributions to both analysis and synthesis. Our journals would publish specialized works as well as state-of-the-art review pieces, both freestanding research articles and pieces of larger interdisciplinary puzzles, sole-authored works and the products of larger interdisciplinary teams, and finished products and early results. Our meetings would be structured to encourage exchange across specialties, and our graduate programs would invite more cross- and interdisciplinary exchange, not just with like-minded humanists, social scientists, natural scientists, and technical experts but across major branches of knowledge.

Conclusions

I wish to conclude by stressing the importance of a more balanced perspective in geogra-
This balance comes in a number of ways. First, it comes from the need to marry more closely our personal research agendas with the needs of the society for which we work. Geographers have enjoyed enormous freedom in pursuing our passion for places, technological innovation, and a more complete understanding of natural and human processes. Elected officials, administrators of government agencies, and those who hold the purse strings on federal research dollars are telling us very explicitly that they expect us to devote at least some of our intellectual energies to synthetic environmental research. It is clear that the public will be more heavily involved in setting the nation’s research agenda. We should pay heed to this fact and develop individual research portfolios and departmental programs that respond broadly to these calls.

On individual and organizational levels, we should also strive for greater balance between analysis and synthesis. I would not like my remarks here to be construed as a whole-scale rejection of analytical geography. We must continue to contribute to our specialized fields, but at the same time, strive for strategic new connections to other parts of the discipline. We must learn to pass more easily and more often between reductionist analytical habits and more synthetic ones.

We should stop obsessing about not keeping up with trends in history, philosophy, sociology, or geology. Certainly, we want to look for illuminating connections with these fields and our own, but we are, in fact, a mix of science, technology, social science, and the humanities. Colleagues in science covet geography’s link to human behavior, cultural landscapes, social process, planning, and policy. Similarly, our social science and humanist colleagues value our productive links to science and our technological expertise. A pluralistic perspective is one of our comparative advantages. We should learn to exploit it.

Geography faces enormous challenges and opportunities as we enter the twenty-first century. The societal environment in which we function, including the worlds of science, public funding, education, and the labor market, are changing rapidly. These changes offer opportunities for us if we can reconfigure our discipline to address environmental issues from a synthetic perspective. The practice of synthesis in geography faces formidable hurdles because we have evolved into a discipline that is overly specialized, in which physical and human geographers are strangers to one another, and whose current curriculum and educational practices are at odds with synthesis. Geography as a discipline and geographers as individuals must change these practices and adopt new habits of the mind if we are to take our rightful place in the intellectual community’s search for synthesis.

Acknowledgments

The author wishes to thank William L. Graf, W. Andrew Marcus, Stanley D. Brunn, Alexander B. Murphy, Joseph S. Wood, and Lawrence A. Brown for their helpful comments on an earlier version of this paper and the Central Arizona–Phoenix LTER (NSF, DEB-97/4833) for providing the intellectual infrastructure in which innovative synthetic research can flourish.

Notes


2. Includes jobs in physical geography, combinations of physical geography and GIS, and society-nature interactions advertised in the October and November, 1998 issues of Jobs in Geography.

References


Turner, B. L. II; Clark, W. C.; Kates, R. W.; Richards, J. F.; Mathews, J. T.; and Meyer, W. B., eds. 1990. The Earth as Transformed by Human Action: Global and Regional Changes in the Biosphere over the Past 300 Years. Cambridge: Cambridge University Press.


