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ABSTRACT

This book emerged from a "Summit in Geographic Education" at Southwest Texas State University in San Marcos, Texas, May 1993. This volume is comprised mainly of the papers prepared for the Summit. The book is divided into four sections: (1) "A View from the Summit"; (2) "The Reform Movement in School Geography"; (3) "Higher Education's Role in the Reform Movement"; and (4) "Geography Education Beyond the Classroom." The 16 articles include: (1) "The Reform Movement in Geographic Education: A View from the Summit" (Robert S. Bednarz; James Peterson); (2) "Guidelines for Geographic Education and the Fundamental Themes in Geography" (Salvatore J. Nataoli); (3) "Discovering Innovative Curricular Models for School Geography" (James F. Marran); (4) "The Dissemination and Implementation of the National Standards: A View from the Local Level" (Douglas A. Phillips); (5) "Geography Instructional Materials for Standards-Based Education" (A. David Hill); (6) "Technology in Geographic Education: Reflections and Future Directions" (M. Duane Nellis); (7) "Environmental Education: A Geographical Perspective" (Rosalyn McKeown-Ice); (8) "Geography in the Workplace: A Personal Assessment with a Look to the Future" (John W. Frazier); (9) "Baccalaureate Curricula in Geography: Need for Consensus Guidelines" (Sidney R. Jumper); (10) "The Bete Noire of Geographic Education: Teacher Training Programs" (Richard G. Boehm; John Brierley; Martha Sharma); (11) "Realities and Opportunities for Funding Geography Education" (Dorothy R. Jacobson); (12) "Implementation of Geography Standards: Strategies and Initiatives" (Anthony R. de Souza; Susan Munroe); (13) "Geography Education in National Context" (T. J. Wilbanks); (14) "Improving Geography Learning in the Schools: Efforts by the National Geographic Society" (Robert E. Dulli); (15) "Geography and National Education Policy" (Terry Smith); and (16) "The Need for Research in Geography Education: It Would Be Nice to Have Some Data" (Roger M. Downs). (EH)

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Edited by
Robert S. Bednarz
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National Council for Geographic Education

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Foreword

Significant events in the national reform movement in geographic education ideally take place after detailed data collection, thoughtful analysis, and widespread community action. Such was not the case with the Summit in Geographic Education. My idea for the Summit can be traced back to the 1991 St. Paul NCGE meeting, more specifically to a president's session in which reform in geographic education was discussed. Prominent geographic educators addressed an audience of perhaps 80-100, patiently answered polite questions, and then left the room for coffee, hallway conversation, or perhaps for the next session.

My recollection is that I shared the front table with Jim Goodman, Dave Hill, and Kit Salter. To this panel participant, the NCGE session had only limited value—awareness was advanced and the audience seemed satisfied, but I was plagued by the thought that there could have been more. An intriguing format might have required these four to talk, debate, discuss, and interact with each other as they intellectually explored important topics in geographic education. Such were the thoughts that became the basis for the Summit in Geographic Education at Southwest Texas State University in San Marcos, Texas, 20-23 May 1993.

The plan was to have certain individuals throw out ideas and then have a knowledgeable audience debate, discuss, and add perspectives, perhaps expanding or honing our working knowledge of the topic. Those who presented provocative ideas appear the author's section of the Table of Contents of this volume. Equally important, in my opinion, were those in the audience who picked up key ideas and then refined them with incisive comments and thoughtful perspectives. They are the hidden artists of this substantial canvas and need to be mentioned in at least one place: Sarah W. Bednarz, Robert S. Bednarz, Mary Lynn Bird, Osa Brand, Stanley D. Brunn, David B. Cole, Dennis DeCock, Edward A. Fernald, Philip J. Gersmehl, James M. Goodman, Charles F. Gritzner, Susan W. Hardwick, Howard G. Johnson, C. Gregory Knight, James B. Kracht, David A. Lanegran, Michal LeVasseur, Gail S. Ludwig, James F. Petersen, Alice T. M. Rechlin, Peter W. Rees, Cathy R. Salter, Joseph Stoltman, William R. Strong, Douglas C. Wilms, Barbara J. Winston.

The Summit was called the Summit not because of the high-powered geographic

educators in attendance but rather because of the lofty ideas and issues addressed by all. A level platform of understanding emerged from the Summit that should make all else in geographic education grow in form and function. The national reform movement in geographic education was served well in San Marcos, Texas, and the legacy of the Summit will be enjoyed by students, teachers, and citizens alike as we move toward the 21st century.

A final note. Summits, or any other worthwhile conference, cannot move forward without the support, planning, and arrangements of many people. In this case, the steering committee consisted of Jim Petersen, Duane Nellis, Alice Rechlin, and Sarah and Bob Bednarz. Local arrangements were handled by Betty Williams, Linda Hammon, Denise Blanchard Boehm, and graduate students Paul Sutton and Mark Carter. Funding came from Rand McNally, the Association of American Geographers, National Council for Geographic Education, Geographic Education National Implementation Project (GENIP), the National Geographic Society Education Foundation, and an anonymous foundation in Dallas, Texas.

Richard G. Boehm
August 29, 1994

Acknowledgments

Several people and organizations deserve appreciation for the part they played in this enterprise. Dick Boehm, who organized and worked to secure funding for the Summit, merits special recognition. Without his leadership, the Summit would not have occurred, and the papers contained in this collection would have never been written. Mary Lynn Bird, Ronald Abler, and Ruth Shirey, executive directors of the American Geographical Society, the Association of American Geographers, and the National Council for Geographic Education, respectively, not only supported the program but were active participants. Their personal support and the prestige of their organizations, which their attendance brought to the Summit, contributed significantly to its success. In a similar fashion, Bob Dulli and Terence Smith of the National Geographic Society contributed their best effort and the support of the Society.

Besides the authors, two individuals deserve special credit for their help in the production of this book. Sam Natoli, Special Publications Editor for the National Council for Geographic Education, is one. His experienced critical eye resulted in numerous improvements to both the text and organization of this volume. His good counsel was invaluable. The second individual deserving thanks is Salwa Choucair, editorial assistant of the *Journal of Geography*. The attractiveness of this volume is the result of her expertise.

Finally, a note of gratitude goes to a long-term generous friend of geographic education, Dennis DeCock of Rand McNally. His support made the production of this special publication possible.

Introduction

This volume is comprised (with one exception) of papers prepared for and delivered at the Summit in Geographic Education. The articles represent a wide range of views from a diverse group of people. The volume is divided into four sections: 1) A View from the Summit, 2) The Reform Movement in School Geography, 3) Higher Education's Role in the Reform Movement, and 4) Geographic Education Beyond the Classroom.

The Geographic Education System

Several recurrent themes run through the articles in this collection. Perhaps the most important of these is: Geographic education should be thought of as a system that extends from elementary school to university. For the system to function smoothly, all geographic educators should communicate with each other openly and effectively. University geographers must inform themselves about the contents of K-12 curricula and about the National Geography Standards. How else will they know what to expect from their students or how to prepare preservice geography teachers. Similarly, K-12 teachers should be aware of what will be expected of their students when they move up to the next level of the educational system, whether that next level is middle school, junior high, high school, or college. All geography instructors are part of a geography education system that can ill afford a weak component.

Better-Trained Teachers and Effective Materials

The second recurrent theme is: There is a need for more and better trained teachers utilizing well-prepared, up-to-date, appropriate materials that challenge students. Unfortunately many of those who teach geography have had little formal course work in the subject. The reasons for this situation are many, ranging from inadequate certification requirements to the lack of courses available at some institutions of higher learning. At the same time, much of the available geography classroom material is poorly prepared, requires only low-level thinking, and bores most students. Several articles report and evaluate programs that have addressed these problems, and a few propose new strategies to prevent them from occurring in the future.

Geography's Vocational Relevance

Another recurrent topic is the relevance of geographic training for careers in today's, rapidly changing, interconnected, global society. Several articles point out

why education in geography is important and marketable in the 1990s workplace. Geography's vocational relevance comes up in several contexts. It is discussed as an issue pertinent to the content and perspective of the National Geography Standards, as a factor that should be considered by curriculum reformers, and as a determinant of the type and quality of jobs geography majors can expect to land.

Responding to Society's Needs

The fourth theme is related to the third, and, in a sense, expresses a similar but more general sentiment: Geography should be responsive to society's needs. Again, this theme appears in articles addressing a variety of topics. It can be found in the context of the National Standards, fund raising, environmental education, curriculum change, and vocational opportunities. Virtually all of the authors argue for a strong connection between academic geography and the world outside school. Very few, if any, are willing to advocate geography for geography's sake. Many of the contributors are convinced that those who do not recognize geography's relevance are those who have not been adequately informed.

Geography Standards

The last theme is: Geography needs standards for all levels of education. Although substantial attention is focused on pre-collegiate education, the university curriculum does not escape scrutiny. One article calls for a careful reconsideration of college programs through the creation of consensus curriculum guidelines for undergraduate geography programs,whereas others attack the subject more indirectly. For example, the college curriculum is considered by authors discussing workplace opportunities for geographers, geographic technology, and preservice programs for teachers. Summit participants saw geography as a rapidly changing discipline whose curriculum must change if it is to remain relevant.

1

A View from the Summit

This opening section contains only one article. The piece by Bednarz and Petersen is unique because it is the only one written after the Summit concluded. Thus, the authors had the opportunity to read and reflect on the collection of papers before preparing "The Reform Movement in Geographic Education." In the article, Bednarz and Petersen state how and why geographic education has made progress and what opportunities and challenges lie before geographic educators. They argue for a conception of geographic education as a system that encompasses all educational levels, K-Ph.D. They call on all geographic educators to contribute to the improvement of both the quality and quantity of geography taught to students in schools and universities. The authors also discuss each of the five recurrent themes in the general context of the reform movement. The article both summarizes and sets the stage for the papers that follow.

The Reform Movement in Geographic Education: A View from the Summit

Robert S. Bednarz and James Petersen

A Time of Opportunity

During the last decade, geographic education has received increased attention from professional geographers, K-12 educators, and the general public. The reasons for this renewed interest are many. They include public recognition that Americans know less about geography than they should, establishment of the National Geographic Society's Alliances for Geographic Education, and efforts by consensus groups to establish both a national assessment framework and world-class standards for K-12 geography. Whatever the reasons, this attention provides important, pivotal opportunities to demonstrate the importance of geography in curricula at all levels, to increase the quality and quantity of instruction in geography, and to educate more Americans who can use geography to understand their world.

Why has geography made so much progress during the last decade? In addition to efforts made by advocates of geographic education, it is because the public recognizes that geography is relevant to the issues that confront the world today. Geography can provide both the knowledge and skills necessary to understand our world. It would be difficult to comprehend, let alone solve, global problems without applying geographic knowledge and skills. For example, geographers have contributed to solutions to a wide variety of problems involving human-environment interaction. As people become aware that virtually all environmental concerns involve consideration of human-environment interactions, the relevance of geography becomes increasingly apparent. Geographers tend to look at issues holistically, and the value of this broad perspective, particularly for environmental concerns, is gaining more acceptance. Today few people think that the environment can be understood by simple or narrow viewpoints or that environmental problems can be solved by taking a restrictive approach.

Geography's ability to view issues at a variety of scales, from global to local, has also proven to be increasingly appropriate in today's world. Geographers customarily view the world as a mosaic of regional and local parts that fit together to make a global system. This is the way that geographers approach studies of global economies, human impacts on the ecological systems of Earth, and the imprint of diverse cultures on human activities and landscapes. Considering problems at a variety of scales is not new to geography; neither is multiculturalism nor global interdependence. Yet in education today, these themes are receiving strong interest and emphasis.

Public attitudes about the importance and relevance of geography are mirrored within the educational system. As our society better recognizes and appreciates the contributions that geography can make, its demand for individuals who are trained in geography increases, and our educational system responds. In addition to the external forces that have created a greater demand for geography, there has also been some realization from within academia that geography's ability to bridge the gap between the physical and social sciences is a valuable perspective. Although we live in an age of increasing specialization, the need for the integrated approach to problem solving that geography can provide remains both crucial and timely.

Geography has an opportunity, then, to establish its relevance at every level of the educational system—K-12, undergraduate, and graduate. It can demonstrate its utility to the general public as a discipline that can prepare K-12 students to function intelligently as global citizens of the 21st century. Geography can play a similar role at the undergraduate college level by educating students with knowledge and skills desired by both the public and private sectors. Finally, through graduate studies, geography departments can produce the specialists who will conduct research and train the next generation of geography instructors. Obviously, not all geographic educators will choose to work at all of these three levels. The same may be said for most departments of geography.

Every geographer should recognize that all levels of geography education are part of an interdependent system.

The Geography Education System

Every geographer should recognize that all levels of geography education are part of an interdependent system. Geographers should view their discipline from a broad perspective, rather than merely from the narrower perspective of their specialized interest, or subdiscipline. Keeping the discipline healthy will require an understanding of the interactions and connections among the components of the geography education system.

Perhaps one of the most important, but often unappreciated, relationships within geography education is the link between K-12 and college or university geography. Developments in K-12 education often have important impacts on college and university geography and vice versa. College and university departments have the responsibility for preparing K-12 geography teachers. If the demand for geography in the schools increases, the demand for geography in colleges and universities by preservice teachers will grow. The content of geography courses in which preservice teachers enroll should reflect, in part, what those teachers will teach. Thus, college and university geography departments should be acquainted with state teacher certification requirements and with state curriculum guidelines. K-12 geography also influences the quantity and quality of students who enroll in college and university geography courses. At the 1993 annual meeting of the

National Council for Geographic Education (NCGE), Gilbert M. Grosvenor, president and chairman of the National Geographic Society reported evidence of an enrollment increase in college and university geography courses resulting from more and better geography at the high school level.

Geographers must be willing to consider the connections between what students learn in classrooms and what employers in both the public and private sectors desire from students who have taken geography course work. Many geographic educators, especially those at the college and university level, have not felt responsible for, or capable of, preparing students for non-academic employment. College and university geographers have been concerned about overemphasizing technical training at the expense of education, and this has led some to advocate a purely academic approach for college and university geography courses.

If high school graduates gain a better understanding of the job opportunities for which university geography can prepare them, however, it will become more difficult for college and university geographers to ignore their desire for job-related knowledge and skills. The demand for applied course work in the university is likely to increase as a result of the job opportunities offered to geography students trained in the latest technologies, such as GIS, remote sensing, or location or market analysis. Students who see their peers graduate to successful career positions, in part because they have acquired a set of marketable skills in their geography programs, will soon demand more of the same.

These changes in the discipline of geography should be seen as an opportunity or a challenge rather than as a problem. For example, many disciplines have placed a much greater proportion of their graduates in public- and private-sector jobs than geography has, without sacrificing their academic worth or rigor. Geography could place a greater proportion of its students in geography-related jobs if geographers more effectively understood and communicated the relevance that their interests and knowledge have to the non-academic job market. Again, viewing the discipline holistically would help geographers determine what they can contribute to the non-academic world. In part this requires that geographic educators be willing to break down some of the barriers that have unnecessarily divided the discipline in the past.

It is ironic that geographers, who often see the integrative perspective of their discipline as an advantage, have divided into, and identify with, narrowly focused interest groups. Geographic educators should work to increase communication among geographer-specialists with diverse, and often divergent, interests. The discipline would benefit if human geographers discussed issues more frequently with physical geographers. One of the traditions of geography (man-land) recognizes the advantage of bridging human and physical geography, and one of the fundamental themes (human-environment interaction) explains the educational advantages of taking this perspective.

The barrier between academic geographers and geographic educators should also be lowered. In many instances, of course, an individual may play both roles, yet it is hard to argue that geographic educators receive the same respect, rewards, or recognition as their peers who specialize in another aspect of geography. The over-

representation of older, tenured faculty members in geographic education is probably a reflection of this situation. Only those college and university geographers who are somewhat safe from the criticism of their colleagues can afford to devote their time and effort to geographic education. It will be difficult to make real progress if the majority of geographic educators are established or near the ends of their careers.

Geographers might do well to worry less about the difference between applied and theoretical geography. This is a question that almost every discipline faces, and it is one that probably will never be permanently resolved. The boundary between the two changes rapidly; as methodologies and theoretical constructs evolve, work once considered theoretical often becomes the basis for applied work later on.

Other geographic dichotomies that are becoming increasingly blurred include divisions between quantitative (or technical) vs. non-quantitative (or non-technical), regional vs. systematic, and eclectic vs. heuristic. Although the wide-ranging interests of geographers and their holistic approach are often advantages, these benefits can be lost if the discipline fractures into many, highly specialized subgroups that do not communicate with each other. A trip to the annual meetings of the Association of American Geographers (AAG) or the NCGE will quickly make the problem apparent. It is difficult for geographers with one specialization to learn much from attending a session organized by colleagues with another specialization, and relatively few even try. As they leave an AAG session, listen to the comments of the few economic geographers from the neoclassical school who might attend a session organized by postmodern geographers or ask the few teachers attending a session unrelated to teaching at an NCGE meeting for their reaction to the presentations to get an idea of the problem. Geographic educators must realize that the geography education system cannot be strong unless all of its subsystems are strong, and at the same time, geographers must afford mutual respect to those who do exemplary work, albeit in a different disciplinary arena.

Perhaps it is human nature for individuals to value their own interests more than the interests of others, but this is probably not the most productive strategy for geographers if they are to make the most of today's opportunity. All too often geographers devalue that in which they are not interested, and some set standards for others that are inappropriate, unreasonable, or impossible to attain. Perceiving the geography education system as a unit would encourage geographic educators to evaluate the contributions of geographers with specializations different from their own more fairly.

National Standards in Geography

One of the ways that geography has begun to capitalize on its opportunity is the ongoing effort to develop standards for K-12 geography. The chance to create standards grew out of geography's inclusion as one of the original five core subjects of the *America 2000* educational reform plan. Since the original five subjects were chosen, a new administration has come to Washington, the reform effort has been renamed *Goals 2000,* and the number of core subjects has grown. Nevertheless, a

consensus project was undertaken to create an assessment framework, and the results have been circulated and well-received by the geography education community. The NAEP assessment, and the *Guidelines* that preceded them, served as the bases for an effort to create a national consensus for world-class standards in geography.

The Standards development group has involved a wide range of individuals. Professional geographers, some representing national organizations, have served as writers, content advisors, and as members of the oversight committee. State education agency representatives (e.g., social studies coordinators) have also participated in the project. Professional educators, including classroom teachers, have served in a variety of ways; for example, the writing committee includes a teacher among its members. In addition, educational administrators, citizens, members of educational organizations, and politicians have all been involved in seeking the consensus required by the charge to the Standards Project.

Developing a consensus among so many individuals with so many different perspectives has not been easy. Individuals have expressed divergent ideas about how the Standards should be structured and organized, about their content, about to whom they should be directed, and about what role they should play in geographic reform. Nevertheless, the Standards Project has produced a draft document for review by thousands of geographic educators and other interested individuals. A final version of the Standards is expected to be completed by September 1994.

To a large extent the impact of the Standards will depend on how they are implemented. Because the Standards are voluntary, the task of encouraging schools to adopt them will be as great as the challenge of developing them. If the implementation process is successful, however, schools and the students they serve will reap several benefits. The National Standards encourage doing geography, rather than simply learning about geography, and they emphasize the need for performance-based assessment. By adopting uniform criteria with other schools across the nation, individual schools will be able to measure their performance more objectively. Without the consistency provided by standards and effective assessment, it would be difficult to know what progress the reform effort is making. Employing standards that define world-class performance will help schools ensure that their students receive an internationally competitive education in geography.

Implementing the Standards will require a major effort by the geographic education community. The willingness of educators and the public to support and lobby for the Standards will determine how widely they are adopted. In the end, the decision to adopt the Standards will be made at the local level, largely outside of the college and university realm. Success will depend more on the efforts of classroom teachers, state geography Alliances, citizens, and school administrators than on college and university geographers. The influence of the National Standards in geography, however, will be felt at all levels of the geography education system (K-Ph.D.).

Because gaining the support of teachers is critical to the adoption process, the writers of the Standards have worked to make the document as teacher-friendly as

possible. This goal has been difficult to attain because the Standards are intended to be world-class, yet many who teach geography have limited backgrounds in the subject. Adoption of the Standards will require an extensive program of staff development involving geography teachers. During the last decade, thousands of teachers have attended inservice training sessions ranging from one-day National Diffusion Network workshops to multiweek summer institutes. The staff-development challenge presented by the Standards offers geographic educators another opportunity to improve the quality of geography taught in the schools. Establishing standards, training teachers, making geography relevant, and improving curricula are all intended to produce students who can use geography to help them understand the global economic, ecological, and cultural systems of today's world. All of the efforts have a fundamental goal—to improve student learning in geography.

Current Efforts and Future Directions

The current reform movement in geographic education has encouraged the discipline to reflect on its entire educational system. Self-study or self-assessment is an integral part of making real progress. Without determining what has been accomplished, what needs to be done, and how geography education can get where it wants to go, it is difficult to imagine how real improvement can occur. The development of the NAEP assessment and the National Standards represent important parts of this self-evaluation process. Their development required careful consideration of the geography that was being taught in the schools and the geography that American schools should be teaching. These issues were addressed by the writing committee, the content committee, the oversight committee, and thousands of professional geographers, teachers, and others who critically reviewed the documents. Those involved with developing the NAEP assessment and the Standards did more than consider what sort of geography schools should teach; they also tried to evaluate what would be necessary for schools to reach the goals set forth in the Standards. Efforts to make the implementation of the Standards desirable for teachers and schools are on-going.

Another potentially positive outcome of the reform movement is the integration of efforts by academic geographers, geography educators, and applied geographers to solve current issues and problems. As argued earlier, increased communication among academic geographers, geographic educators, K-12 teachers, and applied geographers is beneficial. The Geography Standards will encourage a cooperative, systematic view of the geography education system. The Standards emphasize doing geography by applying geographic skills and content to current problems, and they introduce important geographic concepts into the K-12 curriculum. The higher quality K-12 geography that results will produce a larger number of students who are both more interested in and better prepared to succeed in college geography courses.

All geographic educators share the responsibility for continuing the progress of the reform movement. College and university geographers must be willing to do their part. Establishment of a viable and appropriate research agenda for geographic

education is one way that they can have a powerful positive influence on the geography education system. Thoughtful, rigorous, widely accepted research in geographic education will elevate both the reputation of those who conduct these studies and the standing of geographic education. Notable research published in respected publications will attract the attention of geographers and demonstrate the efficacy of geographic education as a field of specialization within geography. Research will help to determine the most productive classroom techniques and strategies to effect high levels of student learning. As the geographic education research agenda expands and develops, it will inevitably overlap and interact with research carried on by both academic theorists and applied geographers.

A View From the Summit

The Summit in Geographic Education was organized in order to bring together a wide spectrum of geographers with a shared interest in geographic education. The purpose was to provide a forum for the discussion of tough issues, in a setting that encouraged the consideration of divergent viewpoints. The collection of papers based on that meeting, presented first in a special issue of the *Journal of Geography* (January/February 1994), reflects a part of the heterogeneity of our discipline, in terms of topic, viewpoint, and presenter. Yet, despite divergent views among the participants, there was a unifying theme—commitment and dedication to excellence in geographic education.

A benefit of the reform movement in geographic education has been the widespread process of self-assessment in the discipline, with no segment escaping scrutiny. We share a belief that the geographical perspective can provide a comprehensive picture of a complex problem. Concerns within our discipline are often just as complex as the research problems that geographers face. Geography accepts diversity within regions defined by shared characteristics, considers problems at many scales, understands the inter-relatedness of parts of a system, considers environmental interactions with human behavior, and often encourages a broad and integrative perspective. In assessing the realm of geography, we would be well-served by taking this same viewpoint. Geographers can theorize, but they can also apply their knowledge. Having analyzed the needs, the time is now ripe for application.

Our view from the summit provides a glimpse of the landscape of geography and our distant, but approachable, horizons. At this point, at least we have done our reconnaissance. Further progress will be best accomplished by mapping out a detailed long-range plan for geographic education and following the best path to implement that plan. With a good map and a knowledge of where we want to go, we will arrive at our destination.

2

The Reform Movement in School Geography

This section contains four articles. Although two describe projects that were directed primarily by university geographers, each article addresses a topic important to the K-12 classroom. All of the recurrent themes can be found in this section, especially the second (the need for better trained teachers using better materials) and the fourth (Geography should be responsive to society's needs).

The section begins with "*Guidelines for Geographic Education* and the Fundamental Themes in Geography" by Natoli. A decade after the appearance of the Guidelines, the chair of the committee responsible for developing this publication narrates a retrospective assessment and provides an insider's look at the development process. Cooperation, discussion, and ultimately, consensus were required by the joint committee to forge this document. The five fundamental themes, the best known part of the *Guidelines*, have played a large role in the reform movement in geographic education. The appeal of the fundamental themes is based on their ability to communicate the essence of geography in simple and direct language. Appearance of the *Guidelines* was fortuitous, because the publication appeared at a time when the public was receptive to geography's message. Nevertheless, the public image of geography continues to be incomplete, or even incorrect.

Next is "Discovering Innovative Curricular Models for School Geography." Marran, who chairs the Geographic Education National Implementation Project (GENIP), looks forward to a second decade of the post- *Guidelines* era, noting that although the development of national geography standards represents tremendous progress, much work remains to be done. Ineffective and often detrimental teaching methods must be replaced with techniques that enrich the presentation of geography. That the "old geography" persists is further evidence of the need for effective teacher training and teaching/learning standards for geography. Marran argues that implementation of effective reform will require continued cooperation by teachers, university educators, researchers, and the professional geography organizations.

In "The Dissemination and Implementation of the National Standards: A View from the Local Level," Philips discusses the real-world obstacles that lie ahead for the geography reform movement. The president of the National Council for Geographic Education (at the time of the Summit) makes the point that geographers who advocate reform must realize the importance of two groups that are continually lobbied by those advocating additions to the curriculum. These are classroom

teachers and the curriculum decision-makers. Both groups are often ill-equipped to make decisions affecting geographic education because of their limited exposure to modern geography. The phrase "think globally, act locally" is a key to enacting educational change in the United States, where educational issues are generally decided in a potpourri of case-by-case or district-by-district decisions. To be effective in this arena, geographers need powerful friends with large grass-roots organizations. This means seeking allies among national organizations that represent related disciplines, professional teacher's organizations or unions, and representatives of national and state governments.

The section concludes with "Geography Instructional Materials for Standards-Based Education" by Hill. A positive outcome of the reform movement has been renewed interest among university geographers in developing pre-collegiate teaching materials. Hill, a professor at the University of Colorado, outlines several externally funded projects involved in the design of geography teaching materials that emphasize critical thinking, problem solving, and skills development. There is a need for a systematic approach to lesson-plan development, supplementing or replacing fugitive materials, which may offer fragmentary coverage of world geography, or even incorrect information. Hill's project, GIGI, stresses a higher level of involvement by students studying global issues while it encourages teachers to use extending activities to link the lessons to local concerns. ARGUS, another large effort to develop learning materials, focuses on U.S. geography at the secondary level. Developers of curriculum materials in geography today have an awareness of lessons learned from the High School Geography Project, a well-received but unfortunately under-used geography program produced in the 1960s. As Hill notes, ". . .it does little good to develop strong materials unless they are widely adopted, used by well-trained teachers, and instrumental to the standards process."

Guidelines for Geographic Education and the Fundamental Themes in Geography

Salvatore J. Natoli

Nearly ten years have passed since the Joint Committee on Geographic Education of the Association of American Geographers and the National Council for Geographic Education produced the *Guidelines for Geographic Education: Elementary and Secondary Schools*. More than 100,000 copies have been distributed. This paper discusses the antecedents of the *Guidelines*, the debates that produced the document, the logic of the development of the fundamental themes, and retrospective and prospective views of the process and the product. **Key words:** *guidelines, fundamental themes, geographic education.*

This is an abbreviated story of those who directly and indirectly contributed their effort and ideas to the *Guidelines for Geographic Education: Elementary and Secondary Schools*. The Joint Committee's [on Geographic Education of the Association of American Geographers (AAG) and the National Council for Geographic Education (NCGE)] work to develop the *Guidelines* would be to assimilate the work of geographers who had influenced the core ideas and pedagogy of the discipline and to translate them into a language understandable to a broad public.

Influences

A few seminal works shaped the basic ideas of geography in the document, including Richard Hartshorne's (1939) classic work, *The Nature of Geography,* a critical survey of geographic thought. Later, William Pattison (1964, 211–216), synthesized geographers' behavior with exceptional cogency in "The Four Traditions of Geography," which established a logical framework that embraced the discipline's complex yet converging historical antecedents. The fundamental themes of geography emerged from the recurring concepts and ideas within the traditions (with the exception of location, which he apparently took for granted as an essential ingredient of spatial geometry).

The Committee benefited also from works by geographers such as Preston James (1959), Phillip Bacon (1970), and Edward Taaffe (1974), along with reports of the Ad Hoc Committee on Geography (1965), the Geography Panel on the Behavioral and Social Sciences and the Social Science Research Council (Taaffe 1970), the Geography and Liberal Education Committee (1965), and the AAG Committee on International Studies (1982).

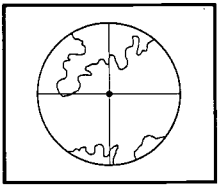
Preliminary Problems

The Committee lacked the most basic data to begin its work. For example, how do children learn geography? What concepts and ideas are developmentally appropriate at certain ages? How could geographic learning enhance other forms of learning or vice versa? To fill these lacunae, the committee would depend upon its members' collective teaching and research experience and our professional contacts, and the experience of the schools. We knew, however, that pitifully few students were enrolled in geography classes in secondary schools and that few teachers had majored in geography at the undergraduate level[1] and that many of those who had were teaching little or no geography because of the crowded social studies, science, and mathematics curricula.

Previous curriculum efforts were instructive. The HSGP (High School Geography Project, 1969-70) approached geography by guiding students to seek, identify, and attempt to understand past and contemporary problems on the earth through the inquiry (scientific) method. This 1960s project (and many other natural and social science projects) never caught fire in the schools for a variety of reasons and situations.[2] We examined state curriculum guidelines and successful syllabi and teaching activities from the United States, Canada, the United Kingdom, Sweden, Australia, the former Soviet Union, the former West Germany, Italy, France, Japan, and the Netherlands and carried on extensive correspondence with many educational enterprises throughout the world.

We hoped our work would dispel the public's perceptions of an eccentric geography or its obsessive concerns with place-name location and exotic landscapes as synonyms for geographical literacy. Yet, we felt compelled to return again and again to an essential starting point in our logic—a characteristic Peirce Lewis (1985, 471) called the "whereness" of things that would lead "beyond the description of where Tallahassee is, and asking why Tallahassee is there, and how its location helps explain the sort of place it is, and then—if we are very clever—how the lessons of what we learn in Tallahassee can apply to other places and other patterns"—in a sense, what were the fundamental themes of geography?

The Fundamental Themes

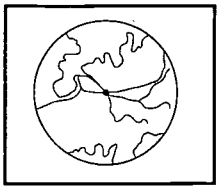


Location

The justification for beginning with location in developing the themes replicates part of the Aristotelian geocentric cosmology. This would assure geography its historically authentic position while avoiding the sterile geometry of using a global address as the end rather than the beginning of geographical practice.

We could not dismiss location lightly because of its significance in understanding world climatic patterns and its mathematical precision for cartography. Location, in absolute and relative terms would express the logical interrelationships for advancing legitimate geographic investigations, and the latter would enrich the logical transition from *location* to the elusive concept of

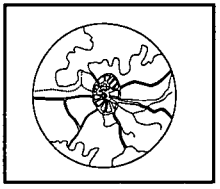
place—the conscious observation of surroundings that invest locations with the necessary characteristics of place.



Place

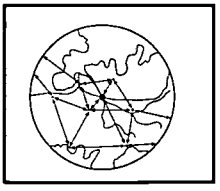
One *Oxford English Dictionary* definition of place is a defined or undefined space but with the requirement for a definite situation (Natoli 1993, 10–11, 23). Fred Lukermann (1964, 167–192) identified six constituent values of places: location, ensemble (integration of nature and culture), uniqueness (within an interconnected framework), localized focusing power, emergence (within a historical-cultural sequence of change), and meaning.[3]

Although places are largely subjective elements, in geography they represent careful observations of the environment, integral to developing formal concepts of the region, and essential for comparing and contrasting landscape elements with other places. These observations also yield vital clues to historical development, are indispensable for reaching levels of cognition that result in sensible generalizations about areas, and provide the dependable capital that imparts meaning to the fundamental themes of geography (Natoli 1992, 4–5).



Relationships within Places

Pattison's "man-land" tradition provided transition from the subjectivity of place to the theme of relationships within places. This theme would express how places evolved, developed, and gained geographical recognition by the intricate interactions between people and their physical and cultural environments, although it also subsumes physical-physical relations as well as cultural-cultural interactions. We veered away in this theme from even an allusion to the discarded ideas of environmental determinism that remained surprisingly strong in some classrooms and had even received impetus from some overzealous environmentalists (Hartshorne 1937, 166–172).

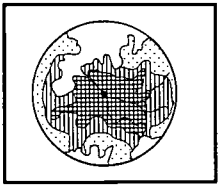


Relationships between Places (Movement)

Perhaps the most glaring oversight within the movement theme resulted from our fixation on defining relationships between places (movement or spatial interaction) in the contexts of economics, sociology, and information highways. Although movement in the influential context of spatial interaction according to Ullman (1956, 862–80; see also Association of American Geographers Committee on Geography and International Studies 1982, 11–13; Harper 1985, 55–66) embodies the intricate economic, social, or information flows, it also offers testimony to our heuristic tendencies rather than to the seemingly mundane dynamics between physical and human systems (Natoli 1990, 32–33). It also connotes, however, the incessant change on

Earth, the movement of continents, and widespread physical and human consequences of intermittent ocean currents such as the El Niño, restless weather patterns, and the devastating consequences of the Chernobyl disaster (Natoli 1990, 33).

Bednarz, Tchakerian, and Giardino (1993, 35–40) offered a rich context for both the inclusion and the omission of physical geography in the school curriculum and suggested how teachers can incorporate a process-response approach to the movement theme. They go on to cite the necessity of becoming familiar with several fundamental concepts of physical geography—system, boundary, driving force, resisting force, threshold, and equilibrium. They then propose ways to incorporate the process–response approach to themes, key, ideas, and learning opportunities (GENIP 1989).



Regions: How They Form and Change

It was no accident that the Joint Committee listed region as the logical culmination of the five fundamental themes. Defining and describing regions, the basic (and ultimate) unit of geographic study, and an area that displays unity in terms of selected criteria is what most people expect geographers to do and according to John Fraser Hart (1982, 1), the region is the "highest form of the geographer's art."

Values and Accommodations

Members of the Joint Committee on Geographic Education of the AAG and the NCGE, in addition to the author who served as chair, were Richard G. Boehm of Southwest Texas State University, James B. Kracht, Texas A&M University, David A. Lanegran, Macalester College, Janice J. Monk, University of Arizona, and Robert W. Morrill, Virginia Polytechnic Institute and State University. Most of the Committee members had extensive direct or indirect experience with or as elementary and secondary school teachers that helped to frame the pedagogical issues implicit in the *Guidelines*.

Robert Morrill invested a deep humanity and compassionate stewardship to the methods of geographic inquiry and was the conscience of the committee. Janice Monk expanded on our knowledge of the tools of geography and stressed the inclusion of social justice and equity into the fabric of the themes. David Lanegran and Richard Boehm offered strong guidance on the utilitarian aspects of geography and on applying the results of geographical research to contemporary issues and problems. Boehm and James Kracht explained the sensitivities and developmental aspects of teaching and learning geography in the elementary school. Lanegran, Morrill, and Monk outlined the sections on secondary school geography. Morrill and Monk were largely responsible for the sections on "Skills for High School Geography" and "Learning Outcomes." Lanegran advocated using the adjective *fundamental* for describing the themes because their nature suggests the term, *primitives*—the basic statements that compose axioms, that is, fundamental condi-

tions held to be constant throughout any sequence of mathematical reasoning (Kolars and Nystuen 1974, 9–10).

Committee Operations

The Committee extended, revised, and fleshed out groundwork laid by a group of Minnesota geographers, including David Lanegran, in 1982 and 1983. I insisted that we follow a strict logic in presenting the heart of the *Guidelines*—the fundamental themes—to demonstrate their inherent interrelationships and that we keep the language understandable to informed laypersons, the group that could best promote the cause of geography in the schools. We would speak to classroom teachers specifically in the sections on curricular sequences, skills, and learning outcomes because they would be the most active participants in the processes to implement the *Guidelines*.

Internal Debates

Utility, morality, accountability, justice, and equity are forthright values that pervade the geographical point of view. The Committee decided to incorporate values within the *Guidelines,* rather than make explicit statements about them, as curriculum projects in the 1970s and 1980s had done (see Fenton 1966; Blanchford 1972; Watson 1977; Cowie 1978; Slater 1982).

The Joint Committee on Geographic Education– "hoped our work would dispel the public's perceptions of an eccentric geography or its obsessive concerns with place-name location and exotic landscapes . . ."

We considered, among other things, whether we should emphasize geography skills separately or integrate them with the themes because they are part of the content of geography. We extracted them from the content into a separate section because teachers would be familiar with such a division. We decided not to offer a definition of *geography* in order to avoid definitional debates that would divert attention from the ideas within the document. We settled on using a modified expanding-environments sequence for the elementary curriculum framework because of its use in most social studies programs at the time. The guidelines for separate courses in grades 7–12 would at best be idealistic, but they would demonstrate the breadth and depth possible at this level (Joint Committee 1984, 18–21). We also did not want to cast geography in the role of displacing other subjects in the curriculum. Thus, we wrote: "Geography belongs in every grade level of the curriculum. Ideally it should be a separate subject" (Joint Committee 1984, 9; see also Natoli 1988). We tried to stress the benefits accruing to the entire curriculum from an increased amount of geography throughout the curriculum. These few examples indicate the continuous debates and rigorous reviews that encouraged each committee member to reflect on every word and line we had written. The

degree of consensus, cooperation, and creativity was so remarkable that it became the most singularly rewarding endeavor of my professional career.

Production and Review

The timetable for development of the *Guidelines* began in October 1982 and ended with their publication in November 1984. During that period, an original writing group was reconstituted in October 1983 as the Joint Committee, funded modestly by AAG and NCGE, and worked intensively for a six-month period to produce a penultimate draft for review by the AAG and the NCGE governing boards in April 1984. A six-month period followed for completing additional reviews by hundreds of readers from all levels of education as well as informed laypersons. Revising, editing, and designing decisions followed. Ten thousand copies of the document were printed in November 1984. The Gildea Foundation supported the first printing which was sold out by April 1985 when an additional 20,000 copies were printed.

The Joint Committee's Report

The Committee's report to the AAG and NCGE governing boards included often overlooked but prescient recommendations for implementation. Janice Monk proposed the idea and coordinated the recommendations as necessary steps and corollary activities for improving geographic education in the United States. The 23 recommendations fell into five categories: influencing standards, improving teacher expertise, setting up communication networks, increasing the visibility of geography, and improving teaching and learning materials. The Committee also recommended an AAG–NCGE joint planning session to develop a multi-year plan for enhancing geographic education in the United States. This plan would identify quantifiable goals and action steps as well as evaluation components for every phase of the implementation and assign responsibilities to regional councillors, state coordinators, ad hoc committees, and department chairs (Joint Committee Memorandum 1984). The Geographic Education National Implementation Project (GENIP), a direct outgrowth of the Committee's recommendations (Figure 1) and the National Geographic Society (NGS) alliances have assumed many of these activities although the AAG, the NCGE, and the American Geographical Society (AGS) sponsor important projects and programs that continue to promote geographic education.[4]

Retrospect and Prospect

In retrospect, the preconditions for the early and continuing success of the *Guidelines* seemed to converge at precisely the time when the document would receive a receptive ear. A series of fortuitous events triggered the public interest in the discipline.[5, 6]

The *Guidelines* with their five fundamental themes seemed to provide teachers with a recognizable conceptual base for organizing the structure of the core of geography in the schools. Their subsequent adoption as the content vehicle for the National Geographic Society alliance teacher networks and their use by textbook

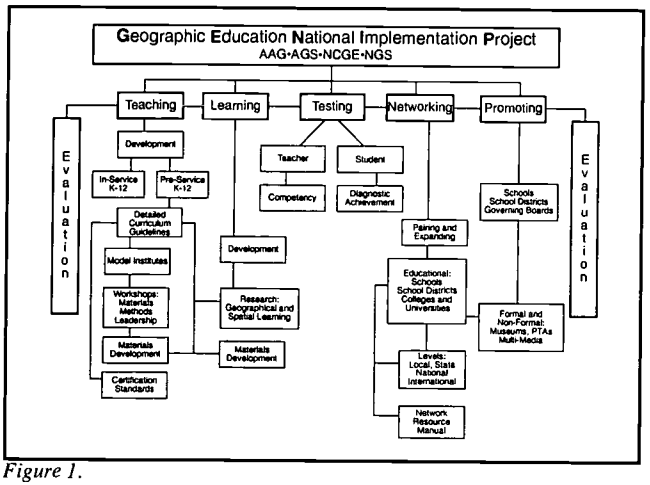


Figure 1.

publishers, map producers, and curriculum developers in geography and social studies are evidence of their legitimacy. The *Guidelines* have helped to structure curricular change in geography in dozens of states and have been translated into several languages.

The *Guidelines* were to strengthen geographers' rationale for the discipline's place in the elementary and secondary schools, assist in developing public policy, and prepare students for careers. The document outlined imperatives for nurturing informed citizens, provided a scope and sequence of geography in the elementary and secondary schools and the content and detailed skills required for learning (and teaching) outcomes in geography.

The *Guidelines* and the five fundamental themes have not been without critics—the themes themselves have been pronounced insufficient to carry through the conceptual ideas of geography in the schools (Harper, 1990). Downs, Liben, and Daggs (1988, 681–683) suggested that research must address the balance between content and learner by taking into account the idea of *psychological* progression rather than the *Guidelines'* delineation of learner outcomes according to their *logical* progression from an adult's perspective. Such constructive criticism can only help the *Guidelines* evolve and develop as geography becomes a dynamic part of the curriculum in our nation's schools.

The five themes of the *Guidelines* appear in current national testing and standards initiatives (*America 2000: An Education Strategy* 1992, NAEP Geography Consensus Project 1992, 16–23: Geography Education Standards Project 1993). The *Guidelines* have encouraged a degree of cooperation, previously unknown among the major geographical organizations in the United States, to advance the cause of geographic education in the schools.

If all these efforts succeed, schoolchildren in the United States will compete effectively with students of all nations in their knowledge of geography. It is still too early to decide whether the reform in geographic education will be successful.[7]

Twenty-three years ago, Gilbert White (1970, 2) summarized the potential influence of the High School Geography Project. He noted that ten years from now, if the venture is completely unsuccessful, school use of geographic ideas will be little changed from today. If it is moderately successful, geography will be taught

widely and substantially in its present form. If it is highly successful, it will have generated a series of competitive improvements and internal revisions so that course materials will be replaced by more effective ones. The *Guidelines* should be a leaven that will lighten and lift up the whole loaf of geographic education, and its message should lead in ferment.

Acknowledgments

Richard Boehm, James Kracht, David Lanegran, Janice Monk, and Robert Morrill are the key players in this story. I acknowledge and appreciate their comments and suggestions on the manuscript. In addition, I owe a debt of gratitude to William D. Pattison who also reviewed the manuscript and offered valuable insights and suggestions, to Pamela Hollar and Angela Olson for their talents, and to Timothy Daly, Dan Kaufman, and Charles Herbert for their graphics expertise.

Notes

[1] Cirrincione and Farrell's (1987) survey confirmed our estimates.

[2] A useful summary of advantages and disadvantages of national projects can be found in Association of American Geographers and American Sociological Association. 1974. *Experiences in Inquiry: HSGP and SRSS*. Boston: Allyn and Bacon: 11-14.

[3] J. Nicholas Entrikin (1991, 2), on the other hand, elaborated on the concept of the "betweenness of place," i.e., where the forms of analysis may be described as narrative-like syntheses "that lie between the centered and decentered view [of place]."

[4] For example, one recommendation called for developing detailed grade-by-grade curriculum guidelines. The two GENIP publications on K–6 and 7–12 geography result from this. Others included developing state networks for individuals who can be called upon as consultants in geographic education and developing model workshops and workshop materials that can assist local consultants. Eventually these activities became part of the National Geographic Society State Alliances. The NCGE standards for teacher certification in geography are an outgrowth of these recommendations.

[5] Following President Carter's Commission on Foreign Language and International Studies (1979) release of its report, *Strength through Wisdom*, the results of a series of polls and tests given to students from kindergarten through the university validated public awareness of Americans' ignorance of international knowledge. The *Guidelines* suggested ways that schools could overcome this.

[6] Shortly after the *Guidelines* were released in October 1984, Theodore Shabad, a journalist-geographer for the *New York Times*, introduced the *Guidelines* to a national and international audience in an article on the need to overcome geographical illiteracy in the United States. The AAG office was inundated with requests for the *Guidelines* following the appearance of Shabad's article. Many attribute the subsequent wide distribution of the document to this article.

[7] The *Geography Assessment Framework* presents the five fundamental themes of geography as organizing ideas for instruction. It has devised three content outcomes (space and place, environment and society, and spatial dynamics and connections) that subsume the themes as the basis for evaluation although the content outcomes seem to play a minor role in the Geography Education Standards Project (NAEP Geography Consensus Project 1992, 16–23).

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Discovering Innovative Curricular Models for School Geography

James F. Marran

Over the next decade or so, the National Assessment for Educational Progress in Geography and the Geographic Education Standards Project promise to give geography a new definition as a school subject. This will challenge the educational community to re-examine how geography is taught and learned across all the grade levels, K-12. If geography is to be perceived as an essential subject in preparing students for citizenship as adults, not only must its image change, but its content and the pedagogy that delivers it must be modified as well. To achieve those ends, new curricular models grounded in cogent and applicable research must develop through partnerships of teachers, teacher educators, learning theorists, and professional geographers. **Key words:** *research, human-environmental interaction, spatial concepts, Geographic Education National Implementation Project (GENIP).*

The school day is a cacophony of bells, recesses, assemblies, safety drills of one kind or another, public address announcements, and an array of other routines that range from collecting lunch money to signing restroom permits. Sometimes instruction seems incidental to what is really happening in classrooms, principals' offices, hallways, stairwells, and schoolyards. Life in the trenches is relentless hard work that demands constant accountability, responsible role-modelling, balanced blends of toughness and tenderness, and the utilization of all manner of skills in delivering subject matter and managing students.

In such typical school environments, knowledge of research in either educational theory or in the academic disciplines is far removed from the experience of most American teachers. The very culture of schools discourages such awareness. The textbook continues to provide the central curricular focus in all subject areas, but especially in the social studies (including geography). A carefully constructed study by Vito Perrone a few years ago confirmed that most teachers continue to follow the text; but, on a more hopeful note, he observed that there is a greater variety of supplemental materials being used at present—including primary sources, maps, and databases—than in previous decades. As promising as that finding is, Perrone noted that what appear to be changes in teacher behavior are almost always keyed

to the text. In general, this means that teachers move away from the text only briefly, and then hasten back to the security of the book. In effect, then, all independent input that could move student learning from knowing to understanding has not been significantly altered (Perrone 1985).

Table 1
Components of the OLD Geography

Oriented on Specific Place/Location
Structured on the Recall of Information
Fact-Based Objective Testing
Limited Skill Development
Teacher Directed/Teacher Shaped
Textbook Driven
Student as Segregated Learner
Minimal Problem Solving
Hooray! It's Field Trip Day
Regional Emphasis
Ethnocentric/Nationalistic Bias

Further studies by John Goodlad (1988) and Larry Cuban (1984) unremittingly admit to the existence of brilliant teaching in many classroom settings. These are relaxed and vibrant environments. Superb lesson plans have been crafted so that students are involved in challenging activities, and so that they pursue and discover knowledge on their own in dynamic and collaborative ways. But there is always the overridingly harsh and constant reality of "talk" or lecture as the most common feature that characterizes the style of most of the nation's teachers. That is especially true at the middle and secondary levels. Talk continues to be the name of the teaching game. Thus, students function largely as passive learners. The flood of teacher talk discourages any significant initiatives on their part. According to Goodlad, surprising numbers of teachers encourage only a low order of cognitive complexity. The pursuit of higher-order thinking skills like evaluation and analysis is rare in a great many classrooms. As a result, testing is directed at coverage based on the acquisition of facts. Goodlad (1984, 468) observes, "Teachers' tests reflected . . . mainly the recall of information." His conclusion is that topics of the curriculum are bits of data to be acquired, not ideas to be explored.

Geography since World War II

Over the last half century or so, geography as a school subject across the grade levels has drifted in search of an identity that would raise it above mere spot location, place-finding, map-reading, and world-orienting. As important as these endeavors are, they are so fundamental to knowledge that they clearly do not deserve an academic base of support nor do they provide much of a standard to help students discover a definition of what geography means or how it applies to their lives. Certainly these fact-finding and skill-based activities bear little direct relationship to the disciplinary field that is so rich in interpreting the physical and human realities of Earth. As a result, "where is it ?" is often the only geographic question that social studies teachers expect their students to answer. In many instances, at all grade levels, acquiring geographic information never ranges beyond determining the

absolute location of places or recognizing that a particular city is a part of a particular country which, in turn, is in a particular region on a particular continent. Through such a teaching/learning motif, then, Oslo emerges as a Scandanavian city at 59°N 10°E that is the capital of Norway, a country in northwestern Europe. Oslo, then, has no other identity beyond knowing where it is. And so finding places randomly becomes the geographic equivalent of "hunt and peck" (see Table 1).

The findings of Perrone, Goodlad, Cuban, and others are indeed discouraging when one realizes that there is a significant amount of soundly developed educational research available about how children think about and perceive space. The 1960s produced important findings related to developmental geographic learning at the early grades. Crabtree (1966) was especially successful in demonstrating that, among early school age children, observation through field work can lead to a sharp increase in the levels of conceptualization about space and spatial relationships. Well-structured and carefully directed field experiences, which might include walks around the neighborhood or the schoolyard with symbolic frames of references like maps and photographs of the places being observed, helped in getting students to see beyond the physical realities of buildings, streets, intersections, and playlots to recognize patterns of land use and the relationships between the physical and cultural environments they observed. Involved and active learners were better critical thinkers, better problem solvers and better at making judgments about issues in geography than children who did seat-work exercises. Crabtree concluded that "doing" geography was far more successful than days of target-practice place-location using atlases and outline maps.

Reform in geographic education has become a powerful movement on the American educational scene. Its presence cannot be denied.... This will challenge the educational community to re-examine how geography is taught and learned across all the grade levels.

Need to Improve Preservice and Inservice Preparation

Central to the problem of presenting a more comprehensive geography is the limited knowledge of the subject among the nation's social studies teachers (Cirrincione and Farrell 1988). Not only do they lack formal preparation in geography in their preservice experience, but there is no consensus within the ranks on how to include geography in the curriculum. Some argue for integration into other courses; others insist on a separate program. In spite of their limited competence in geography, the teachers themselves are not opposed to expanding the subject in the curriculum. In fact, in a survey of almost 600 social studies teachers conducted by Cirrcione and Farrell, the majority argued that while skills in geography are important, there needs to be greater emphasis on the subject's conceptual base. Further, they agreed that

it would be through a curriculum in geography that students would learn about global processes and world interdependence. Indeed, the responses of the teachers in the survey established that geography was a more appropriate vehicle for these purposes than was history or political science.

Table 2
Components of the NEW Geography

Emphasis on Spatial Relationships
Encourages Poblem Solving
Connected to Critical Thinking Skills
Depth Replaces Breadth
Collaborative Learning Strategies
Research Based
Adaptable to the NEW Technology
Observation Through Field Work
Human/Environmental Interation Emphasis
Framework/Standards Driven

But there is a disappointing dimension to the study and perhaps it is predictable. Although most teachers recognized the central role geography can play in teaching interdependence, they failed to link it to understanding population growth and settlement patterns, or to the role and impact of transportation and communication in linking people and their activities. They gave priority to teaching the location of cultural and physical features, thus reinforcing the stereotypical perceptions of geography both inside and outside the schools (Natoli, 1986).

Dismal as all this may seem, there are some hopeful signs, but they are largely confined to the early school experience. Interestingly, the exposition of geography in the elementary schools has tended to be more formal and conceptually abstract than at any of the higher grade levels. There is more attention paid in the early grades to what maps are about, to what constitutes the essential features of maps, to the nature of occupied space, and to an understanding of spatial relationships than is common until these concerns reappear in the introductory college course (Jenness 1990). If students have an opportunity to become literate and competent in geography, it is in the early grades. Often, however, that base has not been built upon because geography in the schools has, until recently, meandered along on uncertain currents rather than seeking to find its own channel.

After World War II, an area studies and regional emphasis emerged. This was an attempt to integrate the social sciences into an amalgam to help students understand the political polarization that was beginning to define the post-war world. Geography's part in that effort by curriculum developers was to provide the power and breadth of the subject to help students understand the new international realities by putting those realities in a regional context. In the middle and secondary schools, that resulted in the emergence of programs of study variously labeled: World Cultures, World Studies, Hemispheric Studies, and Introduction to the Social Studies. These curricular configurations provided an intersection among geography, history, economics, and anthropology, out of which grew the New Social

Studies, a phenomenon of the 1960s that promoted the processes of learning as much as the content of a subject area.

The New Social Studies was heady stuff that was often more an educational cause than a movement for curricular change. Geography's involvement was the High School Geography Project (HSGP) which produced *Geography in an Urban Age* (Macmillan 1968). This was a six-unit course in systematic geography. A far more sophisticated form of school geography than its regionally oriented predecessors, HSGP generated furious debates over the proper content of geography in the schools. Its critics eschewed it as being too eclectic and its proponents believed its hands-on approach would engage learners to think meaningfully in spatial terms, something that had not been a part of their own school experiences.

Whatever its merits or demerits, HSGP marked the only effort until the emergence of the *Guidelines for Geographic Education: Elementary and Secondary* (1984) 15 years later that teachers, learning theorists, and academic geographers attempted something really new. What they produced through HSGP was intellectually stretching but so responsibly innovative that it cast its shadow over a significant amount of the materials development which followed in its wake. Its topical approach was the first significant effort to join the natural and human environments in ways that challenged students to understand such concepts as global systems, central place theory, environmental perception, and diffusion processes. HSGP continues to influence text development. More importantly, however, the Project illustrated through the richness of its content that geography is integrative and thus, through the study of the physical and the human, provides a bridge that joins the humanities with the natural and the social sciences.

Beyond the *Guidelines*

Since the publication of the *Guidelines* (1984), the energy unleashed in geographic education has been unbounded. Among its most evident results are the Framework of the National Assessment for Educational Progress (1992) and the work of the Geography Education Standards Project. Both efforts have moved school geography to positions of priority and importance that are unprecedented. With these frames of reference in place, the old curricular models of purely physical geography or world regional geography must change. Most courses in the middle and secondary schools presently ignore location theory, economic and population geography, the examination and analysis of settlement patterns, or any serious inquiry into topics with significant environmental implications. There are, of course, promising endeavors underway. ARGUS and GIGI are two good examples. Such curricular efforts, however, must be ongoing. Future curricular initiatives must deal seriously with such emerging technologies as remote sensing, computer information systems, and digital methods of mapping. That means current research in human spatial and ecological perception must find its way into the schools, but only after it has been reinforced by the work of the learning theorists concerning how students acquire spatial concepts as well as how they achieve higher-order thinking skills. In addition, the pedagogy must complement the fresh content

emerging from the research and the new cognitive models so that the delivery systems will be responsive to various learning styles and to collaborative teaching strategies. Only then will students be redeemed from classrooms dominated by teacher-talk and fill-in-the-blank workbooks so typical of the old geography (see Table 2).

With the national standards about to be completed and the National Assessment for Educational Progress (NAEP) 1994 testing model in place for grades 4, 8, and 12, what geography education needs now is a long-range plan that will provide a strategy for the full implementation of all the recent initiatives. Reform in geographic education has become a powerful movement on the American education scene. Its presence cannot be denied. Many forces of change over the last decade are responsible for that positive result. Each of geography's professional associations and societies has been involved toward achieving the goal of generating a renaissance in geography education so that the subject would regain its position of importance and visibility in the curriculum of the nation's schools. Indeed, victory is close at hand. The very purpose and power of the Summit in Geographic Education attests to that. What must emerge is a consensus on the type of long-range planning model to construct that will include a well-defined strategy on how to implement it. A coordinated effort among all of geography's associations and societies at the national level is essential if that goal is to be achieved.

What better group to serve as the facilitator for the implementation of the standards than the Geographic Education National Implementation Project (GENIP)? As a consortium representing the nation's four major geographic organizations (Association of American Geographers, American Geographical Society, National Council for Geographic Education, and the National Geographic Society), GENIP's mission is to improve the status and quality of geography in the curriculum in grades K-12. Its purpose in the process would be to maintain communications and develop agreement among its sponsors within the community of geographers and among geographic educators in order to ensure the implementation of the standards as fully and as fairly as possible. Clearly the next step is to develop a strategy to bring the national standards urgently and meaningfully to the schools, to the teacher education institutions, to the publishers, and to the materials developers. GENIP should be central in initiating and guiding the implementation.

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The Dissemination and Implementation of the National Standards: A View from the Local Level

Douglas A. Phillips

Soon local school districts will be facing standards in geography, history, civics and government, and the social studies. This complexity presents states and local districts with major problems when developing and implementing a local curriculum based on the National Geography Standards. Thus, implementation of the National Geography Standards must address both the practical and political issues. To accomplish this, the geography community needs strong partners including teachers' unions and educational organizations. **Key words:** *National Geography Standards, curriculum implementation, Local Education Agencies (LEAs), social studies, social sciences, teacher training, accountability.*

It is the fall of 1995. Your school district has just asked you, (a K-12 teacher, administrator, or parent) to "wade in" and serve on the district's social studies curriculum committee. The committee's task is to develop a K-12 social studies program using curriculum resources currently available in the area.

At the first meeting, the committee chair shares the National Standards in geography, history, civics/government, and the social studies and curriculum guides from the National Council for the Social Studies (NCSS). The state standards in geography, history, citizenship/government, and other areas that the State Educational Agency (SEA) added (e.g., economics, self-esteem) to the state's standards are also provided. Armed with additional curriculum resources from the Social Science Education Consortium (SSEC), Association of Supervision and Curriculum Development (ASCD), other state departments of education, informational items from textbook companies, our district's old curriculum guide, and a few dozen pertinent articles, the committee is now empowered to develop the local program.

The community wants the district to raise student test scores and to be held accountable. Thus, the committee has been asked to use the national and state standards because the district will consider conducting assessments based on the standards. However, the teacher's union is uncertain about the implications of the national standards and the accompanying issues of accountability. After a couple of months, the committee finds they have waded into the Marianas Trench and that they are immersed in a sea of social science and social studies standards.

The completion of the National Standards in geography will initiate the vital implementation stage. The implementation will present two major challenges at the local, state, and national levels. The first includes the practical implementation issues of teacher training, preservice, and curriculum development. The second includes the political issues involved in implementing the geography standards.

Practical Challenges in Curriculum

The social studies/social sciences are beset with a problem unlike other major curriculum areas included in *America 2000*. Mathematics, English, and science will each have one set of national standards. In these areas the curriculum compromises will have been forged at the national and state levels with strong involvement by academics and practitioners. This leaves districts faced with only one national and possibly one state document to work with in shaping the local standards.

In stark contrast, the social studies/social sciences will have at least four sets of national standards. Standards in geography, history, and civics/government are being developed, and NCSS is developing national standards for social studies. States are also developing standards in geography, history, civics/government or in social studies, economics, and other subjects. The plethora of standards existing without a common voice means that the Local Education Agencies (LEAs) and SEAs will be forced to forge together the standards for use at the local and state levels. The magnitude of confusion facing local school districts with all of these standards is unparalleled.

Curriculum at the local level is shaped by teachers, administrators, parents, students, and other community members. Curriculum committees are facilitated by a curriculum coordinator, principal, or teacher. Local districts usually establish social-studies-curriculum committees. Separate curriculum-review committees for geography or the other social sciences rarely exist. If this happens, it is usually for a single course at one grade level.

Unfortunately, many local social-studies-curriculum committee members have little background in geography. This is especially true at the elementary level. Backgrounds of local committee members vary from those with no experience to some individuals who have taken a university course, attended a summer institute, or know the five themes. A committee would be fortunate to have one or two individuals with a degree in geography. Many on the committee will hold a limited view of geography (e.g., map and globe skills and place geography). These are the people who will draw together the local standards. The lack of backgrounds in geography at the local level poses a great challenge in implementing the national standards.

In contrast to geography, nearly all teachers graduate from college with required courses in history, government, and social studies teaching methods. Thus, there is an inherent bias on most social studies curriculum committees toward history, citizenship, and the social studies. Unfortunately, this works to the detriment of geography.

Practical Instructional Challenges

Weak educator backgrounds in geography provide for major problems in implementation even if strong geography standards are adopted within LEAs. Implementing an effective classroom program in geography requires teachers who view the world through a geographic lens. When possessed by the teacher, this view can be effectively taught to students. However, elementary teachers are often not comfortable teaching geography because of their weak background in the discipline. Secondary teachers frequently have a history bias that causes major geographic omissions and distortions when they integrate history and geography.

Major efforts by the National Geographic Society and geographic alliances have started to address this monumental task of teacher training. However, much work remains because more than a million additional teachers need in-depth training.

The geographic community alone is not powerful enough to implement the national standards across the nation.

In-depth inservice training in geography will be expensive and difficult for local school districts to justify in an era of tight budgets. The question about why geography (history and civics/government) should be taught as discrete subjects will be answered by LEAs and SEAs. Why spend so much on geography training rather than on the sacred curriculum cows of math, reading, and science or on new educational trends or icons like computers, multimedia, and other technology? These questions will be answered locally by people with little knowledge about the nature of geography.

Local districts, with external encouragement, may seek to hire teachers with backgrounds in geography. Thus, preservice is another area to address in implementing the national standards. Major changes in course requirements for prospective teachers are needed to provide a geographic foundation. If geography courses are not required, this geographic lens will be difficult to achieve since universities are often trapped in a world where academic geographers do not communicate with social-studies-methods teachers and where geography methods classes are nearly extinct.

Political Challenges

The National Standards in geography are voluntary for states and LEAs. This is a significant U.S. variation when compared to other nations such as Japan or the United Kingdom where a national curriculum is mandated. The voluntary situation preserves control at the local and state levels. Although this avoids imposition of a national curriculum, it simply shifts the arena for conflict to the local level.

Political decision makers and administrators at the local and state levels will need to develop an understanding and ownership of geography as a discipline. Two primary resources are needed for implementing the standards at the local and state level. The first of these is funding. Financial resources are needed for training teachers and vital classroom materials like globes, atlases, appropriate maps, and other resources like technology.

Technology important to geography, including multimedia, GIS, and new applications of virtual reality simulators, for example, require funding. New technology will also require additional training for teachers to successfully apply "geo-friendly" technology in their classroom.

The second vital resource required is time. Classroom time devoted to teaching geography must be provided. Districts will first look at having geography integrated within the social studies. Lost in this huge area, the status of geography will not necessarily improve despite the development of National Standards.

The NCSS has stated in its National Social Studies Curriculum Standards brochure that "independent efforts to define standards by subject-matter disciplines are important but insufficient to provide the unifying focus required of broad-based citizenship education." Thus, it should follow that, to make the linkages necessary within the social studies, students must have a strong foundation in geography, history, and civics/government. If these foundations are missing, what exactly are students integrating or unifying?

Thus, geography must be required as a discrete subject to allow for the unifying effect of the social studies. To do otherwise is asking students and teachers to unify fluff. Improving the status of geography clearly requires inclusion of geography as a discrete subject. Nations from El Salvador to Japan require a strong foundation in geography, often taught as a separate subject **at every grade level.** Simply put, a world-class geography program requires world-class-teaching-time allocations for geography.

Labor Challenges

Teachers are ultimately the most important group in implementing the National Standards in geography. The meaningful involvement in development and implementation of the National Standards by teacher labor organizations is vital to the success of the national standards in geography. A lack of this support can be fatal.

For example, a national curriculum was instituted in 1989 in the United Kingdom. Geography was one of the core areas identified with subsequent national curriculum and assessment development. This curriculum was not voluntary, and assessments are being given in a number of curriculum areas including geography. However, teacher's unions see the issue of accountability being raised and as a result, major national teachers' unions, such as the National Union of Teachers, have questioned the curriculum and voted to boycott administering the national tests in June 1993.

With local or state curriculum and assessments evolving in the United States over the next few years, local communities will be the stage for these conflicts as they move closer to holding students, teachers, and administrators accountable. Although the National Standards are voluntary, a local district can adopt standards and tests that will be mandatory for their district. If a school board pushes too hard for standards and assessment or a teachers' union reacts out of accountability fears, the political impact of unions and accountability questions move from the national to the local level.

Teachers in the United States are primarily represented by one of two unions, the National Education Association (NEA), with more than two million members or the American Federation of Teachers (AFT), with 850,000 members. Both organizations are closely watching the national standards processes, but have taken different paths.

The AFT and its president, Al Shanker, have been active in the political and educational processes related to the National Standards. Shanker and the AFT have published position statements and articles that reflect a supportive attitude toward the national goals and standards movement. In contrast, the NEA has been observing the standards processes and has representatives involved in reviewing standards materials, but it has made no major pronouncements as of June 1993.

With these challenges, geography must identify and enlist the involvement and support of all parties interested in developing and implementing the geography standards. The geographic community alone is not powerful enough to implement the national standards across the nation. Other partners must be enlisted and involved to develop true organizational commitment to the National Geography Standards and implementation. Among these organizations are the NEA, AFT, the National PTA, the Chief State School Officers, ASCD, the National Association of Secondary School Principals, the National Association of Elementary School Principals, and others.

Token involvement by national organizations in the National Geography Standards development and implementation process will provide for their token support in the implementation process. Geography requires strong, meaningful, and ongoing linkages with these organizations. This means listening closely to their concerns and recommendations to implement the standards effectively.

Many collaborative activities are needed, including a national implementation oversight committee composed of representatives from professional and labor groups. This committee would develop a national implementation plan. A number of activities would follow, including, for example, materials developed to support individuals at the local level who want to serve as advocates for the National Standards. Materials targeted specifically at teachers, parents, students, administrators, board members, and other community members advocating the National Standards should be developed in cooperation with other national organizations to empower local individuals with the knowledge necessary to plant and nourish the standards in local communities.

These materials should include rationale for the National Standards, organizations endorsing the Standards, selected supportive quotes from key individuals, common questions and answers, and steps on how to approach a school district to help to facilitate local changes. Political consultants can develop steps for a grass roots campaign for National Standards. The change process is political, and materials should reflect ways that individuals and groups can help to facilitate the needed support for the National Standards.

The support of the U.S. government and state governments are vital for a successful implementation of the national standards. Strong advocacy must be

matched by the funding necessary for the implementation of the standards. The federal and state funding needed to support local school districts, especially in geography, must be adequate to provide for a substantive level of support for implementation due to the problems described earlier.

The geographic community has a huge challenge ahead in implementing the National Standards in geography in local communities. Planning for dissemination and implementation of the Standards requires extensive work in both the practical and political arenas so that Standards advocates have the support necessary to succeed. The community of geography must aggressively seek out allies and jointly plan for the successful implementation of the National Geography Standards.

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Geography Instructional Materials for Standards-Based Education

A. David Hill

In order to establish standards-based education in K-12 geography in the United States, we must 1) develop strong instructional materials, 2) train teachers to use those materials, and 3) ensure adoption of the materials by providing curricular guidance, especially linking materials and teacher training to the reform movement for standards-based education. Three geography instructional materials-development projects support the new geography standards and offer alternatives to the current patterns of classroom use of traditional textbooks and idiosyncratic fugitive activities. GIGI, ARGUS, and GEOLinks represent steps in the evolution of geography materials development in the United States. **Key words:** *curriculum, materials, issues-oriented, geographic perspectives.*

In order to further enhance geography education in the United States, one of our many needs is to improve the quality of instructional materials. A three-pronged effort is needed to 1) develop strong materials, 2) use both the Alliance inservice network and preservice programs to train teachers to use those materials, and 3) ensure adoption of the materials by providing strong curricular guidance, especially linking materials and teacher training to the reform movement for standards-based education (SBE). National geography standards to support SBE are scheduled to emanate from the Geography Education Standards Project (GESP) in 1994 (Geography Education Standards Project 1993). In order to establish SBE in geography, all three of the efforts listed previously must succeed.

Expectations are escalating for strong instructional materials, not only because of the nationwide surge in attention to geography, but more importantly because of the emerging National Geography Standards. These standards under development by GESP are rigorous; they are mandated to be internationally competitive—they state what geography students should know and be able to do in order to be active and responsible citizens in an internationally competitive environment. These standards stipulate the knowledge, skills, and perspectives that are essential to the education of what GESP is calling "the geographically informed person." This is a person who, according to GESP, "applies a comprehensive spatial view of the world to life situations." Instructional materials that do not provide specific and systematic

help in reaching these standards should, in my view, be judged inadequate by the educational community. Where these standards are adopted, we might expect that they will help reform both materials and the materials-adoption process and requirements.

This paper focuses on the first of the three efforts listed above—the development of strong geography materials—but in doing so it emphasizes the importance of the teacher's role in the success of materials. Thus, it foreshadows the importance of the second need listed—teacher training in the use of good materials. The third point cannot be treated here for lack of space, but it goes without saying that it does little good to develop strong materials unless they are widely adopted, used by well-trained teachers, and instrumental to the standards process.

Fugitive Materials and Textbooks

Two undesirable patterns currently obtain in the use of instructional materials: the recent over-reliance on numerous, unrelated activities and the continuing dominance of traditional textbooks. Some of the most enthusiastic participants of National Geographic Society-sponsored Alliance summer geography institutes and inservice workshops have turned away from textbooks in their teaching. In the place of textbooks and in the absence of strong alternative instructional materials, they use a collection of separate lessons or activities in their classrooms. Typically these are called fugitive materials, either because their published sources are not identified or because they have not been published and their sources are not credited. They are often lessons that have been demonstrated in institutes and workshops, and many are teacher-produced activities collected through teacher networks. Copied, often illegally and so frequently they are virtually unreadable, these lessons typically contain dubious content. Perhaps worse, these lessons are often used without regard for any unifying scope and sequence. If a rationale is given for their use, it is usually to teach the five fundamental themes of geography (Joint Committee on Geographic Education 1984). Because the sources of the activities are idiosyncratic, there is rarely a curricular scheme holding them together. This produces a potpourri that confuses students. Too many teachers teach separate lessons to other teachers in workshops without fully understanding the content bases of the lessons. One of the most trenchant understatements alluding to this situation comes from the Evaluation Report of the West Central Regional Geography Academy: "Specific methods of teaching geography are probably more transportable from one teacher to the next than is a conceptual understanding of geography per se" (Ormrod 1993).

It is likely that only a small percentage of geography teachers are substituting fugitive materials for textbooks. Most teachers, probably those who have yet to be influenced by the National Geographic Society's Alliance movement, still rely heavily on textbooks. Traditional textbooks are fact- rather than process-oriented. They stress "what" instead of "how" and "why." Hoffman (1990) showed that texts generally do not encourage a process-oriented geography education. They emphasize selected facts rather than the explanation of facts and the description of patterns rather than the explanation of patterns. Rarely do they offer alternative theories and

even more rarely do they examine theories in the light of facts. Therefore, when teachers allow textbooks to dominate instruction, they are unlikely to meet today's educational demands for critical thinking, problem-solving, skill-building, and inquiry about the real world.

The textbook-adoption process is dominated by hidebound procedures and by form and content prescriptions that discourage innovation. Textbooks mirror the requirements of the large adoption states (i.e., California, Texas, Florida). Smaller states have little or no chance of finding texts that meet their needs when they are different from those of the large adoption states. Furthermore, school budgets traditionally favor textbook purchases over the purchase of supplemental materials. Finally, teachers are too often excluded from decision making about the adoption of instructional materials. Indeed, they need to learn more about how to judge strengths and weaknesses of geography materials and they need to be given greater authority in choosing the materials they will use.

Perhaps some freedom from these strictures is beginning to appear. Certainly the traditional college textbook market is being challenged by electronic technology and print-to-order course packets (Cox 1993). Perhaps the school market will follow suit; if so, we should welcome it. We should encourage greater flexibility in the adoption system so that textbooks have to compete with materials of all kinds—both print and electronic—on a more level playing field.

Expectations are escalating for strong instructional materials.... The demand for geography in the schools has raced ahead of the supply of well-trained teachers and good materials.

This discussion points to the need for alternatives to both fugitive materials and traditional textbooks and for a much wider variety of materials to meet the demands of today's geography education. Three such alternatives are Geographic Inquiry into Global Issues (GIGI), Activities and Readings on the Geography of the United States (ARGUS), and GeoLinks. All three projects were begun prior to the development of the Geography Standards, so it remains to be seen how well these new instructional materials will align with the Standards. These are, however, reform-oriented projects that are likely to support the new Geography Standards. More attention is given below to GIGI only because the author has greater familiarity with this project.

The GIGI Project

Funded by a grant from the National Science Foundation, the *Geographic Inquiry into Global Issues* (GIGI) project at the University of Colorado is developing instructional materials for secondary schools (Hill et al. 1992; Hill 1993). Since 1990, the project has engaged this author, as project director, and a large group of writers, editors, and consultants. It has given us an opportunity to develop materials designed to help meet the goals of teaching responsible citizenship, modern

geographic knowledge, and critical and reflective thinking. Viewing our task as a process of translating the discipline of geography for educational purposes (Dunn 1992; 1993), we have sought to create challenging, useful, and relevant issues-oriented materials in order to motivate students to learn geographic knowledge, skills, and perspectives.

GIGI Components

GIGI is developing two issues-based modules for each of ten world regions (Figure 1). There is no necessary sequence to the modules; each one is free-standing and independent. Depending on individual needs, one can use all 20 modules (in any desired order), or a small subset, or only a single module. This postmodern approach to materials development maximizes teacher choice.

Each module requires from 10 to 15 class periods. Modules typically begin with a broad introduction to the global issue. Then, a primary case study, lasting three to four lessons, examines the issue in a real place within the selected world region. Next, usually in a single lesson, students explore a comparative case study in a different region, that illustrates a variant of the issue and gives a sense of the issue's global nature. Modules typically close by coming back home to focus on the issue as it may appear in the United States or Canada. We do this because North America is not one of the ten GIGI regions.

Each module contains a Student DataBook, Teacher's Guide, Mini-Atlas. CD-ROM and laserdisks supplement the print matierials. The Student DataBook contains questions and data in a variety of textual and graphic forms. Unlike a conventional textbook, students will not understand the Student DataBook by itself. Rather, they derive meaning from the DataBook only with the guidance of the teacher, who is led by the Teacher's Guide. This Guide has a crucial, dual role: to suggest teaching procedures and to help the teacher with both content and process.

Role of Questions

GIGI is based on Slater's (1982; 1993) inquiry activity planning model. Questions guide inquiry in order to merge the inquiry process with the conclusions drawn. Directly linking questions and answers helps achieve an intellectually satisfying understanding of a problem. According to Slater (1993, 60):

> The progression from questions to generalizations is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Meaning and understanding define the process of tying little factual knots of information into bigger general knots so that geography begins to make sense, not as a heap of isolated facts but as a network of ideas and procedures.

When students are asked to learn conclusions without learning how they are drawn, we perpetuate the tradition of an answer-centered education bereft of higher-level thinking.

GIGI asks both convergent and divergent questions and tries to reach a balance between the two. Too much convergent questioning inhibits critical thinking and

SOUTH ASIA	**Population and Resources** *How does population growth affect resource availability?*	**Religious Conflict** *Where do religious differences contribute to conflict?*
SOUTH-EAST ASIA	**Sustainable Agriculture** *How can the world achieve sustainable agriculture?*	**Human Rights** *How is freedom of movement a basic human right?*
JAPAN	**Global Economy** *How does trade shape the world economy?*	**Natural Pollution** *Why do the effects of natural hazards vary from place to place?*
FORMER SOVIET UNION	**Diversity and Nationalism** *How do nations cope with cultural diversity?*	**Environmental Pollution** *What are the effects of severe environmental pollution?*
EAST ASIA	**Population Growth** *How is population growth to be managed?*	**Political Change** *How does political change affect peoples and places?*
AUSTRALIA/ NEW ZEALAND/ PACIFIC	**Global Climate Change** *What could happen if global warming occurs?*	**Interdependence** *What are the causes and effects of global interdependence?*
NORTH AFRICA/ SOUTH-WEST ASIA	**Oil and Society** *How have oil riches changed nations?*	**Hunger** *Why are people hungry?*
AFRICA–SOUTH OF THE SAHARA	**Building New Nations** *How are nation-states built?*	**Infant and Child Mortality** *Why do so many children suffer from poor health?*
LATIN AMERICA	**Urban Growth** *What are the causes and effects of rapid urbanization and urban growth?*	**Development** *How does development affect peoples and places?*
EUROPE	**Regional Integration** *What are the advantages of and barriers to regional integration?*	**Waste Management** *Why is waste management both a local and global concern?*

Figure 1. Modules scheduled for publication in the *Geographic Inquiry into Geographic Issues (GIGI)* Project, showing issue and title question for each month.

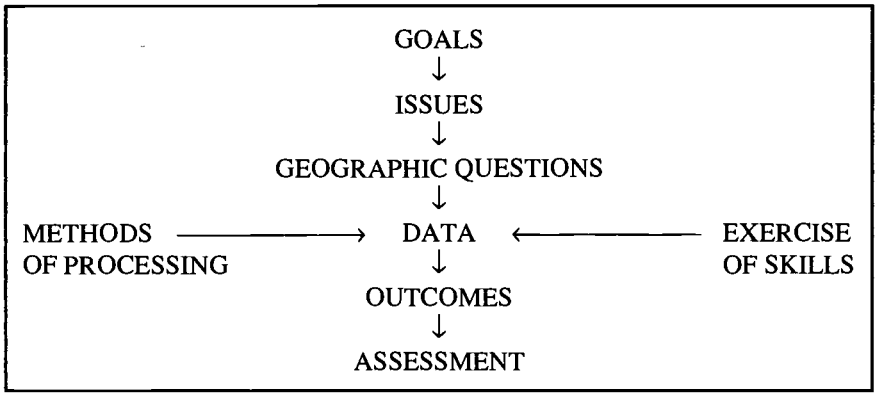

Figure 2. GIGI's Model for Issues-Based Geographic Inquiry (After Slater 1982; 1993).

leads to little else than rote memorization, whereas too much divergent questioning may discourage learning grounded in fact and substance. We encourage teachers to supplement the questions in GIGI by asking students many more questions of the type suggested by Slater (1982; 1993):

1) demanding recall,
2) encouraging classification and ordering,
3) encouraging the use of data to draw conclusions,
4) encouraging awareness of the limitations of data or of evaluation of data, and
5) encouraging awareness of the processes of reasoning used.

Issues-Based Geographic Inquiry

In order to foster active learning and higher-level thinking, GIGI stresses issues-based geographic inquiry. Inquiry is essentially the method of science and of good detective work. It poses questions and proposes answers about the real world, and it tests its answers with real data. To reach GIGI's goals, students examine specific global issues by pursuing answers to geographic questions (Figure 2). They answer these questions by analyzing and evaluating data, using geographic methods and skills. This "doing geography" approach leads to significant outcomes in knowledge, skills, and perspectives.

In truly free inquiry, students work independently, but with GIGI posing questions and providing data, teachers and students explore the issues together. GIGI may be the least teacher-proof geography materials available—they will not work as designed without good teachers guiding students in their use.

Issues-based inquiry promotes the development of a critical perspective in students. They learn the habits of critical and reflective thinking. Multiple and opposing positions are inherent in these issues. Facts can be used to support different points of view. This is the context in which the habits of the critical perspective can develop, and *interpretation* is the key activity. With GIGI, teachers foster these habits and abilities as they help students interpret data guided by hypotheses,

propositions, arguments, or questions, and as they challenge students to raise new questions, question the quality of the data, seek more useful data, articulate relationships they perceive, explain their processes of investigation, and defend their positions and solutions. Without this kind of teacher guidance, GIGI will not meet its goals of teaching responsible citizenship, modern geographic knowledge, and critical and reflective thinking.

Importance of Local Examples

GIGI is a world geography, but it shows that issues work at various geographic scales—personal, local, regional, national, and global. Because it is sometimes difficult for younger students to identify with faraway places, success with GIGI depends in part upon the ability of teachers and students to relate the issues being investigated to examples in their local community. Issues having important geographic dimensions abound in every community. Peak educational experiences often come when students see things in the field that relate to their classroom studies. Klein's (1993) field observations during GIGI's national classroom trials convinced us to urge GIGI teachers to make frequent reference in class to local examples and to have their students conduct local field studies related to the issues whenever possible.

Familiar people can be as important as familiar places in motivating students. The quality of personal engagement is at the crux of successful instruction. Teachers need to help students find relevance by identifying the GIGI issues with real people, especially at the students' own age levels, and by connecting to everyday life at the human scale in other ways.

As teachers gain familiarity with teaching local examples, as they develop field exercises for their students, and as they learn how to put a human face on these materials, they will begin to customize the GIGI modules to fit their particular environments. Our trial teachers reported that the more they taught GIGI modules, the more comfortable they became with them.

Fostering Optimistic and Constructive Perspectives

The seriousness and complexity of the global issues studied in GIGI can overwhelm students unless teachers take care to foster optimistic and constructive perspectives toward issues. "Gloom and doom" needs to be balanced with examples of success and prospects for positive change. It is important to help students develop efficacy, an attitude that their actions can make a difference in solving problems (Klein 1993). The maxim "think globally, act locally" speaks to the need to help students organize and take constructive actions that address local variants of the issues they are studying. As we noted earlier, student involvement in local projects enriches educational experience; in addition, there is good evidence that it actually produces an optimism, the feeling that their actions can make a difference, to help them deal with the often difficult and sometimes depressing issues they face in the world. GIGI includes lessons and activities that show possibilities for positive action.

Certain perspectives can foster student optimism and constructive behavior. Geography students, especially, should learn to respect other peoples and lands, and they should come to cherish environmental unity and natural diversity. They should also learn to be skeptical about simple explanations such as the theory of "environmental determinism." In addition, optimistic and constructive perspectives accompany the development of empathy, tolerance, and open-mindedness. These traits are fostered by teachers and materials that avoid sexist and racist language, discourage ethnocentricity, and challenge stereotypes, simple solutions, and basic assumptions.

ARGUS

Activities and Readings on the Geography of the U.S. (ARGUS), is developing secondary-level materials on U.S. geography. The project is funded by an NSF grant to the Association of American Geographers. Its major goals are to help students develop the ability to see meaning in the landscape, to use maps as analytical tools, and to learn to apply the spatial perspective to problems (ARGUS 1993). An extended discussion of the theoretical basis for the ARGUS course may be found in Gersmehl and Young (1992), but for a brief description of ARGUS, "a really basic outline" of the ARGUS materials was provided by Philip Gersmehl, the project's principal developer, and I include it here with his permission (Gersmehl 1993):

ARGUS is a set of high-school geography course materials: a text, book of readings, student activity manual, and teacher's guide. The four components are complementary rather than interchangeable. The core is a short text about some big geographic forces that shape the United States:

1) population geography—the patterns of Native American life, European exploration and colonization, immigration, and internal migration that give each region a unique population profile and system of land division.
2) economic geography—the patterns of resource use, primary production, manufacturing, and services that give each region a unique mix of big jobs (jobs that bring money into the region) and support jobs.
3) political geography—the patterns of representation, voting, and informal political action that give each region a unique set of laws and institutions and a set of boundaries that affect where certain laws and programs apply.
4) environmental geography—the patterns of natural resources, hazards, and human uses that combine to create particular environmental opportunities and problems in each region.

To illustrate these broad principles and make them more concrete, the text has 26 two-page case studies. These have photographs, maps, diagrams, statistics, and short verbal descriptions of specific places in the United States. They illustrate how broad geographic principles interact to shape the landscape in particular places.

The case studies are the links between the textbook, the readings, and the student activities. The readings provide a variety of perspectives on the landscape and people of the region exemplified by each case study.

Each student activity has four tasks to perform within the course:

1) to introduce a skill for analyzing real-world data,
2) to provide information about a specific place,
3) to use a specific map type (isoline, choropleth, etc.), and
4) to illustrate a major explanatory theory of geography.

Individually, the activities are short (usually only one or two class periods) and self-contained. Together, they cover important theories, map types, and the major regions of the United States.

Finally, the teacher's guide provides detailed suggestions for setting up and running the student activity, asking questions about the case study and associated readings, evaluating student understanding of the material in each of the ARGUS components, and linking the section to other ARGUS parts and to other courses (Gerschmel 1993).

The U.S. geography focus of ARGUS will complement GIGI's global perspective. GIGI's inquiry- and issues-orientations and modular form are its attractions. ARGUS's strength lies in its innovative combination of both regional and topical geography as well as the amount and range of geographic concepts and skills that it systematically treats.

It bears repeating, however, that the success of both GIGI and ARGUS will depend on the skills of well-trained geography teachers. Our classroom observations of GIGI's trials (Klein 1993) and Joe Stoltman's (1993) observations from conducting teacher workshops with ARGUS materials strongly support this conclusion. According to Stoltman, "those teachers out of university less than five years quickly grasped the material, but those out ten years or more had difficulty seeing ARGUS as the alternate treatment of geography and seemed wedded to the regional approach." Evidence that both the GIGI and ARGUS developers are well aware of the critical role of the teacher is the careful teaching-the-teacher that occurs throughout both projects' teacher's guides.

GeoLinks

GeoLinks is supported by a FIPSE grant to Macalester College and two school districts. It is electronically assembling and editing teacher-produced lessons to support the Minnesota geography curriculum and to make the curriculum usable nationwide (Lanegran and St. Peter 1993). Concerned that the "official curriculum" is rarely the "implemented curriculum," this project seeks to produce a curriculum that will be used because it is created and recreated by teachers. It is based on Hypercard, an inexpensive computer software program that enables the user to write programs on the Macintosh computer. This enables teachers to design their own curricula to match a group of students at a specific time and place by accessing any number of lessons that are focused on outcomes the teacher wishes to use in the classroom.

This system has two parts: first is the Minnesota geography scope and sequence. This informs teachers on the times that outcomes are best introduced, reinforced, and mastered so that they can determine what objectives they should be

trying to include at a grade level. Second is a Hypercard stack of hundreds of lessons, many of them written by summer-institute teachers. The stack will grow as more lessons are added. Each lesson is organized according to a standardized format that includes information on the outcomes emphasized in the lesson. The scope and sequence guides lesson selection, and the teacher chooses paths through the stack to call up an almost infinite number of curricula. Lessons are also classified by grade level, learning style, cognitive level, and continental location. Teachers can search by outcome and key word.

This innovative project holds great potential. With careful selection and editing of fugitive materials to ensure the high quality of the lessons put on Hypercard, lessons are rescued from their fugitive status. Materials can be quickly added and updated, which is more difficult with printed materials. Because this system offers such a flexible approach to curriculum development, it may prove valuable as states and individual school districts set about developing curricula for standards-based education in geography.

Conclusions

As stated at the outset of this paper, standards-based education in geography will require more than standards. Curricula must be aligned with standards and strong instructional materials must be developed to support standards in the classroom. ARGUS and GIGI, and GeoLinks represent steps in the evolution of geography materials development in the United States. ARGUS and GIGI are comparable in scope to the High School Geography Project in the 1960s. Less a materials development project than a way to use locally produced materials, GeoLinks , with its ingenious computer-based system, offers the possibility of judiciously using teacher-produced materials in support of standards.

Attention must now turn to teacher training and adoption for these projects, without which these innovations will languish. Both content and process must be addressed in that training. ARGUS and GIGI emphasize content that challenges poorly trained teachers, for example, sound physical geography as a basis for explaining environmental issues. And because learning the content is dependent upon the exercise of higher-level thinking, teachers must become skillful in helping students speculate, hypothesize, analyze, interpret, and evaluate.

Recent national and state-level efforts in geography inservice teacher-training have produced important results, certainly a better record than we have in producing strong instructional material. The upshot is that even the teachers who have received good training do not have access to enough high-quality material. The demand for geography in the schools has raced ahead of the supply of well-trained teachers and good materials. Teachers with little or no geography education are still teaching geography. Although large numbers of teachers have been involved with summer institutes and inservice workshops, the training sometimes has been uneven and superficial. A good two-week institute is a great help, but it does not produce the command of geography content required to get the high-quality instruction needed to help students attain the new geography standards.

Furthermore, let us begin other materials-development projects, such as an integrated, across-the-curriculum elementary effort built onto a geography framework. We have very little high-quality elementary material for geography. At the same time, extant materials such as ARGUS and GIGI, as well as the Minnesota system, should be aligned with standards and their development and evaluation needs to continue so that we may build upon these pioneer projects of the 1990s.

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3

Higher Education's Role in the Reform Movement

This section is comprised of five articles that explore the role that geographers in higher education can and should play in geography education reform. As in Section 2, all of the five recurrent themes emerge from the articles, but the first, third, and fifth themes are the most prominent (geographic education as a K-Ph.D. system, the vocational relevance of geography, and the need for geography standards at all educational levels).

The section begins with "Technology in Geographic Education: Reflections and Future Directions" by Nellis. An advantage of geography training has always been the development of skills in addition to those considered part of a basic liberal arts education (i.e., reading, writing, reasoning, and computation). The development of spatial analytical skills supported by technical expertise will become even more strongly woven into the geography curriculum of the future. Computer technology has been shown to be an effective tool for learning not only in university but also in K-12 classrooms. Specific technologies such as geographic information systems and remote sensing remain important as marketable skills, and these high-tech methods for understanding spatial information are adaptable to pre-collegiate levels of education.

In "Environmental Education: A Geographical Perspective," environmental geographer McKeown-Ice notes that geography has a long tradition of academic and professional interests in environmental issues, but this aspect of geography has not been effectively communicated to the public. Environmental education from grade school to university is widely regarded as important, but many environmental topics by necessity combine science and social science concepts, and as a result, like geography's, environmental education's position in the curriculum is often blurry. McKeown-Ice argues that many basic geographical concepts are crucial to understanding environmental issues. Further, she makes the case that the links between geography and environmental education are a natural way to infuse into the curriculum much of what we know about human-environment interaction.

Frazier offers a look at the job market for geography graduates, particularly applied geographers, in "Geography in the Workplace: A Personal Assessment with a Look to the Future." In addition to the traditional geography career areas, such as teaching, cartography, and regional planning, graduates with technical expertise in spatial data analysis are finding good jobs in the private sector. Although there has been much success, Frazier, an applied geographer at SUNY Binghamton, makes a call for better efforts to communicate geography's utility to society and policy

makers in both the public and the private sectors. Much of this responsibility should be borne by university geographers who train students seeking professional careers in geography-related fields. Linkages between academics and the real world should be strengthened. In higher education, learning and skill development often occur most efficiently under conditions similar to those which the students will encounter after graduation. Project- and problem-oriented approaches and internships help smooth the transition between learning and working environments and should be encouraged. Communication and linkages between these environments can produce a symbiotic relationship between the university and business worlds.

The reform movement has been characterized by university professors offering advice about how to improve geographic education at the K-12 level. In "Baccalaureate Curricula in Geography: Need for Consensus Guidelines," Jumper of the University of Tennessee, calls for a similarly critical evaluation of the status of the undergraduate university curriculum. Although university geographers have been quick to call for action in the schools, they have been slow to reform their curricula. Although national standards are being prepared for school geography, college and university programs display little uniformity. For example, there is no agreement about which course should be the introduction to the discipline. As the improvement of school geography continues, better trained incoming students will expect more from their college and university courses. These courses should build on students' prior training and prepare them for careers that capitalize on their geography skills and knowledge.

Boehm (organizer of the Summit) et al. argue in "The Bête Noire of Geographic Education: Teacher Training Programs" that the key to producing enough well-trained geography teachers is strong programs of preservice education. Effecting change in teacher certification programs, however, is difficult and will require cooperation among the many members of the geography community, including some constituents who have not traditionally been involved with educational reform. By improving preservice education, geography has an opportunity to break a vicious cycle—poorly taught geography causes a decline in student interest, which results in a decline in geography's status, followed by diminished training requirements of preservice teachers, which leads back to poorly taught geography. Although interest in geography has been increasing, little progress has been made regarding the educational requirements and preparation of preservice geography teachers. The lag between schools' expectations of new teachers and the response by preservice education programs is a continuing problem.

Technology in Geographic Education: Reflections and Future Directions

M. Duane Nellis

Enhancing geographic education must include the integration of spatial technologies. With the wealth of information and the integration of information associated with geography, technology is a natural link to maximize our ability to understand spatial processes and with that to think geographically. Through telecommunication, computer graphics, geography computer programs and simulations, as well as Geographic Information Systems, Global Positioning Systems, and remote sensing, geography educators and students can address a broader range of spatial questions than was previously possible. Future directions require the development of exemplary curriculum materials, a greater network of technology users coordinated through the Geographic Alliances, private and federal cooperation for diffusion of software and hardware to geography teachers, and standardized efforts relative to ethics in information. **Key words:** *spatial technologies, geographic information system, remote sensing, GPS, exemplary curriculum materials.*

Changing student learning in the 1990s and into the year 2000 and enhancing geographic education will require three agendas of reform. The first is an emerging consensus about the learning and teaching of geography. The Summit in Geographic Education, the development of the National Geography Standards, the development of exemplary curriculum materials (e.g., GIGI or ARGUS, see Hill, Part 2), and the National Assessment Framework are examples of the evolution of a geography consensus.

The second is the training of well-integrated users of technology in geographic education. The pervasiveness of technology today and the opportunities to use technology to understand and model geographic patterns and processes require that appropriate types of technology be integrated into geographic education.

The third agenda of reform must be restructuring. We must address issues related to implementing the geography standards and integrating technology into geographic education to bring about real change. Only by restructuring the current curriculum and geography learning strategies and environments can enhancements in geographic education occur.

The objectives of this paper are to 1) present a synthesis of the role of technology in geographic education, and 2) develop some thoughts and recommendations on the future role of technology for enhancing geography learning.

The Need for Technology in Geographic Education

As the United States moves toward a post-industrial society, people will need to apply their thinking to new, emerging, and integrative subject areas, and to innovative approaches for addressing those subjects. In geography, the role of technology (e.g., geographic information systems [GIS], computer cartography, and remote sensing) can lead to more active learning and adventurous teaching. By integrating geographic technologies or spatial analysis techniques into courses, geography can become more exciting and forward-looking. Training students to use these technologies also addresses a future need of our society. According to the *SCANS Report for America 2000* (U.S. Department of Labor 1991), the workplace requires competency in five areas. These five areas are resources, interpersonal skills, information processing, systems analysis, and technology. Integrating technology into geographic education can address these needs, and geographers, trained in spatial analysis technologies, can more effectively serve society. The key is to plan strategically for the introduction of computer technologies when it is appropriate to the needs of the geography student. For geography educators, the challenge is how to use emerging technology effectively and creatively within our curriculum goals.

Studies suggest that the use of technology can enhance student learning. A University of Michigan study reported that children can gain the equivalent of three months of instruction per school year when computers are available to them (Elmer-Dewitt 1991). Twenty years of research show that computer-assisted learning produces at least 30 percent more learning in 40 percent less time, and at 30 percent lower cost (Perelman 1987). When a computer is used for interactive multimedia methods of instruction, retention is raised to 80 percent, as opposed to 40 percent for discussion methods, or 20 percent for a lecture approach using visual aids (Northup, Barth, and Kranze 1991).

With an effective series of technology-based curriculum modules and implementation strategies developed at a range of grade levels, geographers can realize positive results in learning. Obstacles, such as lack of teacher training, limited availability of user-friendly software, and competition for use of computers with other curricula, however, must be overcome (Weller 1993). Although many problems exist for integrating technology into geographic education, the advantages far outweigh the problems (Flowerdew and Lovett 1992). With the wealth of information and the integration of that information with geography, technology is required if we are to maximize our ability to understand spatial processes and to think geographically. Now is the time for us to move beyond these limitations. We must work aggressively to seize the advantage while technology and geography are still at the forefront of emerging developments.

Technology in Geographic Education: Where We Are

Geography teachers must deal with vast amounts of text, numerical data, and graphics, and they must be prepared to take advantage of a broad range of powerful technology tools (Fitzpatrick 1993). Whether using word processing, spreadsheets, telecommunications, graphic displays, reference displays, simulations, GIS, global positioning systems (GPS), or remote sensing, geographic educators have available a wide range of tools that offer potentially stunning results.

Geography educational technology tends to fit into three broad categories—database systems, exploratory systems, and simulation systems (Fitzpatrick 1990). Database systems, including geographic-information display software, geographic information systems, remote sensing image processing systems, and computer mapping software, are especially powerful computer-based tools that can help teach geography effectively at all levels. Students can accumulate, display, and analyze geographic information with relatively user-friendly software, while developing higher-order thinking skills.

In a . . . society ever dependent on computer technology, geographers and geographic education are at a crucial point. Through technology we have new opportunities to enhance learning at the same time that we prepare students to be effective citizens.

Within the database systems category are display software and relational database programs that make spatial analysis easier. With display software, such as PC-USA® and PC-GLOBE®, students can see the same categories of data for different regions or countries and analyze these databases to see how areas differ. At an advanced level, MicroCAM®, WORLD®, and ATLAS*GIS® involve the manipulation of map-projection parameters. Students can add their own data as well as select from a variety of data and map display options (Wikle 1991). Relational databases can be overlain to see relationships between phenomena sharing the same geographic space. IDRISI®, GISTutor®, and ARCVIEW® are examples of relational databases often referred to as geographic information systems.

Exploratory computer programs aim to inspire students, usually through some game that is based upon various information about places and regions of the world (Fitzpatrick 1990). Broderbund's enormously popular "Carmen Sandiego," for example, develops a spatial sense as well as research and deductive-reasoning skills.

Simulation systems require students to play a role in a specific geographic or socio-political setting (Fitzpatrick 1990). Learning locations and geographic characteristics and developing small group and decision-making skills are some of the simulations' goals. National Geographic Society's *Golden Spike* and *Weather Machine* are two examples of simulations.

GIS Technology: The New Geography?

GIS offers tremendous promise for enhancing geographic education. Mark and Dickenson (1991) have demonstrated the link between the use of GIS and the four traditions of geography as defined by Pattison (1964). GIS can be an integral part of the spatial analysis tradition, as it enhances the ability to recognize, interpret, describe, and measure spatial relationships. Characterizing regions, demonstrating human-environment interaction, and modeling earth science processes are tasks that can help geography students accomplish GIS. This technology is also tremendously valuable in the K-12 education system for illustrating the five themes of geography—location, place, human-environment interaction, movement, and region.

The case for teaching GIS within the higher education curriculum rests on four ideas: geography as the home discipline of GIS; GIS as a collection of marketable skills; GIS as enabling technology for science; and, GIS as an intellectual theme within geography (Kemp, Goodchild, and Dodson 1992). Morrison (1991) argues that geography, seeing itself as an integrating discipline and focusing on spatial phenomena, is uniquely suited as the home discipline of GIS. At the same time there has been a tremendous growth in the demand from both the public and private sectors for students who can apply spatial analysis through the use of GIS. In addition, GIS has emerged in recent years as a skill that competes for attention with cartography, remote sensing, and statistics in the basic geography undergraduate curriculum.

Abler (1988) has described the potential of GIS as a tool to support scientific inquiry in geography, and in all disciplines that work with geographically referenced information. In this information age, GIS-based analysis is becoming crucial to understanding our complex human-environment system. But for geographers attempting to analyze spatial information using a GIS, questions concerning data capture, compilation, accuracy, display, and analysis must be thoroughly researched on a scholarly level (Kemp, Goodchild, and Dodson 1992). At the same time, a balance between research concerning GIS concepts and principles and efforts to apply GIS to practical problems must be maintained as we develop a stronger role for GIS in geographic education. At the least, we must draw upon the Core Curriculum Project of the National Center for Geographic Information and Analysis for its insight concerning GIS in the university undergraduate curriculum. Some of the basic principles behind the college-level curriculum can also be applied at the middle- and high-school levels.

As GIS becomes increasingly widespread in the workplace and in everyday lives, we can no longer limit student exposure to GIS to the university or college level (Goodchild and Kemp 1992). The Environmental Systems Research Institute (ESRI) National Council for Geographic Education (NCGE) ARCVIEW® Project is one example of efforts to introduce GIS principles with user-friendly software at the secondary level. ARCVIEW® and its related databases, ARCUSA®, ARCWORLD®, and ARCSCENE®, and the ability to display them to secondary

students and teachers, offer literally thousands of pieces of geographic information (Nellis 1993a).

The joint ESRI-NCGE Project involves the development of secondary-level, tested, curriculum modules (through the geographic alliance network) based on integration of the five themes with a wide range of geographic issues. For example, the module for Kansas focuses on depletion of groundwater from the Ogallala Aquifer. Databases including human population, irrigated cropland, soil type, available surface water sources, number of beef cattle, and other variables are integrated into the module so that the students can easily apply the five geographic themes in their analyses of the problem. Through GIS, the geographer (and the geography teacher and student) can address a wider range of spatial science questions than might otherwise be possible through alternative means (Nellis 1993b).

The Role of Remote Sensing in Geographic Education

Remote sensing also plays an important role in geographic education and research at the university undergraduate and graduate level. The increasing availability of low-cost, image-processing software, such as RSVGA®, PEDAGEOG®, and IDRISI®, allows students to see Earth processes from another perspective that enhances their understanding of human-environment interaction.

At the secondary level, use of remotely sensed data also has a number of advantages (Curran and Ward 1985). Students enjoy using remote sensing data more than most other forms of visual aids, and thus they retain more of the information to which they are exposed. Remote sensing also allows very large scale relationships between Earth features to be examined at a synoptic scale. Images can also be obtained sequentially, thereby providing a pattern of environmental change over time, which assists students in understanding natural and human-induced change. There are limitations to the use of remote sensing information, such as teacher experience, the need to interpret rather than read the imagery, and the costs involved (Weller 1993).

A number of recent initiatives by the NCGE, EOSAT, and NASA are changing the availability and nature of remote sensing materials for teachers. The GEO/SAT Project, PATHWAYS publication (Baumann 1994), a new NCGE/GPN slide set, and Space Shuttle Photography on laser disk are exciting new remote-sensing-based products for use in teaching geography. The NCGE PATHWAYS publication, for example, offers secondary teachers eight remote sensing images in slide format with an accompanying lesson plan for each of the images. The NASA laser disk collection of Space Shuttle photography includes approximately 92,000 digitized photographs of Earth recorded by Shuttle astronauts since 1982 (Lulla 1993). The NCGE is just now exploring approaches for developing resource materials to use along with this laser disk.

Future Directions for Using Technology in Geographic Education

In a post-industrial, information-age society ever dependent on computer technol-

ogy, geographers and geographic education are at a crucial point. Through technology we have new opportunities to enhance learning at the same time that we prepare students to be effective citizens.

With the emergence of new spatial analysis techniques in geographic information systems, remote sensing, and computer cartography, educational systems at all levels must generate approaches to use these advances in teaching even at the most basic level of geography. Course curricula, particularly at the university level, must be reshaped, and new courses that link the conceptual elements of the spatial sciences need to emerge (Walsh 1992). Techniques courses must no longer be offered only to the relatively few advanced students (Carstensen 1993).

The rapid development of computer software, support materials, and graphic capabilities makes geography a perfect partner for new technologies. Computers are found in an increasing number of classrooms, and a larger percentage of children have access to computers at home. Our children are being raised with a mouse in their hand, and it is important to take advantage of this readiness (Ludwig 1993). Free software and data (e.g., census data) are becoming available for a large range of applications (R. Lougeay 1993). Finally, as we look to the future, hardware and software are becoming increasingly invisible, so that more emphasis can be placed on geographic problem solving than on the technology (Lind 1993).

The day is rapidly approaching when digital-based, multimedia workstations located in a classroom or at home will become the educational center for a portion of our children (Baumann 1993). More learning of geography outside the formal classroom using computer technology will become the norm (R. Lougeay 1993). For geographic education, these workstations will allow students to see different areas of the world and interact directly with students in those areas. Through the use of satellites, students will be able to observe a variety of changing and dynamic geographic patterns on the Earth.

In summary, to capitalize fully on the technology available for enhancing geographic education, we must work toward the following: 1) develop exemplary curriculum materials at all levels that integrate spatial technologies into teaching geography (including linking these materials to the National Geography Standards); 2) create a group of geography mentor teachers (master teachers) who specialize in applications of geographic technology; 3) aggressively pursue funding from federal agencies and private corporations to facilitate diffusion of geographic-based software and support hardware; 4) develop strategies for ensuring geographic data quality standards and proper ethics in use of computer-based information; and 5) facilitate coordination of technology implementation among the major geography organizations (Association of American Geographers, National Council for Geographic Education, National Geographic Society, and the American Geographical Society).

The future of technology in geographic education is truly exciting. The opportunities for enhanced learning of geography through technology are tremendous. We must challenge ourselves to take advantage of this special opportunity.

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Environmental Education: A Geographical Perspective

Rosalyn McKeown-Ice

Geography is an ideal disciplinary vehicle for environmental education; however, non-geographers are rarely aware of the vast geographic interest, research, and literature related to the environment. Geographers study the environment in four major ways: 1) the natural environment using scientific methods and techniques; 2) the influences of human behavior on the environment; 3) environmental influences on human behavior; and 4) the different cultural perceptions of the environment and how these perceptions are expressed in the surrounding landscape. Within these avenues of inquiry, geographers examine spatial patterns of environmentally related topics at different scales—local, regional, and global—and the interconnections of the global environment and economy. The future role of geography in environmental education is shaped by four current activities: the development of science and geography standards and assessment frameworks, the formulation of environmental literacy standards, and the creation of environmental education certification standards. **Key words:** *geographic education, environmental literacy standards, environmental education.*

Geographers and geography educators have been interested in environmental research, issues, and education for decades. This interest stems from geographers' attempts to understand spatial patterns. Geographers study both natural and cultural landscapes, thus forming a disciplinary bridge between the natural and social sciences. Non-geographers are rarely aware of this interest or the vast geographic literature about environmental topics. The purposes of this article are 1) to describe common geographic approaches to the study of the environment, 2) to describe major contributions of geography education to environmental education, and 3) to note four educational activities that will shape the role of geography in environmental education.

Inquiry into the Environment

Geographers study the environment through four avenues of inquiry. First, geographers study the natural environment using scientific methods and techniques.

Second, geographers study how human behaviors affect the environment. Third, geographers study how the environment influences human behaviors. Fourth, geographers study how populations perceive their surrounding environments and how those perceptions are expressed in the landscape. Within these avenues of inquiry, geographers examine spatial patterns of environmentally related topics at different scales—local, regional, and global. Some of these avenues of study are unique to geography, whereas others are common with other disciplines in the natural and social sciences.

Study of the Natural Environment

Like biologists, ecologists, geologists, chemists, and geophysicists, geographers study the natural environment. Geography encompasses the study of both biotic and abiotic elements of the natural landscape, the distribution of those elements, and how they change over space and time. Geographers also inquire into the processes that affect the surface of the Earth. They study why the wind blows and what it brings with it, where different types of trees grow and why; they map the migration paths of different animals and ponder the pressure those animals put on migration routes. They also study the frequency of floods and droughts. Geographers study the changing patterns of vegetation in the tropics since the last glaciation. Geographers also study the distribution of streamflow in various physiographic regions, searching for explanations of why some rivers flow year round while others flow only after rainfall. In this line of inquiry geographers often ask, What is the distribution of a natural phenomenon in nature? What do we know about this phenomenon? What causes or influences the distribution of this phenomenon?

Geographers also study the processes that change natural landscapes. These geomorphic natural processes include erosion and deposition by streams, wind, and ice. For example, geographers study erosional processes that change the shapes of mountains and beaches.

Study of Human Influences on the Environment

Geographers study the influences of humans on the environment. In the study of human influence and alteration of the environment, geography is a bridge between the natural and social sciences, uniting the study of the natural environment and the study of human behavior. Geographers look at how human behaviors affect the environment. For example, biogeographers study how forest fire suppression affects succession, and how pollution such as acid rain affects plant and animal communities. Physical geographers study how damming rivers affects the flood frequency and how soil compaction affects erosion. Geographers also study how human-induced environmental degradation affects the economy.

Geographers also study the cultural processes that affect landscapes. Some cultural processes are settlement, urbanization, land-use change, and the diffusion of ideas around the world and tangible items (such as food stuffs). For example, geographers study the diffusion of the potato from the New World to the Old World and how it changed agricultural and dietary patterns.

Study of Environmental Influences on Human Behaviors

Geographers examine how the environment affects human behavior. That is not to say that the environment dictates human behavior (environmental determinism), but that the environment influences human behavior. For example, repeated flooding and subsequent governmental regulations often lead to prohibitions against building permanent residential and industrial structures on floodplains. People also tend to build houses with characteristics that reflect their adaptation to regional climates. For example, houses in Florida have less insulation than those in Alaska. Geographers are currently looking at environmental pressures, such as the availability of water, which could limit industrial, agricultural, and population growth in the arid American Southwest during the next decades.

Study of Cultural Perceptions of the Environment

Geographers study how different peoples and cultures perceive their surroundings and how those perceptions affect the way people use the environment. In the aerial photography of Gerster (1976), the presence of roads on the American landscape is striking. The American people have used acres of farmland and millions of cubic meters of gravel and asphalt to create an intricate system of freeways, highways, and roads. The roads branch into streets and eventually into individual driveways. We consume millions of gallons of petroleum to fuel our use of these roadways. We as a society have decided to dedicate a vast quantity of our resources to make convenient, individual use of automobile transport possible. This pattern of roadways and use of resources is not apparent in South America or on some of the other continents. A population's perception of the value of resources affects more than road patterns; it influences a society's awareness, use, and conservation of energy, water, and other natural resources.

Geography is an ideal disciplinary vehicle for environmental education; however, non-geographers are rarely aware of the vast geographic interest, research, and literature related to the environment.

Use of Scale in the Study of the Environment

Geographers study resource use and environmental change on three scales: local, regional, and global. Maps that display the spatial distribution of phenomena often move geographers to inquiry. Geographers frequently map a phenomenon and try to explain the pattern of the spatial distribution.

These four avenues of inquiry and the consideration of different scales form the foundation for a geographic perspective for teaching about the environment.

Major Themes of Environmental Education

Environmental education has its roots in nature education, geographic education, conservation education, outdoor education, and science education; however, envi-

ronmental education is emerging into a discipline of its own. In spite of many different disciplinary approaches and little agreement on the definition of environmental education, several major themes can be identified. They are: 1) the interrelationship between natural and social systems, 2) the unity of humankind with nature, 3) the influences of a society's technology and decision making, and 4) the continuation of learning throughout the human life cycle (Roth 1991).

Parallels in geographic education are found for each of the themes of environmental education. 1) Geography also bridges natural and social science, revealing interrelationships between natural and social systems. 2) Geographers view humans as agents of landscape change, effecting and affecting processes that modify their surroundings. Geographers rarely seek places for research that are unaffected by humans, rather they include humans as part of the study. 3) For years, geographers have been examining the effects of technology and of the choice of technologies on the land and the people. 4) Geography educators, like environmental educators, mathematics educators, science educators, etc., strive to motivate students to be lifelong learners. Given the parallel nature of environmental and geographic education, many educators see geography as the ideal disciplinary vehicle for environmental education.

Contributions of Geography to Environmental Education

A common and widely adopted approach to geographic education in the United States is to organize geography content using the five themes. The five themes are: location, place, human-environment interactions, movement, and regions. The commonalities between geographic education and environmental education are perhaps the most obvious through the theme of human-environmental interactions. Examples of human-environmental interactions have been described previously. The other four themes—location, place, movement, and region—can have strong environmental components as well. For example, residents of the Love Canal neighborhood became very concerned about the **location** of their homes in relation to the toxic dump, and the physical presence of the toxic wastes became part of the description of the cultural and physical components of the **place.** The **movement** of the Islip garbage barge was watched by millions of Americans on the evening news as its captain tried to find a port that would accept the garbage. **Regions** are also being defined by environmental parameters, such as the region of increasing desertification south of the Sahara in Africa. Environmental concerns can be studied using all of the five themes.

Some educators hold the opinion that geography's greatest contributions to environmental studies and environmental education are use of scale and emphasis of global interconnections. The use of three scales (local, regional, and global) is essential for students to understand the global implications of local environmental degradation. For example, the draining and filling of wetlands for development may appear to have few negative global effects; however, the environmental alteration can destroy nesting and feeding grounds of waterfowl, thereby affecting hemispheric patterns of waterfowl migration and population. Through environmental

education, students must realize that local actions can positively or negatively affect global environmental health. The use of geographic scale and interconnections are essential to the process of local learning leading to global understanding of environmental issues.

Maps also illustrate that local problems are often an important component of global problems. Maps in atlases such as *Gaia: An Atlas of Planet Management* (Myers 1984) or *World Resources, 1993* (World Resources Institute 1992) help students visualize the magnitude of local environmental degradation repeated around the world. For example, a map of global production, exports, and imports of oil compared to a map of visible oil slicks rapidly illustrates the magnitude of marine pollution. Cartography and map interpretation offer a strong analytic component to environmental education.

Multicultural Perspective

A current educational trend that is reflected in environmental education is to create curricula that include multi-cultural perspectives. Geography inherently uses a multi-cultural approach, because of its international focus and its study of the different cultural perceptions and uses of the environment. Geography provides the opportunity for students to study other cultures and compare them to their own. This comparison leads to the realization that cultures around the world use their resources in different ways resulting in different patterns on the landscape. It also leads to the understanding that cultural norms are not the same around the world and it fosters greater tolerance of other peoples and cultures.

The Future of Environmental and Geographic Education

Four major events have the potential to shape the future of environmental and geographic education in the United States well into the 21st century. First, environmental literacy standards are currently being drafted by the American Society for Testing and Measurement (ASTM). The lack of environmental education standards, either written or commonly accepted, has lead to confusion among groups such as grant-making agencies, school boards, curriculum developers, business and industry participating in and supporting environmental education, and the general public promoting quality basic education (Roth 1991). Creation of the environmental literacy standards is a consensus process. Fortunately, the current draft of the standards has a distinctly geographic nature.

Second, teacher certification standards are being written for environmental education. These certification standards are also being created through an ASTM committee process.

Third, many states are creating comprehensive environmental education initiatives. The movement to create these initiatives is supported by the North American Association for Environmental Education, which is sponsoring workshops and publishing a handbook to assist state environmental education organizations with the process. Representation of geography in these initiatives will depend on

geographers in each state identifying the beginning of the process and working to include geography as an integral part of the initiative.

Fourth, national assessment standards and learning outcomes are being written for science and geography. Geographers have included a major section on environment called "Environment and Society" in the *Geography Assessment Framework.* Geographers also have an environmental education advisory committee that assists the writing committee produce learning outcomes and assessment standards related to the environment for grades 4, 8, and 12.

Recommendations for Action

The National Council of Governors endorsed a national educational plan that calls for five core subjects—English, history, math, science, and geography. Environmental education has two points of entry into the K-12 curriculum, science and geography. Despite sentiments to exclude Earth science, and thus physical geography, from the national science standards, science and geography educators need to share the responsibility of teaching about the environment. Geography and science educators should work together to define roles and responsibilities in teaching environmental education in the K-12 curriculum. They should not battle for turf or ignore each other's efforts, as they have so frequently in the past.

Geographers and geography educators can become involved in the process of teaching science educators and environmental educators about the geographic knowledge base, the geographic skills, and the wealth of geographic resources related to the environment. We can present papers and workshops at national and regional conferences of the National Science Teachers Association and the North American Association of Environmental Educators. We can review working papers and drafts of the National Science Education Standards, the Environmental Literacy Standards, the Environmental Education Teacher Certification Standards, etc. We can become involved in the creation of state environmental education initiatives. We can assist local schools to integrate geography into their curriculums. In essence, geographers must move outside comfortable and familiar circles of professional communication and talk with professionals of other disciplines and associations on national and local levels. A few geographers have been doing this for years. They will tell you it is not easy, but it is necessary.

Conclusion

Geography has a rich knowledge base pertaining to environmental research and education. It is our responsibility as geographers and geography educators to work with environmental and science educators to assure that geography has a meaningful role in the assessment frameworks, learning outcomes, curriculums, statewide environmental education initiatives, literacy standards, and other educational projects that will shape the future of environmental education.

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Geography in the Workplace: A Personal Assessment with a Look to the Future

John W. Frazier

This paper offers a perspective of geography in the workplace. Who is doing what kind of geography can help us understand the influences of our discipline in the workplace. We can and must do better in providing research-oriented, problem solvers to the workplace. To achieve this, we need to address collegiate-level geographic education, our goals and aspirations, the discipline's roles and responsibilities, educational reforms, and potential linkages between academic geography and the public and private sectors. If we understand geographers' roles in the workplace today, and can agree on the needs for tomorrow, we can debate goals, actions, and outcomes.

Although no one knows the entire workplace, its opportunities, and demands, I provide a general model of geographers in the workplace, including "who is" and "who is likely to be applying geography in the future." This leads to how our degree recipients should be educated and suggests issues, challenges, and strategies. **Key words:** *Applied geography, careers, private sector.*

Geographers are employed in various positions, although few are called geographer. Figure 1 summarizes some of the employment opportunities for geographers. Teaching is the mainstay of academic geographers, and public planning is the chief occupation of non-academic geographers (e.g., Mayer 1980). Public sector employment opportunities include federal (e.g., DMA, U. S. Census, USGS, EPA, EDA, ARC, etc.), regional (TVA, local development districts, regional planning and development agencies, states, etc.), and local levels (urban planning, health planning, housing and community development, economic development, county planning, etc.). In the arena of public planning, titles include technician, planner, cartographer, GIS specialist, research analyst, scientist, administrator, director, executive director, and so forth.

We have been proud of those graduates who have become professional or applied because they are evidence of our value to the real world. These successes (at all educational levels) are warmly and proudly remembered to deans and colleagues, while less fortunate graduates disappear.

Employment opportunities have increased for geographers in several private-sector domains. With the increased popularity of demographic forecasting, geodemographics, and GIS/automated mapping technology, geographers have found employment with data management companies, to manipulate, portray, and less frequently, analyze data or produce software and customized mapping solutions. Opportunities exist in many organizations that use automated systems, and most of these positions place a premium on technical skills. They may be the single greatest employment source for geography graduates today.

Few geography-degree recipients penetrate the private sector in business and economic development (i.e., beyond technical functions like GIS). An exception is retailing (e.g., Dayton-Hudson, May Stores, Kroger, Stop and Shop, Ames, Hechingers, Lowes, Fays, Food Lion, General Growth Companies, JC Penney, etc.).[1] Although overall numbers are relatively small, the pattern of success may merit a closer look by those who are interested in placement in the business world.

Other sources, less known to me, certainly also belong in Figure 1. Despite this, the discussion provided illustrates several major sources of employment opportunities historically tapped by geography-degree recipients. Beyond these generic sources, however, we need to know what kind of geography is being applied and by whom.

Who is Applying What Kind of Geography in the Workplace?

Given the breadth of employment possibilities (Figure 1a and 1b), we know that *geography is being applied in numerous ways* by non-geographers every day. Other disciplines (biology, economics, anthropology, and increasingly, business and management) have a legitimate concern for environmental and spatial theory and practice. Problems that have environmental and spatial components do not recognize disciplinary boundaries. Also, GIS has made it easier for any practitioner to employ a geographic framework for analysis. *The "who" applying geography is anyone in the workplace who needs it.* We may be troubled by the use of geography by non-geographers in the creation of geographic products, but this is more likely to increase than decrease.

The quality and type of geography applied in the workplace depends on the place of employment, job description, and the individual, including his or her previous education. Because academic geography prepares professional geographers and influences the quality of geographic application, it is useful to classify non-academic positions, to evaluate current employment of geographers through this classification, and to create goals for future placements.

A Model of Position Types and Responsibilities

Simplification is inherent in any general model. Table 1 may oversimplify the breadth of experience geographers enjoy in the workplace, but it summarizes broad categories of employment and their responsibilities into six general job descriptions. The first three are largely production positions. Each entails repetitive production of maps, data, and routine reports. These are described below.

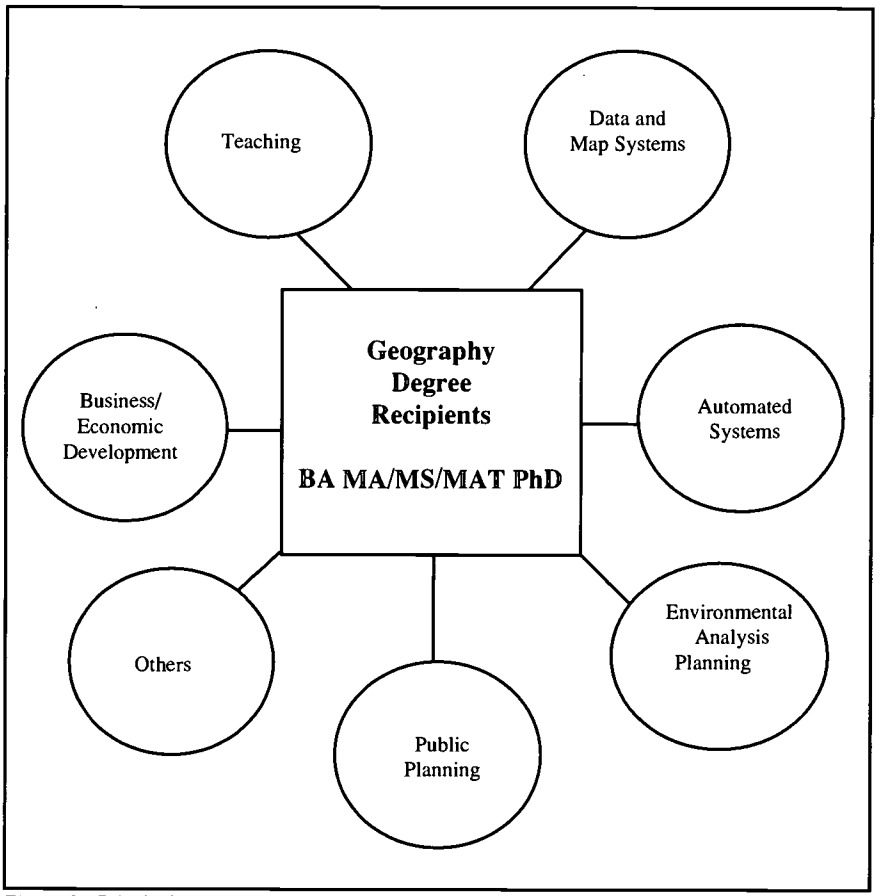

Figure 1a. Principal employment sources for geography-degree recipients.

A *planning* or *technical assistant* provides support functions. Responsibilities tend to be routine, repetitive, and are largely limited to preparation of materials that support plans, large mapping projects, or reports. This is often an entry-level position requiring a bachelor's degree in geography but no experience.

The second position is technical in nature. The *cartographer* or *GIS/automated mapping specialist* uses cartographic theory and technical skills to create or modify automated systems, or to produce maps and other products that aid research, analyses, or that result in a product such as an atlas.

The third position, *planner*, refers largely to public planning and generally requires certification. Planners are knowledgeable about planning theory and practice (comprehensive plans, land use regulations, zoning law, and environmental regulations). Although planners perform some research functions, most planners admit that departments are understaffed and that they react to requests (federal program requirements, e.g., CDBG, zoning variances, public hearings for special

Environmental Analysis/Planner
EPA
Bureau of Land Management
Solid waste and management
Water resources planning and management
Meteorology
Engineering and pollution abatement
Etc.

Public Planning
Urban planning
Regional planning
Rural development
Health planning
Transportation plan
Advocacy planning: Empowerment
Etc.

Business/Economic Development
Industrial
Retailing
Financial
International trade
Marketing
Market research
Etc.

Data and Map Systems
Satellite data
Demographic data
U.S. Census
USGS
SMA
Etc.

Automated Systems
Automated mapping
Remote sensing
GIS
Etc.

Teaching
Primary
Secondary
Collegiate

Figure 1b. Employment sources for geography-degree recipients

permits, etc.) rather than provide visionary plans. For this reason, planning is characterized in Table 1 as "production" rather than "research." Because geographers have found the greatest employment in planning since the 1940s (Mayer 1980), the discipline has had little influence on public or corporate policy.

Two job descriptions in Table 1 may be characterized as research positions. *Research analyst* refers to positions that use the research skills developed in a degree program, through experience, or by additional training. These analysts work with primary (field) data, secondary data, and typically are part of a problem-solving team that works on a piece of the puzzle, and then merges with a larger group. They are directly involved in the research enterprise but report to a supervisor.

The second research position, *senior analyst/project manager/scientist,* includes positions with advanced responsibilities. Such a person is responsible for all aspects of a research project, including design, execution, report writing, and recommending actions. Senior researchers with knowledge of all aspects of research and client profiles and needs must be comfortable dealing with both executives and clients.

Researchers have a broad range of clients and, therefore, broad research agendas. The charge may be to advise a client, to perform basic research, or to determine spatial patterns of consumers, which includes providing advice on how to change the patterns. In all of these cases, a client has particular problems or issues to be resolved through research and recommended actions.

Table 1
Positions Typically Secured by Geographers and Their Responsibilities

Job Descriptions	Responsibilities
1. Assistant Technician/Assistant Planner	Assist specialist/planners through the preparation of data, maps, and graphics, also may collect and organize data, digitize maps, and perform other basic support functions.
2. Cartographer/GIS/AM Specialist	Responsibilities include compilation, design, and production of conventional and digital map products. Supervision of technical assistants.
3. Planner	Demonstrable skills lead to certification. Responsibilities include applications of planning principles to zoning, economic development, comprehensive planning, and other duties.
4. Research Analyst	Application of research methods and disciplinary (specialty) knowledge to problem solving. Typically part of team participating in large project. Report findings to supervisor.
5. Senior Analyst/Project Manager/Scientist	Responsible for all aspects of a project, from problem definition to recommended actions for a client. Provide quality control and project supervision. Takes responsibility for results and reporting.
6. Executive	Leadership role and responsibility for research, development, or some other area. If CEO, responsible for all functional areas within the agency or company.

Geography has failed to compete adequately for these research positions with the exception of retailing. There geographers have enjoyed a positive image and the benefit of well-placed executives and managers.

Finally in Table 1, *executive* refers to administrative functions including vice president (e.g., vice president for area research), president, and CEO. These leadership roles encompass responsibility for at least one functional area of the corporation (area research) or all functional areas (CEO).

Research disciplines should place their degree recipients in positions that lead to recognition and influence. In fact, university administrations assess departments' (disciplines') success, in part, by how many influential people they produce over a period of time. These include notable writers, engineers, doctors, politicians, researchers, and corporate executives. This implies that a discipline educates students, who after graduation, find worthwhile employment. They become influential and are promoted to senior research and executive positions. It is necessary that research disciplines place many of their degree recipients in non-academic

positions that lead to significant careers and potential distinction.

This leads to questions that the discipline must address, or answers will be provided by others. The questions I wish to raise are for the collegiate level.

Some Questions for Collegiate Geography

A number of questions help focus on issues that collegiate geography must address. These include:

1) Why have geographers not done better in the non-academic workplace, especially private sector and research and executive positions?
2) What are the appropriate aspirations of a research discipline regarding the workplace?
3) What are the appropriate roles of academic departments and university teachers in the preparation of students for the workplace? Can we be satisfied with the singular role of imparting knowledge?
4) Is there a relatively standard geographic curriculum with general coursework based on principles, skills, and measured outcomes that most of us could agree on?
5) What responsibility, if any, do we have to society to provide research-oriented problem solvers?
6) What responsibility do we have to our students to provide a well-defined, conceptual and analytical framework to enable them to compete in the workplace for positions that are on a career track?
7) What responsibilities do we have to our discipline and its future regarding the creation of a more viable and visible geography?
8) Does it make sense to undertake educational reform at the precollegiate and collegiate levels simultaneously? What types of resources are required? What will the expected outcomes be?
9) Is it desirable and feasible to develop linkages between the discipline and the private sector? Will our objectivity and critical inquiry be sacrificed or is it possible to agree on our differences and forge relationships based on mutual respect and benefits for both parties?
10) Can we afford not to provide more direct utility to our students and society in the 21st century?

It is never comfortable to address performance and adequacy because answers may force us into uncharted waters for solutions. The stakes for collegiate geography are too high not to attempt this course.

Addressing Some of the Issues

The first question—why have our degree recipients not done better—probably has multiple answers. Among them are:

1) an image among public and private sector agencies that geography is merely trivia (no original concepts and no core);

2) an omnibus perception of geography that it is everything and therefore it is nothing;
3) inadequate relevant research findings to be generally useful or meaningful to policy makers and private sector employers;
4) inability (or lack of effort) to inform others of geography's core and its relevance;
5) inadequate linkages with policy makers and business;
6) inadequate understanding of the workplace—its nature, demands, needs, and how geography degree recipients can be assets.

These and other factors must be debated and addressed if we wish to understand how degree recipients can improve their chances in the workplace.

The next two questions deal with aspirations and appropriate roles for geography departments and their faculty. Geography seems to have a need to be valued by other disciplines and by society, policy makers, business, and industry. Yet, as a discipline, we have never formulated a plan regarding what specific roles we wish to play in society and how we plan to secure these roles. To realize our aspirations, there must be clearly defined and specific education roles that match our aspirations. Some (Wilbanks 1993) maintain that we need more "research stars" dealing with critical issues in visible ways (like Gilbert F. White, Ian Burton, Robert W. Kates, Brian J. L. Berry, John Borchert, and others). This will lead to more recognition in the policy arena. However, an equally valuable enterprise is providing a sustainable core of high-quality, trained researchers who become problem solvers in the non-academic arena, while remaining well rooted in the core of our discipline. This will require a more focused core of course work and a balance between theory, skills, and problem-solving approaches. The result will be different than the **average** degree recipient who fills a planning or GIS position in the private sector.[2] It will also mean different and expanded roles for many geography faculty. They must understand the workplace.

Geographers – "... have been proud of those graduates who have become professional or applied because they are evidence of our value ... warmly and proudly remembered to deans and colleagues, while less fortunate graduates disappear."

A simple example is preparing students for their first job interview and providing hints for career advancement. Each of us has probably had the experience of the nervous student seeking advice on how to handle the first interview. We impart the importance of disciplinary knowledge, skills, work or intern experience, appearance, confidence, and a good first impression. But how many departments provide routine advice to all degree recipients before that first interview? How many of us consider explaining what factors influence long-term job success and promo-

tion? How many successful role models do we bring back to the classroom or seminar?

Clearly, there are many roles that we can and must play. If we do not, who will advise our graduates? While space does not permit a discussion of all roles, Tables 2 and 3 illustrate some of the dimensions of securing employment and promotion. Such information is necessary if students are to know the workplace and its demands.

Table 2
Securing a Position

Knowledge of:
- **Potential employer—annual report, surveillance**
- **Issues/problems of importance**
- **Specialty area**
- **How skills and education fit job need**
- **Relevant coursework**
- **Technical skills**

Experience
- **Actual related**
- **Indirect but relevant**
- **Value of teamwork**
- **Value of internship**
- **Value of thesis**
- **Value of research assistance**

Impression Made in Interview
- **Personal appearance**
- **Communication skills**
- **Mannerism—style, confidence, etc.**
- **Performance on test**

The fourth question deals with need to revise geography curricula. Jumper (1993) provides compelling arguments to do so, including the fact that little agreement exists nationally regarding what a geography degree recipient "is expected to know" or "to know how to do" (see also Hart 1968). If we are to convince the workplace (and others) that geography is a coherent field of study, then it is time that our curricula, undergraduate and graduate, reflect that coherence and be expressed in terms of learned outcomes. This is necessary at both the bachelor's and master's levels. To do this we must resolve a number of issues. Among them are:

1) Can geography be less eclectic?
2) Can geographers recast old concepts and principles in light of technological change, and develop new concepts and principles?
3) Can the discipline rid itself of the erroneous dichotomy of theoretical versus applied research and replace it with the notion of a continuum of theoretical and applied science?

It is possible that our discipline, in order to avoid the reductionism of other disciplines, has cast theory and organizing principles aside in favor of more eclectic approaches to reality. Although eclecticism can be as useful, no discipline can function without a set of principles and concepts that undergo regular review and refinement and guide future endeavors. This is what a disciplinary core is all about.

Geography can and should recast its concepts and develop new principles. Jones and Roberts (1993) point out that substantial geographic research has focused on "transforming the space economy." There is room for varying philosophical views in geography, but we must incorporate these views into advanced textbooks

that provide new conceptual frameworks, theories, and the practical value of complex, geographic relationships discovered from critical inquiry. Commercial book publishers have avoided publication of advanced geography texts because of low adoption numbers. If we cannot agree on advanced concepts, curricula, and coursework, how can we expect to provide students with meaningful advanced texts?

Finally, geography needs to understand that applied geography is the touchstone of theoretical geography. The two should not be seen as conflicting, one meaning "jobs," the other meaning "academics." This is an immature view that fails to recognize the significance of applied science.

Table 3
Securing a Promotion

Performance
- Quality
- Dependability, evenness
- One step ahead of the pack

Skills
- Relevance of existing skills
- Those developed while employed
- Unusual communication skills

Knowledge Base
- Relevance of education
- Knowledge developed on job
- Knowledge increase through continuing education

Personal Characteristics
- Flexibility
- Team player
- Highly motivated
- Creative
- Assertive
- Focused/incisive
- Thinker
- Problem solver
- Leadership qualities
- Capable of making a decision
- Liked/respected by peers

Questions five through seven deal with geography's responsibilities to society, students, and its own future. Space does not permit a full discussion of these questions. However, state legislators, state education offices, administrators, reaccreditation experts, and parents of students are making it increasingly clear that academics have a responsibility to society and students. If we wish to leave geography better off than it was when we came, then improving its relevance to society through educating students to become better teachers, researchers, and problem solvers is a worthwhile endeavor.

Question eight asks whether or not we should consider reform at the precollegiate and collegiate levels simultaneously. Resources are an issue, but the potential benefits derived from considering content and performance standards at the K-12 and collegiate levels outweigh the costs. Clearly, successful standards at K-12 will yield better informed college freshmen in geography courses. Our curricula and standards for college geography should reflect these improvements and challenge students to embrace geography as a subject and a career. Improvements and standards should also apply to master's degree programs. To maximize resources and continuity, faculty should undertake a comprehensive review and engage in

restructuring the curriculum for the dual purpose of serving K-12 teachers and entering freshmen, while refocusing the core to include concepts, principles, social relevance, and career preparation. All of these can be tied to the National Standards.

Question nine addresses the feasibility and desirability of linkages between academia and the private sector. If we move beyond the theory-application dichotomy, we will be less likely to see business as totally "exploitative and socially insensitive...to be criticized, or at least avoided, rather than assisted" (Wilbanks 1993, 1). We need not fear that private sector linkages "suggest that our research priorities be set by the private sector and not through the practice of critical inquiry" (Jones and Roberts 1993, 3). There are ways to work together, while preserving academic integrity. We must interact with business leaders and policy makers if we are to be taken seriously. Improving communication with the private sector does not assume "that corporations lack sufficient geographic information for investment decisions" (Jones and Roberts 1993, 3). In fact, non-geographers provide this as a commercial service. If this were all we had to offer, then it would be too little and too late. We must communicate on the issues from a research perspective. Here we have much to say but we have not taken the time to find appropriate channels to communicate our views.

How do we communicate and build linkages? There are many excellent minds in geography that can address this issue. Some suggestions have been offered, for example, more geographic research on national issues (Wilbanks 1993). I have argued here that the provision of a sustainable group of high-quality, research-oriented geographers placed in policy-making positions and in the private sector are equally important to visibility for and appreciation of our discipline.

There are other things that we can do. Policy makers, business leaders, and alumni could be invited to sit on a geography department advisory committee to assist in curricular review and matters of relevance to the workplace. This form of interaction would be beneficial to both academia and practitioners. We also need to step beyond traditional research activities and embrace interactive research programs in the workplace. This is more difficult and challenging but has great potential return in terms of demonstrating relevance and capability of geographic research, faculty, and students. This type of research is insightful, valuable, and it provides action-oriented results. It can benefit society while providing alternative ways of learning.

We should also be bold in our ideas and dreams about future linkages. If we can secure funding for a National Center for Geographic Information and Analysis, why not seek funding for a National Center for Geographic Teaching and Learning, for an Institute for Geographic Research and Business Development? Space does not permit elaboration, but it takes little imagination to visualize the excitement and results such operations could provide for students, faculty, policy makers, and business leaders.

Regarding the final question posed, can we afford not to provide more direct utility in the next century? This Summit provides part of the answer.

Summary and Conclusions

Our discipline has undergone many changes over the past two decades. We seem united and prepared to address new roles for geographic education in our K-12 schools, including making geography more liked and more useful. Should we do less at the collegiate level?

I have argued that our degree recipients can do better in the workplace with our assistance. We need to assume new roles in geographic education. A research discipline must aspire to provide high-quality researchers to the workplace. Geography must learn more about the workplace and share it with our undergraduates.

We should reform precollegiate and collegiate geography curricula simultaneously. Curricular reform at the collegiate level should include a reassessment of our core concepts, placing them into a meaningful curriculum that addresses theory and practice through traditional and socially relevant topics.

Finally, we need to forge innovative linkages with policy makers and business leaders that illustrate our research capabilities and the relevance of our findings and that lead to new questions of mutual research interest. These steps need not sacrifice academic integrity. While we forge these new relationships, we should create national centers and institutes that can benefit society, while elevating geographic inquiry to national attention.

A Suggestion for Action

Structure

The professional societies representing geography's interest in academia, business, and government (AAG, NCGE, and AGS) should organize an **ad hoc** task force on "Collegiate Curricula Reform: Preparing Students for the 21st Century Workforce." Because reform must consider precollegiate geography and the non-academic workplace, it will be necessary that both entities be represented on such a Task Force. NCGE is best positioned to recommend from the precollegiate ranks, while the AAG and the AGS could suggest qualified and interested business and government leaders to serve. It might be useful for the AAG and AGS to formulate a "Business and Government Council of Geographers" who could offer services to the profession.[3] The task force should be balanced with university and college geographers drawn from the ranks of professors, chairpersons, deans, vice presidents, and presidents (current and former), who must not only accept any new design but also lobby for it.

Task Force Issues

Space does not permit a detailed discussion of the issues to be examined by this task force. However, it will require high-quality, committed individuals, maintenance of a regular schedule and focused agenda, strong leadership, and a mechanism for disseminating results. Selecting the individuals, the leaders, and the means for disseminating the results would be the responsibility of the professional organizations creating the task force. Scheduling and the agenda would be the responsibility

of the task force and its chair. Below are initial activities for the task force to consider.

Three basic tasks are apparent: 1) establish the content of model curricula, 2) articulate the non-traditional roles of faculty and ensure adequate credit and compensation, and 3) create sample implementation models.

Establishing the content of model curricula will be a major undertaking, with many questions to be addressed. How will a core be established? What concepts, tools, themes? How will they relate to the precollegiate geography? How much transition is required from precollegiate to college-level courses? Should survey courses be reduced in favor of advanced core courses, given a high probability of a fixed number of faculty? What is the proper sequencing of courses? How can experiential education be built into the curriculum? How should performance standards be defined?

Some of these answers require input from others. The **topical** specialty groups of the AAG might define concepts and leading issues to be addressed in the next decade. The annual AAG chairs' meeting could be used as a forum for curricular issues and possibly include input from long-term undergraduate and graduate program directors.

The second issue, definition of non-traditional faculty roles, is tied to an already existing issue in universities: should the reward structure be modified to compensate good teaching and service, as well as research productivity? Recent appeals have asserted an affirmative response. In the case of reformed curricula, including that directed to the workplace in the next century, it will be essential. Certainly faculty must play leadership roles in a broad range of curricular and education tasks, including reform, preservice programs for precollegiate teachers, continuing education for other practitioners, establishing and monitoring high **quality** internship programs, mentoring students, serving as liaisons with government and the private sector, and serving (leading) curriculum committee functions (such as regularly reviewing coursework content, integration, and sequencing), and protecting geography's interest while enhancing the quality of general education on their campuses.

The third issue, creating implementation strategies, of course, is crucial. Initially, however, model curricula will not be suitable for all departments. For those who can and wish to embrace them, however, there are multiple routes. Two that deserve careful evaluation are a well-funded pilot program for several geography programs selected by well-established criteria, and independent efforts by departments who develop their own resources.

In the first model, departments might be selected by geographic, quantitative, and qualitative measures. Funding could be sought from the National Science Foundation, the U.S. Department of Education, and other agencies with an interest in the particular geographical specialty emphasized in the curriculum (e.g., USGS, DMA, EPA, ITA, etc.), as well as from private sources (e.g., ESRI).

Independent efforts could benefit from the advice of consultants provided by AAG, NCGE, and AGS, but secure their own funding from regional, state, and local

sources, including the private sector. Private corporations currently fund programs that have special centers (e.g., packaging) that provide technological education and products that hold promise to improve private enterprise. Similar efforts could be sought for particularly innovative geography programs.

Other models are possible and perhaps more beneficial. Whatever model is developed, it must be integrated into the geography department's broader mission. It would also be helpful if it related to other degree programs. As noted earlier, it is very important to secure a role in the general education curriculum of the university. In addition, new curricula that are structurally linked with those of other departments can be important to long-term visibility. There are some natural places for this to occur. These include using special initiatives such as the NSF programs to link mathematics and the earth sciences, filling the technical needs of cognate social sciences for GIS and our core concepts in their curricula, including those of political science and anthropology, and fostering timely, cooperative linkages between the concepts of physical geography and the research/teaching agenda of the related sciences (i.e., plant diversity and biogeography, atmospheric sciences and global warming issues, and biochemical analysis and environmental analysis).

These ideas require dedication and effort at the scale of those performed in the development of the digital cartographic data standards, plus additional individual and institutional commitments at the department level. Geography faces many of the same educational issues as other disciplines that are not as well prepared to face the workplace of the 21st century. Geography should turn a threat into an opportunity by providing leadership in the university in preparing its degree recipients to lead in the next century.

Notes

[1] I am aware that physical geographers are employed by private sector firms such as engineering companies. However, as a human geographer, I am less aware of their overall employment opportunities. Therefore, my perspective is deliberately limited to workplace opportunities for human geographers.

[2] The intent here is not to devalue cartographic or GIS positions. Rather, it is to draw a clear distinction between positions that are largely technical support and those that are predominantly research.

[3] I have avoided suggesting a role for the National Geographic Society only because they have already given so much to reforms in geographic education.

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Baccalaureate Curricula in Geography: Need for Consensus Guidelines

Sidney R. Jumper

Recent progress in precollegiate geography, resulting from its inclusion as a core subject in the national education goals established by the nation's governors in 1989, and from development of standards for student accomplishment in the discipline at grades 4, 8, and 12, is not yet reflected in college geography curricula. In addition, collegiate geography curricula, whether for those who wish to major in or to obtain certification to teach the discipline in precollegiate schools, lack coherency from one institution to another. Such incoherence is often perceived by those inside and outside geography as a weakness. A successful effort to create a consensus on guidelines for baccalaureate curricula in geography (including those in preservice education) will likely result in an improved reputation for the discipline among the sciences, in students who have skills and creative energies appropriate to the world they must enter upon graduation, and in geography assuming a leadership role in collegiate educational reform. **Key words:** *Guidelines, baccalaureate, curriculum, education.*

Not since 1967-68, when the first Commission on College Geography attempted to determine what was required in the major, have professional geography organizations demonstrated concern about what does, or should, comprise a baccalaureate in geography. This paper takes the position that it is time for a comprehensive evaluation of what should comprise a geography curriculum, based upon changing needs of society and changing emphases in the discipline itself. Simply tinkering with the existing content and structure, adding something here and subtracting something there, will not serve the discipline nor society very well. Higher education in general is no better off than geography in matters of curriculum. In 1985, for example, the Association of American Colleges concluded:

> As for what passes as a college curriculum, almost anything goes. [T]he nature and degree of that concentration varies widely and irrationally from college to college. Indeed, the major in most colleges is little more than a gathering of courses taken in one department, lacking structure and depth....The absence of a rationale for the major becomes transparent in

> college catalogues where the essential message embedded in all the fancy prose is: pick eight of the following (*Integrity* 1985, 2).

The situation specific to geography was described as follows in *Teaching Geography in Higher Education:*

> Designing and delivering an effective curriculum is the most important professional responsibility for geography teachers. In higher education, however, the curriculum is seldom publicly discussed and the geographical literature on curriculum design is limited (Gold 1991, 193).

In a 1973 publication of the First Commission on College Geography, Burke stated, "Like the infamous (and overly-quoted) Topsy, many academic programs appear to have 'just grown' without a clear ultimate purpose" (Burke 1973, 2).

Several years earlier, apparently in response to suggestions that geographers consider some amount of standardization in the undergraduate major, the first Commission on College Geography (CCG-I) gathered data from a stratified sample of 45 departments in the United States and held an open forum on undergraduate curricula at the 1967 meeting of the Association of American Geographers. The major conclusion from the survey was that considerable similarity existed in requirements among the surveyed departments. The workshop was not well-attended, however, and John Fraser Hart and others who participated noted the futility of efforts to promote communication among departments on matters of curriculum (Hart 1968). Hart went on to offer several penetrating questions and conclusions that are as appropriate today as they were in 1968. Examples are:

1) Was the similarity that had persisted in undergraduate geography requirements during the 20 years prior to 1967 more a reflection of the *excellence* of those requirements, or of *inertia*?
2) Highly specialized courses (a "geography of manure" was offered as an example) are too often a part of the core in the major.
3) The structure of undergraduate majors reflects traditional topics and course titles, rather than needs of students. No agreement has been reached on what one holding a baccalaureate in geography is "expected to know, to know about, and to know how to do," nor how a program "might be structured to inculcate these attitudes, this knowledge, and these skills" (Hart 1968, 10, 13, 14).

Curricula-Related Developments Since 1967

Similarities in departmental requirements for a baccalaureate in geography have declined since 1967. A 1992 survey by the second Commission on College Geography (CCG-II) indicated that only two courses (physical geography and cartography) are required by as many as 69 percent of departments, with the next most commonly required course dropping to about 32 percent of departments (Survey 1992, 3).

The formerly safe assumption that students entering college have little or no background in geography is declining in validity. Beginning with a proactive stance

on geography education by the National Geographic Society in 1985, the subsequent establishment of state geographic alliances, and expanded interest in geography education by all professional geography organizations, major improvements have occurred in quality and quantity of precollegiate geography. Since 1985, the number of freshmen entering college as majors in geography has grown, along with a 60 percent increase in student credit hours in geography (Survey 1992, 1). The net result is that collegiate curricula need upgrading and college teachers face new challenges in course and curriculum preparation.

It is probably high time that (geography) curricula be recreated rather than patched and that the focus be changed to meaningful goals rather than the biases of influential members of the professoriate.

Geography's ascendency has been accelerated by its inclusion in the *Goals 2000* which emerged from a bipartisan effort of the nation's governors in 1989. Geography was among five disciplines originally targeted for improvement in K-12 education. Following successful development of a *Geography Assessment Framework* during 1991-92 for the National Assessment Governing Board and the U.S. Department of Education, work began on creation of world-class Geography Standards which will serve as the basis for geography curricula in K-12 schools throughout the United States (Geography 1992). In 1994 a national program of testing student knowledge of geography will begin in grades 4, 8, and 12.

The pending sharp rise in demand for geography teachers, resulting from factors noted above, and a significant shift in responsibility for teacher education from colleges of education to colleges of liberal arts, offer additional challenges to geographers in matters of curriculum design. Those interested in assuring a solid future for the discipline will recognize the need to become involved in developing appropriate curricula for preservice teachers as well as in design and implementation of refresher courses and institutes for inservice teachers.

The Case for Curriculum Guidelines in Geography

The case for curriculum guidelines in geography, which implies some degree of standardization in requirements for those expecting to teach geography in the K-12 grades as well as for geography majors who intend to pursue careers other than teaching, is both strong and urgent. Some of the arguments for curriculum guidelines are as follows:

1) A perception among many scholars and leaders in business and government that geography is trivia and has no distinctive core, ideas, philosophy, or skills.
2) Dangers to geography's reputation as a science if its image is that of anarchy.
3) Availability, in 1994, of the world-class Geography Standards that are to become the baseline measurements for geography achievements on a national scale in grades K-12.

4) Mobility of K-12 teachers, whose careers may take them into schools of several states.
5) Mobility of students, who frequently transfer from one university to another; and of graduate students who often take advanced degrees from universities other than their baccalaureate institutions.
6) The necessity for revising collegiate curricula to reflect the growing geographical competency of high school graduates.
7) Advantages of collectively re-thinking geography curricula so that they incorporate contemporary global scale economic, environmental, political, and social problems; deal effectively with issues of cultural diversity and gender; and give attention to strategies for enhancement of self-learning as a means toward enrichment of life.
8) Securement of better means and methods for effectively using educational technology.
9) Refocus of attention on the value of geography as a general education subject.
10) Development of appropriate requirements for certifying teachers in geography.
11) Agreement concerning minimal requirements for accreditation or certification of programs in areas such as geographic information systems and cartography.

Potential Benefits of Consensus-Derived Curriculum Guidelines

Among the potential benefits of a set of consensus-derived curriculum guidelines are the following:

1) Encouragement to use carefully selected goals, or desired outcomes, for student achievement as the basis for curriculum reform.
2) Enhancement of uniformity in basic degree requirements, including a common core of skills and knowledge.
3) A general improvement of collegiate requirements and expectations.
4) Reduction in obstacles to transferring teachers and students between states and universities, with transfer students losing fewer credits.
5) Creation of a more coherent geography marketplace that will encourage publishers to risk printing a larger number of geography textbooks and other materials.
6) Establishment of a learning environment that can benefit from a system of prerequisites.
7) Creation of more effective general education courses based on geography.
8) Production of more consistent and effective requirements for technical concentrations.
9) Enhancement of attention in the curriculum to gender, cultural diversity, and the contemporary world.
10) Recreation of a K-12 geography that is more competently taught and that presents greater challenges to good students.

11) Establishment of an improved image for geography among the sciences, in business, in government, and with the general public.

Proposed Plan of Action

Among the circumstances under which the proposed guidelines could be developed are the folowing:

1) Strong support from all the major geography organizations.
2) Leadership from an individual and a small committee of persons who are well-respected within the discipline, who believe in the value of outcomes- or goal-based educational reform, who have a vision of a positive future for geography, and who are broadly representative of the major academic and non-academic interests in the field.
3) Strong support for the project and the implementation process from a large segment of the discipline's leadership.
4) Receipt of a grant of sufficient size to assure that a consensus process for guideline development and implementation is feasible.

The existing organization that is in the best position to undertake the project is the second Commission on College Geography (CCG-II). As a member of CCG-II, perhaps I can partially avoid culpability for advocating a major endeavor and suggesting that the work be done by someone else. CCG-II was formed in April 1991, based on recommendations of an ad hoc group that offered as evidence of need for the new Commission the "thought that contemporary societal, institutional, and pedagogical changes suggest the need to look anew at undergraduate education in geography" (Hanson 1991, 1). Assuming responsibility for development of a consensus on guidelines for undergraduate curricula in geography would seem to be in keeping with the responsibilities of CCG-II, insofar as it can manage guideline development within a consensus framework. It is hoped that turning to an existing organization can smooth the way toward securing the funds neccessary to complete the project in a timely and efficient manner.

Summary and Conclusions

In evaluating this proposal, the reader is asked to consider what may be gained, and what may be lost, through creating guidelines for undergraduate curriculum development in geography. It is no longer safe to assume that entering college freshmen know nothing about geography. It is also no longer safe to assume that virtually none of those going through preservice programs for teacher certification will ever teach geography. During the next five to ten years, demand for geography teachers in K-12 schools is likely to escalate. Whether geography proves solid enough and strong enough in the long run to compete successfully with other disciplines for space in the curriculum, however, depends upon how effective we are in designing geography curricula for those who are preparing to teach or to represent geography in solving the practical problems of business and government. To assure best chance of success, it is important to develop curricula at the college level that accentuate the strengths of the discipline. The need for constant vigilance

to avoid loss of recent gains, and for moving ahead quickly in higher education to consolidate hard-won achievements, is illustrated by the debates that continue to rage in the national capital concerning such matters as which subjects belong in the core group (Wilbanks 1993, 1, 2).

Because of the long-standing avoidance of using carefully defined goals and orderly and logical processes as the bases for curriculum reform and evolution, we have often failed to achieve curricula that reflect a rational developmental process and that are demonstrably relevant to the needs of the contemporary world. But the nation's economic and political positions in the world are undergoing change, and public and private sector leaders are looking to education as the primary insurance policy against relative stagnation or decline. The more perceptive leaders in higher education, therefore, are likely to view the next round of curriculum reform as an opportunity to emphasize more goal-oriented, more practical, and more structured curricula than in the past. The new curricula can be expected to focus on analytical reasoning, problem solving, innovation, comparative analysis, group learning, and international understanding. "Communitarian" values may be stressed at the expense of individualism, and higher education may be required to accept greater responsibility for the quality of precollegiate programs (Winkler 1993). If the preceding assumptions are accurate, functional superiority will replace knowledge for its own sake as the primary goal of education. This kind of educational reform would be consistent with the extension of opportunities for college educations to an increasing share of the nation's population and to the increasing public perception of the positive relationship between a college education and opportunities for economic betterment.

It is probably high time that curricula be recreated rather than patched and that the focus be changed to meaningful goals rather than the biases of influential members of the professoriate. By moving promptly to get its curriculum act together, and by learning how to communicate effectively its case through appropriate political processes and within the public arena, geography can not only ensure its own future, it can move into the forefront of educational reform.

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The *Bête Noire* of Geographic Education: Teacher Training Programs

Richard G. Boehm, John Brierley, and Martha Sharma

Despite many recent successes, the geographic education community faces serious problems based on its failure to create and maintain strategies for effective preservice teacher education. The development of effective preservice training is hindered by many problems, including the differing position of geography in school curricula among the states, lack of effective communication among groups responsible for curricula and teacher training, and poor interaction between universities and the schools. One remedy for this situation is cooperation and mutual respect. Preservice teacher education programs in geography need to be cast into a framework fashioned by a broad representation of those who have a stake in quality education—teachers, school district officials, bureaucrats, non-geographers and geographic educators. **Key words:** *preservice, curriculum, teacher certification, school of education.*

There are many recent success stories in geography and geographic education. University enrollments in geography are up 16.6 percent in the last five years (Schwendeman's Directory 1987; 1992), with a sharp increase in the number of entering freshmen majors. Membership in the National Council for Geographic Education (NCGE) is the highest it has been in 25 years with a 86 percent increase in the number of K-12 teachers. The Association of American Geographers (AAG) membership is almost 7,000—the highest it has been in more than two decades. Almost 100,000 copies of *Guidelines for Geographic Education* (Joint Committee 1984) have been circulated in which were first articulated the five themes of geography (location, place, human-environmental interaction, movement, regions). Geography is one of the core subjects named in *Goals 2000: Educate America Act* (along with math, science, history, and English) and national goals and standards in geographic education are being prepared. The National Geographic Society (NGS) has completed a major objective by blanketing the United States with Alliances for Geographic Education (51 Alliances in 48 states), thus ensuring substantial inservice training for teachers of geography well into the 21st century.

Despite these bright spots, geographic education faces serious shortcomings based on its failure to create and maintain strategies for effective preservice teacher

education. It is axiomatic that if *all* we do is provide inservice training in geography for teachers then we institutionalize the continual need for further inservice teacher training in geography! We must fashion effective preservice programs so that the geography teachers of tomorrow are competent, confident, and effective.

An Environment of Neglect

Historically, preservice teacher training programs in geography have languished because of unclear lines of responsibility. When such programs were housed in schools of education, geography got little attention because the demand was low and competition from other subjects for the university student's time was fierce. When the teacher education program was housed in geography departments, it was accorded low priority, well behind research and graduate work in geography, the preparation of undergraduate majors, and even service to general education requirements. Professors who embraced geographic education as a serious vocation were generally accorded low status.

In the past five years, a number of studies and a considerable amount of commentary have appeared that criticize the classic model of academic elitism found on major university campuses. Lynn Cheney, former Chairperson of the National Endowment for the Humanities, dubs the educational practices of our major universities "tyrannical machines" and suggests that "exposing them—showing the world the multitude of ways in which they violate good sense, is not sufficient to alter them" (Cheney 1990).

Education reform of the 1980s and 1990s has targeted schools of education and the sequence of professional education courses. Another concern of reformers is who has the responsibility for teacher education programs. The Holmes Group suggests that teacher certification programs should be pushed back into academic departments and that professional training of teachers take place at the graduate level, perhaps even in a non-university environment called a professional development school (PDS). Such a model (PDS) has worked very well in Albuquerque, New Mexico, and it is being experimented with in other areas. Val Wilkie, of the Sid W. Richardson Foundation, has been working with professional educators for five years on the development of a PDS in Texas. Such an arrangement would be advantageous for geography because the discipline has a well-developed system of mentor teachers within the Alliance network.

Innovative programs hold great promise, but there are still major structural problems associated with teacher education programs nesting in geography departments. First, there is the fairly uniform lack of communication between academic departments and schools of education. Then there is the aura of elitism that puts the emphasis on research, not teaching, and certainly not the teaching of future teachers. Cheney (1990, 25) quotes a senior literature professor saying, "the way one prospers is by finding time away from teaching to get one's own work done." She further quotes a young junior philosophy professor who received the following advice as he was trying to get tenure: "Beware the students, they will destroy you" (Cheney 1990, 25). In such an environment, it is unlikely that teacher-certification programs

will receive the attention that they need. Indeed, will geography professors craft preservice programs that are responsive to curriculum models, national tests, and the needs of local schools? Will they even take the time to find out what the needs of the local schools are, or will they merely pack certification programs with their own peculiar brand of geography—the one that is the easiest for them to deliver? The dichotomy between university and school geography is vast, part of the overall gap that has historically existed between colleges and universities on one side and public schools on the other.

In Roland Barth's (1990) *Improving Schools from Within,* he writes of enormous barriers that separate those who work in universities and those who work in schools. For example, he cites the dance we perform around the question "Who initiates and who responds?" The university says, "Tell us what you need and we'll see if we can or if we want to provide it." School people say, "Tell us what you've got and we'll see if we want any." Another simple and disturbing notion is that "theory resides in universities and practice resides in schools." Barth points out that "a professor is no less a practitioner than a school teacher. Some are good practitioners, some bad, some modest, many immodest, and a few elegant."

John Goodlad (1990), perhaps the most persistent student of how we educate the preservice teacher, summarizes the situation in *Places Where Teachers are Taught.*

> It is regrettable, if understandable, that a consistent professional school orientation involving the integration of high level inquiry with a commitment to improving teacher practice in the schools has yet to be realized in any consistent way. The good news, of course, is that no type of institution is better equipped to achieve that virtue than major universities.

In *Teachers for Our Nation's Schools,* Goodlad (1991, 54-63) articulates 19 postulates that are recommended to improve institutional commitment to preservice teacher education in his chapter "An Agenda for Change." Four of them, in our opinion, have clear messages for geographers as we try to bring clarity, purpose, and distinction to the various contemporary reform movements in geographic education.

> *Postulate One.* Programs for the education of the nation's educators must be viewed by institutions offering them as a major responsibility to society and be adequately supported and promoted and vigorously advanced by the institution's top leadership.
>
> *Postulate Two.* Programs for the education of educators must enjoy parity with other campus programs as a legitimate college or university commitment and field of study and service, worthy of rewards for faculty geared to the nature of the field.
>
> *Postulate Four.* There must exist a clearly identifiable group of academic and clinical faculty members for whom teacher education is the top priority; the group must be responsible and accountable for selecting

students and monitoring their progress, planning and maintaining the full scope and sequence of the curriculum, continuously evaluating and improving programs, and facilitating the entry of graduates into teaching careers.

Postulate Ten. Programs for the education of educators must be characterized in all respects by the conditions of learning that future teachers are to establish in their own schools and classrooms.

The Reality of Curriculum, Assessment, and National Goals and Standards

Preservice teacher education programs in geography need to be cast into a framework fashioned by teachers, school district officials, bureaucrats, non-geographers, and, on occasion, geographic educators. State courses of study, school-district-curricula outlines, and local school-system interpretations often determine what the scope and sequence of geography in the schools will be. Certainly, the *California History and Social Science Framework* (1988) is a critical document. Geographers also need to be aware of the Bradley Commission's *Building a History Curriculum* (1988). While one might argue how effective it has been, in some circles *Charting a Course: Social Studies for the 21st Century* (1989) has helped to define the nature and extent of the geography curriculum in K-12 schools. In Texas, the Chapter 75 social studies curriculum (1986) has been revised and is currently being reviewed by the State Board of Education. These few examples are used because they have achieved national attention, they have affected textbook writing and revision, and they reflect some fairly radical changes with past curricula.

Adding further complexity to the issue of externally driven preservice programs in geography are the recent national assessment and standards initiatives. In 1994, states will be adopting and adapting to the assessment framework developed in 1992-93 by the National Assessment of Educational Progress (NAEP). Geographic educators, working for NAEP (Council of Chief State Officers 1992), have fashioned a set of quite comprehensive learner outcomes for schoolchildren at grades 4, 8, and 12. Test items have been developed, based on these learner outcomes, that will test student performance and, indirectly, teacher mastery of the content and methodology of geography.

Hard on the heels of the NAEP process is the development of national goals and standards in geography under *Goals 2000: Educate America Act.* Performance standards are being developed in geography content, skills, and perspectives at grades 4, 8, and 12. For the first time, geography teachers and students, school officials, parents, and society in general will see what and, to some extent, how children should learn geography in America's schools. *Geography for Life* (1994) is a comprehensive set of guidelines designed to bring students in the United States up to parity with students in other advanced countries in terms of their geographic education, making them internationally competitive.

These curriculum, assessment, and standards documents are mentioned only as examples of the sizeable body of recent information on the scope and sequence of

geography education in grades K-12. States and school districts are using this information, or will use this information, to construct a logical course of study.

The question that must be answered is whether or not those responsible for crafting preservice programs in geography are paying attention to these real signposts. Are university-level geographers, geographic educators, and professional educators monitoring these highly visible prescriptors, or have programs been fashioned by inertia, provinciality, or benign neglect? Schools will be judged by the quality of their students' performance. Therefore, teachers must be well-equipped to lead their students to mastery of the challenging subject matter of geography. University faculty must commit the time and effort to fashion appropriate geography education programs so that teachers are prepared to uplift the standards of their students.

View from the Schools

Teachers have not created the problems facing education today. If equipped with a well-constructed skill and knowledge base and if given access to resources and technologies, however, teachers do have the capacity to change American education and, in so doing, shape the future. Developing this well-crafted skill and knowledge base is the domain and responsibility of preservice teacher education programs.

In geography, the challenge is great. First, the subject is extraordinarily eclectic and integrative. Teachers must be skilled not only in geography, but also in history, science, art, math, the social studies, and in all of the technologies required to teach these subjects. Often, to get hired, geography teachers must have certification in the social studies, or in another or even several other subjects. They must be good at gathering, displaying, analyzing, and interpreting data. They must understand technologies like GIS, remote sensing, CD-ROM, and the hardware and software necessary to manipulate such systems. And, finally, the geography teacher must be sensitive and humane, aware of the need for multiple perspectives, aware that geography has no single meaning, and aware that students must be guided through learning, not forced to absorb. Preservice teachers, upon entry into their chosen careers, must be prepared to teach in the urban ghetto or in the suburban fringe. They must be prepared to translate, for schoolchildren, not only the beauty and elegance of geography, but also the utility of the subject in today's society.

[I]f all we do is provide inservice training in geography for teachers, then we institutionalize the continual need for further inservice teacher training.... We must fashion effective preservice programs.

Agnes C. Underwood, Headmistress, National Cathedral School, Washington, D.C., commenting on the current educational reform movement, said,

> It is both natural and important to us that we work constantly to improve the education we offer. We ourselves want to grow, even as we want our

> [students] to grow. That means assisting our faculty to explore new curricula and new ways of teaching, even as they affirm the tried and true.

Students cannot be held accountable for that which they have not been taught; and teachers cannot teach that which they themselves have never learned.

Taken as a whole, these comments should be seen as a needs statement. Earlier parts of this paper suggest that guidelines for preservice programs in geography exist to fulfill these needs. The question is, Who will take the responsibility for tailoring the program to fit the need?

Alternative Certification

A variety of alternative certification programs exist, and in the current environment of educational reform, are likely to be expanded. Many of them are recast versions of previous programs, and almost all rely on cadres of mentor teachers. It is not the intent of this investigation to survey alternative certification programs, only to suggest that geography should inventory its supply of mentor teachers and provide that list to appropriate university-level education or geography faculty.

Minimum Requirements for Certification

A discussion of minimum requirements for certification is most difficult, considering varying state courses of study, diverse local curricula, and the over-arching national requirements necessary to satisfy standards and assessment initiatives. Nonetheless, poor preparation of teachers responsible for geography demands that certain minimum standards be mandated—standards that should be adhered to by those responsible for ensuring appropriate certification.

In *Strengthening Geography in the Social Studies*, Dennis Spetz (1988, 52-58) recommends that all elementary certificates include six hours of geography including a world regional course and one in physical geography. This minimum will be hard to achieve considering the cosmic nature of the elementary curriculum, but it is true that considerable basic physical and regional geography is called for in the typical state course of study for grades K-6.

At grades 7-12, geography certification should consist of no less than 24 hours, including courses in physical, world regional, and economic geography. Students should also be required to take at least 12 hours of history, including six hours of American history, three hours of state history, and three hours of world history or world civilizations.

To the extent that change can be effected, history certification programs should consist of no less than 24 hours plus at least a 12 hours of geography, most likely to include one course each in world regional, physical, economic, and United States geography.

The 7-12 social studies composite program should consist of, at the minimum, 18 hours of history, 18 hours of geography, nine hours of government (political science), and six hours of economics. This certification program makes sense considering various existing state courses of study and also from the standpoint of

employability of our graduates. Despite the seductive allure of primary certification in geography, job realities suggest that the new graduate has a better chance at a good job if he or she is certified in several of the social studies.

The selection of world regional geography as the lead cultural course in a recommended certification program is a bit controversial. However, most high school geography courses are world regional, and if advanced placement were offered nationwide, it would most likely be in world regional. University departments could buttress this situation by nominating world regional geography to be *the* introductory college-level course, thus providing the logical and sensible bridge between high school and university-level geography.

A Road Out of the Fog

What follows is a series of recommendations designed to overcome the inertia that has plagued preservice certification programs in geography. The list is not exhaustive, nor is it in any priority order. The challenge is enormous.

1) Departments of geography need to review subject-matter certification programs on their home campuses to determine if they do a good job of serving the needs of the NAEP assessment framework, national goals and standards, and the state course of study in geography and social studies. The leadership here needs to come from the AAG with consultation from the NCGE. An appropriate vehicle of alert and a means of follow-up might be the AAG Chair's column in the *AAG Newsletter*.
2) Some type of standardized minimum certification program must be advocated for grades K-6 and 7-12. Such programs should take cognizance of the close relationship between geography and history in most social studies curricula. Responsibility for such advocacy would reside with the AAG and the NCGE, with the NCGE taking responsibility for publication and dissemination.
3) Overtures should be made to departments of history, through existing professional associations, to establish the need for at least nine hours of geography to be added to certification programs in history. As an example, teachers responding to the *California History and Social Science Framework* will find themselves seriously handicapped if their certification in history is devoid of course work in geography. The result will be that history will be taught without the elegance and spatial reality of geography.
4) Methods courses, whether taught by geographers or by professional educators, need to include examples of how geography can be taught with science, math, art, and literature, as well as the flip side—which is how those subjects can be taught in geography courses. This seems to be a natural activity for the NCGE with support from the NGS.
5) The AAG should devote one plenary session at its annual meeting to some critical topic in geographic education. This will enforce the reality that geographic education is a continuous process from kindergarten to university

and that all geographers have a stake in quality geography teaching at every level.

6) The AAG could provide encouragement for quality geographic education by openly soliciting manuscripts on topics in geographic education for publication in the *Annals* and *Professional Geographer*. It would be useful to have a dedicated issue periodically.
7) Some attempt must be made to overcome the prejudice against geographic educators in major university departments. One suggestion is that a senior, tenured professor with a national reputation be identified in each such department as a willing and able collaborator on substantial projects in geographic education.
8) At the high school level, the composite social studies program for certification should be advocated with a minimum of 18 hours of geography and 18 hours of history. The lead here should be taken by the NCGE with substantial communication with various professional history associations.
9) Grants should be written for summer institutes involving professors of geography, history, and social studies. Staff should include several teachers. The purpose of these institutes would be to bring about change in preservice programs so that they will more accurately fit the curricular, assessment, and standards reality of the 1990s. Proposals for these grants should be submitted to the NGS Education Foundation, the National Endowment for the Humanities, National Science Foundation, and the Fund for the Improvement of Post-Secondary Education (FIPSE). Proposals may also be sent to various private foundations.
10) A roster of mentor teachers should be developed to assist with student-teacher supervision and alternative certification programs. Mentor teachers might also have some teaching responsibilities in university-level programs. This could be a cooperative NCGE-NGS project using the existing Alliance network.
11) Geographers should interface with regional teacher-education accreditation boards. NCGE and AAG need to act cooperatively.
12) Departments of geography must take the time to work with and understand the world of professional education. Communication links should be forged with personnel in schools of education engendering open discussion of how best to educate teachers in geography.

Conclusions

The beast must be tamed. Teachers of geography almost certainly hold the key to success for geographic education as we approach the 21st century. They are in a position to nurture future geographers, to write geography education curricula, and to prepare students for the variety of content and performance standards by which internationally competitive geography mastery will be measured. In the face of this reality, university geography departments must face their responsibilities for the preparation of these teachers.

This job is complicated and is different in each state. Nonetheless, some generic strategies do apply and will make the process easier and more productive.

Geography departments in universities that offer certification for teachers need to:

1) Interface with the faculty in schools of education. Through this interaction, geographers will learn about certification standards and agencies as well as what are the barriers to improved certification programs.
2) Investigate the state curriculum in geography and the social studies. If there is no state framework, then look at several county-wide, school district, or urban courses of study.
3) Investigate national and state tests and standards in geography and social studies content and skills.
4) Accord geographic educators among your faculty the status and respect that would be paid to faculty in any other subdiscipline of the profession.
5) Talk to history professors about the close link between history and geography in the K-12 social studies curriculum. Contribute to their undertanding of the importance of the spatial perspective and how history teachers may be better prepared to teach combined history and geography classes.

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4

Geographic Education Beyond the Classroom

This final section contains five articles that deal with issues in geographic education from a non-academic point of view and one article that addresses the need for organized research. The authors' affiliations match their perspectives—either non-academic or academic. Five of the authors are employed outside of academia and one is a university professor. Although strands of all five of the recurrent themes appear in this section's material, the fourth and fifth themes are most conspicuous (geography's responsiveness to society's needs and the need for standards).

The section begins with "Realities and Opportunities for Funding Geography Education" by Jacobson. This NGS specialist, whose job is to secure funding for educational projects, cautions that the competition for grant dollars is intense and will continue to be for the foreseeable future. In order to compete effectively, geographers must make a strong case to show decision makers that projects in geographic education are worthy of financial support. This requires that fund seekers develop a long-range plan, a marketable definition of geography, and a strong argument for geography's contribution to the general education curriculum.

In "Implementation of Geography Standards: Potential Strategies and Initiatives," de Souza and Munroe point out that although many policy makers understand the value of geography in American education, the struggle to increase the quality and quantity of geography taught in schools is not over. Maintaining the consensus that was constituted to produce the National Standards is necessary. The National Geographic Society is willing and able to help disseminate and implement the Standards. Because the task is so large and because the stakes are so high, however, the efforts of other organizations and all geographic educators will be required.

Wilbanks, who was president of the Association of American Geographers at the time of the Summit, warns in "Geography Education in National Context" that geographers may have misinterpreted the decision to include geography in the five core subjects of the America 2000 plan. He cautions geographers, who have an unshakable belief in the worth of their discipline to society, not to believe that the government has finally recognized the inherent value of geography. Wilbanks thinks the inclusion of geography among the core subjects represents a challenge to geographers: to show how the subject fits the American student's basic educational needs. Geography must not be taught for its own sake, but rather must strive to fill societal and national needs. Correctly determining geography's curricular raison

d'être is of paramount importance if geography is to continue to prosper into the next century.

Robert Dulli heads the Geography Education Program at the National Geographic Society and reports on past, present, and planned programs in support of geography education in "Improving Geography Learning in the Schools: Efforts by the National Geographic Society." Much of this effort has been in direct support of classroom teachers. Under the leadership of Gilbert M. Grosvenor, the Society's effort to improve geography education for the last eight years has involved the development of a network of state Alliances, where teachers, university professors, and others cooperate. Summer institutes for inservice teachers are a centerpiece of this effort. There, teachers receive geography training and share their experiences with other participants while they develop effective lesson plans. Upon return to their home districts, institute graduates give workshops to train other teachers. This multiplier approach has made it possible for the Society to reach more than 45,000 teachers who teach nearly 3 million students.

In "Geography and National Education Policy," Smith argues that geographers face a federal education policy that is likely to become less friendly in the near future. As the number of core subjects in Goals 2000 has grown, geography's special advantage has diminished. Smith warns that the current administration's approach to educational reform will probably prove to be less beneficial for geographic educators. He counsels geographers to make sure that the practical relevance of geography is stressed at every opportunity.

Downs concludes the volume with "The Need for Research in Geography Education: It would be Nice to Have Some Data." The geography professor at Pennsylvania State University laments our inadequate knowledge base concerning the nature of geographic learning, and he challenges geographers to participate actively in addressing this problem. In a critical review of the considerable interest and activities in geography education, Downs finds that basic research has been neglected and that true progress for the discipline will require a rigorous, organized, and extensive effort in the research arena. He concludes by offering his recommendations concerning how geographers can begin to address the problems he identifies.

Realities and Opportunities for Funding Geography Education

Dorothy R. Jacobson

Funding for the improvement of geography at the precollegiate level has increased dramatically, both in the amount of money raised and the number of funders making grants. Nevertheless, geography is still not high on the priority list of most funders. Geographic educators must present a stronger case to potential funding agencies. Grant seekers must define geography appropriately, plan for at least the next five years, inventory the resources available to move forward, and be sure to emphasize the present-day relevance of geography's subject matter. Six essential elements for fund raisers are listed, and a short caution concerning potential conflicts of interest is offered. **Key words:** *fund raising, grants, strategies, National Geographic Society.*

Trends in Philanthropy

Let us begin with the goods news. Since the establishment of the National Geographic Society's Geography Education Program in 1985, more than $15 million have been raised for geography education from public and private sources to match the funds committed by the Society and its Education Foundation. Another $52 million have been committed to a permanent fund for geography education, established in 1988 as the National Geographic Society Education Foundation.

Add to this more good news. Since 1980 philanthropic support for precollegiate education has more than quadrupled. In 1980, only 5 percent of foundation support for education went to elementary and secondary education; today, that figure is 25 percent. Membership in the Precollegiate Education Group of the Council on Foundations has grown from 35 in 1980 to 325 in 1993.[1] Without question, an increasing number of philanthropies are recognizing precollegiate education as an essential, effective, and appropriate beneficiary. Often viewed as preventive maintenance, these dollars are intended to strengthen our educational system at its roots, thereby lessening the need for remedial efforts later on.

Likewise, support for environmental issues has increased dramatically, more than doubling in three years, from $74 million in 1989 to $151 million in 1991.[2] The membership of the Environmental Grantmakers Association has increased from only a handful of foundations in 1987 to 172 today. Given these trends, support for geography education seems both available and attainable.

Now a reality check. The areas benefiting most from the increase in precollegiate funding include school restructuring, early childhood education, disadvantaged children and youth, drop-out prevention, and middle school education. The only disciplines cited among the top funding priorities are mathematics and science. Despite geography's resurgence—in public policy, in the classroom, and in the textbook industry—its share of funding for education at the K-12 level remains minuscule.

Strengthening the Case for Philanthropic Support

Although philanthropic support for geography education remains modest, the case for geography education has never been stronger. At least three undeniable forces underscore the merits of increased support: 1) the rapid globalization of commerce and industry; 2) increased acceptance that environmental stewardship requires hard information about science and geography; 3) the dramatic changes in the world's political system. It is noteworthy that these forces, which provide a powerful rationale for geography education, differ only slightly from the arguments used to justify increased expenditures in science and foreign languages. However, something is still remiss in the defense of geography education that must be addressed before philanthropic support increases. Three fundamental needs must be met.

First, geography education needs a sound, practical, and defensible rationale that can be illustrated clearly enough so that the public can understand its value to business, trade, resource management, and everyday life. The two questions most commonly asked in meetings with corporate and foundation executives are: "Just what *is* geography? And what can you do with it?" To be successful, these questions must be answered directly, and in a way that meets the funders' objectives.

Second, there is a critical need for a five-year strategic plan that rigorously addresses the research, professional training, teaching materials, evaluation and assessment, and public awareness needs that must be met for geography's successful return to the K-12 classroom. General consensus among academic geographers, geographic educators, and education professionals will be essential, and the cost of implementing the plan, whether $10 million or $50 million, must be determined. Most importantly, the strategic plan must be based solidly on of the needs of today's and tomorrow's marketplace, unconstrained by today's thinking about the availability of current resources. The Summit in Geography Education was an important first step in identifying priorities and, with consensus, its findings and recommendations should form the beginnings of a strategic plan that can be presented to the grant-making community.

Third, geography educators need to take stock of the people and resources available to move this agenda forward. An increasingly important player in raising needed funds will be elementary and secondary school teachers and administrators. Although professional and academic geographers—and their respective associations—will always have an essential and stabilizing role in charting the course and raising the funds required, those who carry the burden for improving geography education on a daily basis must be enlisted in the process. Teacher-consultants have

a powerful role to play in spreading the word, and those who have an interest should be given the training and support necessary to develop programs, prepare grant applications, and make presentations to prospective donors.

Strategic Openings for Geography Education

The richness of geography as a discipline, and the means by which it is pursued at the K-12 level, provide a variety of strategic openings for geographic educators to work with a broad range of foundations. It is entirely appropriate, for example, that geography education benefit from philanthropy that is focused on issues as wide ranging as leadership development, curriculum reform, technological innovation, early childhood learning, land use management, habitat and wildlife conservation, and diplomacy. But the connections must be made, and they must be made by geographic educators. Otherwise the donor's response assuredly will be "We don't fund geography."

Although philanthropic support for geography education remains modest, the case for geography education has never been stronger.

There are other trends in philanthropy that should be considered in shaping a proposal for geography education. Among foundations, certain trends are pronounced.

1) Grant guidelines are narrowing as society's needs grow. Although this may seem discouraging at first, it means that many foundations are investing more deeply and for longer periods of time in their fields of interest.
2) Foundations are becoming increasingly proactive in grantmaking, working with applicants, observing their programs, and requiring project evaluations. Among professionally staffed foundations, increased communication between donor and grantee is practically required for continuing support.
3) Foundations are targeting their dollars increasingly to areas of geographic interest. For localized geography education programs, this is a trend with real potential benefit.
4) Educational programs that offer multidisciplinary instruction are being encouraged more and more frequently. Those seeking funds for geography education should be aware of these trends and be flexible enough in their programming to respond to prospective funders' interests.

In the corporate arena, there are several noteworthy trends.

1) A concern for tomorrow's employees is shaping today's giving. Pharmaceutical companies are supporting math and science; telephone companies are supporting technology in the classroom; and retailers are supporting economic education. Geography education's ultimate success will be determined by its relevance to the marketplace of tomorrow, as companies look more closely at what geographers have to offer.
2) Environmental funding is increasing rapidly. Whether it is for purposes of public relations, matters of social responsibility, or very real bottom-line

interests, companies are investing more of their funds in environmental research, environmental training, and environmental education. Ties between geography education and environmental stewardship should be emphasized.

3) Corporate contributions are being tied increasingly to marketing objectives. This means that programs should have measurable effects and should demonstrate tangible benefits to the company.
4) Lastly, children are very important to corporations. They are the consumers, clients, and employees of the future. Philanthropic generosity, a hallmark of so many companies in the 1980s, is yielding to marketing strategies, and grant seekers must accommodate today's fiscal realities.

A trend shared by companies and foundations alike is an increased desire for public acknowledgment of their contributions (see also item 6, below).

Essential Elements in Raising Funds

My experiences on both sides of the foundation table provide a perspective on fund raising for geography education. The experience of reviewing proposals and raising funds that may be used to match National Geographic Society grants yields basic advice that I feel is essential to successful fund raising.

1) **Provide a powerful and persuasive definition of geography and its importance.** Boehm's (1990) booklet *Careers in Geography* is a useful tool that translates geography as a discipline ("a science that deals with the earth and its life") into the practical reality of job skills and employment. As the health and welfare needs of today's world scream for attention, donors are choosing those programs that offer tangible, measurable, bottom-line benefits.
2) **Avoid jargon.** Geography education, and its parent discipline, have their own working vocabulary and many of the terms—*spatial relations, GIS, ILI, SGI, Alliances, ASGI,* and *TC*—mean little to an outsider. It is important in fund raising not to opt for handy phrases simply because the structure of the geography education movement is complex. We cannot afford to lose our audience just as we are getting started.
3) **Link our programs to larger national/state/local goals.** The tremendous momentum behind geographic education is a powerful selling point. When taken together, the development of national standards and a national assessment, the proliferation of entrance and graduation requirements, the demand for more training by teachers, and widespread public concern about geographic illiteracy provide important assurances to funders that their dollars will be well spent.
4) **Emphasize the multiplier effect of your program.** If a summer institute costs $55,000 and serves 25 teachers, simple math says that it costs just over $2,000 per teacher for a two-week session. In today's world, where the average per-student cost of a **year's** public education is $5,500, the institute's cost per teacher sounds expensive. A better, and justifiable, calculation would be based on the number of students that benefit from the teachers' improved

skills and, where appropriate, the number of other teachers helped through subsequent inservice workshops. Although it is important to keep our numbers real, it is to our utmost advantage to emphasize the extended benefits of our efforts.

5) **Clearly articulate the nature of our projects, their cost, and their importance.** Michael O'Keefe (1994) of the McKnight Foundation states the case eloquently: "There are four very clear criteria for winning a grant. First, we determine that the project addresses a topic that is a priority *for the foundation* (emphasis added). Second, the applicants must demonstrate a clear understanding of the need or problem they want to solve, and it must be a critical issue. Third, there must be a powerful conviction that their strategy can solve the problem. And fourth, the applicants must convince us that they have the ability to accomplish what they propose."

6) **Maintain a positive relationship with donors.** This includes reporting on the use of funds, inviting donors to program events, providing feedback on the project's impact, and acknowledging donors in materials produced through the grant. Impersonal treatment is returned in-kind. Keep in touch with donors **no less** than twice a year.

Appropriateness of Funding Partners:

It is important to understand the extraordinary value of what has been created to support the geography education movement during the last eight years. A huge network of educators is in place, offering a direct pipeline into schools nationwide. The potential to have an immediate impact on hundreds of thousands of teachers and students is very real. The value of the pipeline is inestimable and, because of this, some cautions are in order.

Conflicts can arise when a contributor's motivations take precedence over a grantee's mission. When this occurs, it is most often in the realm of commercially sponsored programs. By way of example, with the dramatic decrease in school budgets, there has been a rapid and welcome increase in school-business partnerships. These can go awry when the creation and dissemination of classroom materials contain commercial messages and promotional content. The network of geographic educators, now firmly in place in 50 states, Puerto Rico, and the District of Columbia, provides an attractive means for promoting commercial interests. What better way, for example, to get a product message out to children or to their parents? Geographic educators need to take care that the messages they send to classroom teachers and students are editorially sound and bias-free.

This is not to say that commercially sponsored programs are inappropriate. Far from it, in fact. There are excellent materials in the classroom today that would not be available to teachers and students were it not for corporate partnerships. And thousands of companies and local businesses offer in-kind assistance to teachers for the creation of materials on topics in which they have special expertise.

The real key to assessing the motivations for commercially sponsored programs is for you to insist on, and secure, editorial control. The relinquishing of

editorial control by a sponsor is, by itself, a good measure of that sponsor's charitable intent.

The Role of the National Geographic Society Education Foundation

In closing, it is useful to describe the role of the National Geographic Society Education Foundation. Endowed with assets of approximately $52 million, the Foundation makes grants to support geography education at the K-12 level. Its current balance permits a payout of approximately $3.1 million each year. The Education Foundation provides direct financial support through program grants, which include annual operating grants to the Geographic Alliances, pilot programs for urban and preservice teachers, and occasional theme programs, such as fresh-water education which concluded in 1993.

Special funds exist within the Foundation to support geography education programs in specific states. Currently, there are three funds of approximately $1 million each benefiting efforts in Mississippi, Colorado, and Oklahoma; restricted funds benefiting Texas, Hawaii, and the District of Columbia are in development. Grants from the endowments are awarded by the Foundation's Board of Trustees on the advice and counsel of state-based advisory committees. With the goal of adding one or two endowments a year, the National Geographic Society has pledged to match up to $500,000 in any state that has an exemplary geography education program.

Notes

[1] Data provided by Mary Leonard, Director of the Precollegiate Education Group, Council on Foundations, Washington, D.C., May 1993.

[2] Data provided by the Environmental Grantmakers Association, based on surveys of 104 and 123 EGA members in, respectively, 1990 and 1992.

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Corporate Giving Directory, The Taft Group, 12300 Twinbrook Parkway, Suite 450, Rockville, Maryland 20852, 1-800-877-TAFT (sales).

Environmental Grantmakers Association, contact Pam Maurath, 1290 Avenue of the Americas, Suite 3450, New York, NY, 10104, 212/373-4260.

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Implementation of Geography Standards: Potential Strategies and Initiatives

Anthony R. de Souza and Susan Munroe

Full implementation of geography standards will require their adoption by all U.S. states and school districts for use in every school. Strategies for achieving this goal include: using the consensus process to its fullest, involving the energy and resources of geography organizations, and reaching out to others to help maximize the standards' influence. **Key words:** *Standards, implementation, inservice, preservice, curriculum development, curriculum reform.*

For almost one year, the geography community has been working to develop content and performance standards for what students should know and be able to do in geography. Content standards will determine the most essential knowledge, skills, and perspectives that students should learn as they progress through the K-12 school years. Performance standards will indicate what it is students must do in order to prove what they have learned.

Standards setting in geography (and in history, English, math, science, civics, the arts, and foreign languages) is the first step in a nationwide education-reform effort designed to stimulate better teaching and learning of specific subject matter in all schools throughout the country. Policy makers, concerned by low expectations and poor performances of U.S. students, want discipline-based standards put into place so that U.S. students can enter the labor force armed with the information they need to be responsible voters and competent workers. A well-educated citizenry is crucial to the nation if it is to retain its strength as a world leader.

Policy makers included geography in the National Education Goals, believing it to be a fundamental discipline in which students should show mastery by the turn of the century. Americans need to know geography in order to be competent environmental stewards and resource managers—the geography that relates to Environment and Society (National Assessment of Education Progress 1994). And they need to be wise voters when it comes to pressing worldwide issues that relate to economics, politics, and cultures—the geography that relates to Spatial Dynamics and Connections (National Assessment of Education Progress 1994). This modern (or postmodern) geography will broaden citizens' knowledge in swiftly changing sub-fields of geography, helping voters anticipate and avoid problems that could have serious national consequences.

Adoption of the Standards is voluntary. Therefore, the geography community (like all other disciplines involved in developing nationwide standards) is using a broad-based consensus process. Consensus dictates that developers must reach beyond the academy, beyond geographic educators, and beyond professionals involved in education to develop National Geography Standards that are significant and meaningful to all citizens. Consensus dictates that developers must find out what parents, policy makers, and business leaders in communities throughout the nation believe their children, constituents, and employees must know about geography to be effective citizens and workers.

The geography community must listen closely to what these voices say if the Standards are to be adopted. From these voices they must find the themes and topics that occur again and again and then weave them into a coherent tapestry that evokes the usefulness as well as the joy of geography. This tapestry must capture geography's importance to society and also show the pleasure that knowing and understanding geography can bring to every individual's life. The geography community must ensure that the Standards are both intellectually demanding and intellectually satisfying so that they stimulate teachers and students to want to learn even more than what the standards require.

Thus, the Standards must be so thoroughly compelling that students, teachers, and ordinary citizens will grasp the importance of learning and using geography while finding pleasure and satisfaction as they dig deep into the subject matter. Every citizen should be able to say, "Yes! This is what I want my kids (or my employees) to know about the world, and what a lot of fun they are going to have doing it! I'd like to learn this myself!" If standards developers can do this, then implementation should follow.

Consensus Building

To achieve consensus, the Standards have been extensively reviewed during the summer of 1993. More than 2,000 people who have asked to review the Standards have received them for critique as did 100 state social studies and science coordinators, 750 geography teachers, all geographic alliance coordinators, legislative aides to state education committees and governors' aides to education, and stakeholders whose names were provided by the National PTA, the Association for Supervision and Curriculum Development, organizations of state and local boards of education, the Business Roundtable, the American Geographical Society's business members, and the teachers' unions. Comments received in writing were entertained.

If the Standards receive an enthusiastic and positive response from this broad stakeholder review, then Standards developers will have succeeded in developing Geography Standards that the American people want and will support.

Once that occurs, the Standards will be reviewed by a federally appointed body and then examined by the National Education Goals Panel. (This process has been formally introduced as part of federal legislation but has not been acted upon by Congress at this writing.) Once accepted by the goals panel and published in 1994,

the geography community should devote considerable effort to keeping the Geography Standards in the spotlight to ensure their adoption.

To involve the public, we must generate positive press coverage. If the public knows that exciting geography in the form of demanding standards is available to their local schools, then the public will want their schools to use them.

National Geographic Society

To ensure acceptance, the geography community has enlisted powerful allies, all of whom possess unique or complementary talents. The National Geographic Society has a large communications division that can be called upon to generate publicity. Furthermore, the Society, vastly experienced in publishing materials that are interesting and accessible to the general public as well as to educators, will publish the final Standards products—a K-12 Geography Standards book for teachers and curriculum developers, and a separate executive summary for policy leaders, parents, and the general public. The Society will provide editorial and design expertise as well as photos and specially developed maps, charts, and graphs to enhance both products' usefulness to their target audiences. The numbers of copies to be published of both the K-12 standards book and its executive summary are yet to be determined, but both will be distributed free of charge. Translations into Spanish and other languages is anticipated.

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The state- and territory-based Geographic Alliances will be encouraged to work with state and district education decision makers to ensure that the Standards are used to develop state and local curriculum frameworks. Many states and districts are already developing content and performance standards. Others are waiting for results of the broad-based consensus projects to complete their work before engaging in state and local framework development. In all cases, Alliance coordinators should encourage adoption of the geography standards at the state and district level, using teams of Instructional Leadership Institute graduates and Alliance members actively involved in making state and local education policy.

The Society's Geography Education Program (GEP) (which oversees the Geographic Alliance Network) and the Education Foundation (which helps secure financing for geographic alliances) will encourage Alliance leaders to use the Standards in all professional development activities including Alliance Summer Geography Institutes and one- and two-day teacher education workshops. The

Society is planning to organize all of its geography education programs around the Standards, once they are completed.

In 1994, the GED expanded its Instructional Leadership Institute (ILI) by bringing 70 well-trained geography teachers to Washington each year and thereafter (two teachers per Alliance) for a month of training in Standards use and implementation. A smaller two- to three-week institute, which will run concurrently with the ILI, will reinforce the use of the Standards in urban settings. Current plans envision a 1994 Urban Geography Institute that will involve approximately 40 teachers from four cities (Kansas City, Missouri; San Antonio, Detroit, and Portland, Oregon).

Association for Supervision and Curriculum Development

The Society's GED will also work to infuse a technology strand into all its endeavors, synchronizing with the emphasis on technology in the Standards. On one particular project, it will work with the Association for Supervision and Curriculum Development (ASCD) to develop geography curriculum units that support the Standards through a grant from the National Science Foundation. If funding is received, ASCD will train 52 teams of educators from 50 states to use technology and innovative instructional and assessment strategies to create units that will translate the Standards into everyday classroom practice. This proposed five-year project will conduct 21-day institutes each year for four years to train 208 educators. These educators will train other educators, creating a multiplier effect that envisions reaching 40,000 teachers nationwide.

Inservice and Preservice Training

Standards adoption and use could be hampered because so few teachers are well-schooled in geography. The National Geographic Society and its alliances cannot bear the entire teacher-training burden alone. We hope federal entities such as the U.S. Department of Education and the National Endowment for the Humanities (both of which funded the Geography Education Standards Project) will fund Standards-implementation projects that provide inservice professional development activities for teachers.

Preservice teachers must also be guided by the Standards as they prepare to teach geography at new levels of sophistication. We must convince college geography departments and university schools of education to alter their curricula and devote themselves to prepare students adequately who plan to teach geography at the K-12 level. Strategies for beginning this huge task are under discussion within the Association of American Geographers Task Force on College Geography and at the National Geographic Society.

If the Standards are successfully implemented at the K-12 level, the university community will find that students entering their departments know much more geography than students in the past. College courses will have to be adapted to take in the issues addressed in the Standards. Geography departments will have to stress economic, geopolitical, population, natural resource, and environmental issues.

National Council for Geographic Education

The National Council for Geographic Education (NCGE) will promote Standards implementation in a number of ways. High priority will be given both to content articles and teaching/learning strategies and activities that support the Standards. Future publications in the *Pathways in Geography* series will include topics and themes reflected in the Standards.

NCGE plans to provide leadership, working with other geography organizations, to produce a volume of practical suggestions for using the Geography Standards. Particular attention will be paid to using the Standards in selection of content, classroom practices, and assessments. Strategies for adopting the Standards and adapting local and state curricula will be presented. The organization also plans to offer lesson plans that implement specific standards and may establish a clearinghouse for exemplary curricular materials.

NCGE plans to modify its awards programs and its National Geography Olympiad contest for schools to reflect the content of the Standards. It will also provide a public information brochure for distribution through a targeted direct-mail campaign and for distribution with publications orders and at exhibits at annual meetings of educational organizations. The direct mail effort will extend to organizations of other countries whose missions are similar to that of NCGE. The organization will also publicize the availability of the Standards, and support their adoption through its newsletter, *Perspective*, and its magazine, *Journal of Geography.*

Association of American Geographers

Two secondary-school-curriculum projects already underway will assist in Standards implementation. The Association of American Geography's Activities and Readings on the Geography of the United States (ARGUS) Project has developed an innovative curriculum that will meet the Geography Standards. ARGUS materials consist of a concise text, related readings, student activities, and a teacher's guide based on modern curriculum developments in geography, history, environmental studies, and global studies. ARGUS stresses geographical themes, population geography, economic geography, political geography, and environmental issues. The ARGUS Project is part of an effort to develop curriculum exchanges with other countries including the former Soviet Union (CIS) and Japan.

Geographic Inquiry into Global Issues

While ARGUS focuses on the United States, the Geographic Inquiry Into Global Issues (GIGI) Project focuses on other regions of the world. GIGI materials, developed by the Center for Geographic Education at the University of Colorado-Boulder, promote issues-based geographic inquiry. The GIGI Project is developing at least two free-standing instructional modules (a student text and a teacher's guide) for each of ten world regions—South Asia, Southeast Asia, Japan, the former Soviet Union, East Asia, Australia/New Zealand/Pacific, North Africa/Southwest Asia, Africa south of the Sahara, Latin America, and Europe. The modules center

on specific issues that characterize a region. The South Asia modules, for example, focus on population and resources and religious conflict; East Asia modules examine population growth and political change. *Encyclopedia Britannica* will publish the curricular materials in 1994.

Other Strategies

We should examine other implementation strategies. Following the Summit in Geographic Education with two more conferences could expand on that initiative. In addition, a national conference or a series of regional conferences could be organized to familiarize state social studies and science coordinators thoroughly in implementing the Geography Standards through state curriculum frameworks.

In addition the Standards should be placed at the top of the discussion list at future annual Alliance coordinators' meetings. In this way, the coordinators can become thoroughly familiar with the Standards, with implementation issues, and with strategies for approaching policy makers to effect Standards adoption.

Textbook publishers can play a major role in making certain that teachers use the Standards. Just as textbooks have slowly adopted the five themes of geography to shape material and guide teachers in the instruction of geography, so should textbook publishers, developers of curriculum and resource materials, and software manufacturers use the Standards. Many publishers are likely to include the Standards only when they are certain that particular states are going to adopt them. Care, therefore, should be taken to ensure that bellwether states such as California, Florida, Illinois, New York, and Texas adopt the Standards as completely as possible to develop their state curriculum frameworks.

To this end, Standards developers plan to pilot-test the Standards in two or three states after final comments have been received and incorporated. States under consideration for pilot-testing include Colorado, Delaware, and Florida.

Conclusion

A number of brilliant geography initiatives in the past, such as the *High School Geography Project,* have failed to maximize their potential because implementation strategies were neglected. The geography community has, with the Standards, a unique opportunity to reassert classroom geography at all grade levels nationwide. Making full use of coherent and collegial implementation strategies is essential to the long-lasting effects of geography standards on American education.

Acknowledgments

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Notes

On Sunday, May 23, 1993, Summit in Geographic Education participants suggested that GENIP create a Standards Implementation Task force to coordinate activities of the four constituent organizations as they seek to implement National Geography Standards (once they are adopted by the National Education Goals Panel). It was recommended that state (and in certain instances, local) implentation committees be created through the Geographic Alliances to work with appropriate national organizations, state and district administrators and educators, and other public, to advance widespread adoption of the Standards. Efforts to implement the Standards at the state and local levels should take place simultaneously.

GENIP intends to create a work plan for consideration by the constituent organizations during the summer of 1993. It is polling representatives of each member organization to determine the feasibility of forming the proposed task force.

Geography Education in National Context

T. J. Wilbanks

Geography's choice as one of the core subjects in the *America 2000* and *Goals 2000* reform plans has given it a great opportunity to increase its role in school curricula. Nevertheless, those who chose geography as a core subject have a different view of the discipline than professional geographers. As federal control over the reform process weakens and as the action shifts to the local level, geographers must demonstrate the practical relevance of the subject to those outside the discipline who will decide whether geography's role expands in the school curriculum. **Key words:** *Standards, politics, NAEP, issues, environmental education.*

The Charlottesville Summit on national educational reform, convened in October 1989 by the 50 state governors and the President of the United States, determined that teaching and learning in grades K-12 should be focused on *five* subjects. Added to the conventional four—science, mathematics, English, and history—was a fifth, *geography*.

This decision represented the most significant opportunity in the history of this country for geography to move into the first rank of subjects in America's schools. It is critically important, however, for us to understand why geography was added to such a privileged list, because if we misunderstand the situation we are likely to miss our chance at the academic and educational big leagues.

Let us start by reviewing the situation in 1989. At that time, our nation was just coming to terms with the fact that our economy was no longer competitive internationally and that we faced other uncertainties as well, from a global political map, rather suddenly in flux, to a global climate that may be changing in ways that threaten regional economic and ecological stability. Faced with this strange new world, the governors and the President, supported by such private-sector groups as the Business Roundtable, concluded that focusing our schools on the traditional four core subjects was not good enough. Even if instruction in those four subjects were to be strengthened, something important would still be lacking. Articulating this unmet need was not easy, but it seemed to have something to do with *interconnections* in the *contemporary* world, for example, the global economy, international political impacts of regional political reform, and relationships between people and their environment.

Serendipitously, as of 1989, the Geography Alliance program supported by the National Geographic Society (NGS) had been rolling along for several years, promoted in the governors' offices by Gilbert M. Grosvenor, Terry Smith, and others of the NGS; and the general reaction had been quite positive, especially on the part of such key governors as Lamar Alexander of Tennessee. As a result, the summit turned to *geography*—not the social sciences or civics—to meet the vaguely perceived, essentially undefined, and unbounded additional national need.

Reasons for Including Goegraphy as a Core Subject

We should not fool ourselves about the reasons for this decision. It was not because the 50 governors, the President, and the constituencies to which they respond were impressed with the essence of geography as a distinct academic discipline. They did not review the five themes. They did not browse the *Annals* of the Association of American Geographers. In fact, if they had known more about how we talk and what we do within our own walls, they would have been far less interested. Instead, their sense was that geography might be the best umbrella for issue-oriented social studies and environmental education, rather like the span of interest in the *National Geographic* magazine. They were not at all interested in what geographers would call geographic. They were looking for results in terms of useful *outcomes* in what students know and can do in their lives, related to real social and economic needs.

Nonetheless, the Charlottesville Summit and the National Education Goals that were articulated in 1989 gave geography a remarkable chance to show how responsive we can be to a national need. The first effort to implement these goals was the Bush Administration's proposal, called *America 2000*, which said that world-class standards should be established for the five core subjects; that student competence should be tested regularly in these five subjects in grades 4, 8, and 12; and that annual reports should be prepared on our progress toward meeting the national standards in the core subjects. We have all imagined what this national commitment would mean for geography if it actually happens. The results of the first several national tests would show just how far our schools have to go in order to reach world-class standards in our subject, and this would be quickly connected with how little attention states and school districts and individual schools have paid to geography teaching. New programs would be developed to train more geography teachers, to provide more and better instructional materials, and to offer more geography courses and units in the schools. This demand would trickle *upward* as a demand for more teachers of teachers, and more teachers of teachers of teachers, and *every* level of geography teaching and learning would expand as a result.

Of course, simply being proposed by the Administration did not assure the outcome. Any bills and allocations of funds must be enacted by members of Congress, who tend to tinker with proposals from the executive branch, and any national actions must be supported by implementation at the state and local levels. And in all these stages, geography's new special status was sure to be an issue, major or minor. In other words, we needed to be prepared to perform very well under a new kind of spotlight, and we needed to be prepared to work effectively in the *political*

arena as well as intellectual and educational arenas. Given this context, focused on trans-disciplinary national educational needs rather than geography as a discipline, the challenge to us has been to find a way to respond without losing touch with ourselves and what we have to offer as a discipline.

Changes in Recent Legislation

With the arrival of the Clinton Administration, the focus on five core subjects in grades K-12 began to blur in several ways. One reason was that the new administration seemed more concerned about preschool education and post-secondary vocational training than about K-12 school reform, and we all agree that these are indeed national needs. Nevertheless, the new administration produced its own proposal for educational reform: "Goals 2000: the Educate America Act." On March 31, 1994, a revised version became Public Law 103.227. It includes geography as one of *nine* core subjects, adding foreign languages, the arts, civics, and economics. Essentially, the commitment to the general program developed at the Charlottesville Summit has been realized, but the importance of broad political support in Congress and at the state and local levels has increased as the political process has expanded the definition of core subjects beyond the number that can be given central roles in a school curriculum.

Our choice at this historic time is a simple one. We can ... concentrate on the national context of the decision to include geography explicitly in our nation's goals .... Or we can ... assert our uniqueness ... while educational reform passes us by.

Assessment

The first response to these new developments was in connection with a need in 1991 to establish a framework for a national geography test in 1994. This test was to be part of what is called the National Assessment of Educational Progress (or NAEP)—which is not the test that the National Education Goals called for. It is a voluntary test with results reported at the state level, rather than a nationally required (or strongly encouraged) test with results reported at the school district level. But it was important in the new context for at least three reasons:

1) The NAEP test would be the first measure of what needs to be done for the fifth (or seventh) core subject as a part of the national education reform effort. It would jump-start the movement toward a new era for geography.

2) The test itself would be examined by supporters and skeptics alike to see if it describes the kind of subject area that they think the country is looking for.

3) It seemed likely that, if the NAEP framework for what students should know and be able to do as a result of their geography training turned out to be positively received by the various constituencies, it might become a new template for how geography was to be interpreted in the context of the National Goals. This would

mean that it could shape how geography would be defined in America's classrooms for a generation or more.

The results of this process, as imperfect as it was, have been startlingly positive. Not only have external constituencies been impressed with the assessment's representation of geography's reach, as it relates to national needs for educational outcomes, but professional geographers across the country have reacted with considerable excitement and enthusiasm. From a year of chaos, confrontation, and pressure, emerged a consensus that seemed to be persuasive both to many non-geographers and to many geographers, even if it was substantially different from the more disciplinary themes that had been stressed in geography education for a decade or more.

Developing World-Class Standards for Geography

The next step was to respond to an invitation from the U.S. Department of Education (DOE) to contribute further to the implementation of national education goals by drafting world-class standards for geography education in America's schools. Although the proposal funded by DOE through the National Endowment for the Humanities envisioned a set of standards that were extensions of the NAEP framework, with its sensitivity to external needs and constituencies, in the latter part of 1992 and in early 1993 the Geography Education Standards Project turned back toward a focus on the essence of geography as a discipline.

This change was not made thoughtlessly. As best I can understand it, the views of some of the key people in the standards project were 1) that geography had been determined irreversibly to be a core subject, 2) that the task of the project was to implement this national decision, and 3) that the top priority in this regard was to develop standards that would be understandable and palatable to geography teachers in the schools—especially the teachers involved in the state alliances. This meant talking in the terms familiar to teachers whose geography education training had emphasized geography as a discipline.

Clearly, such a determination—as well meaning as it may have been—was premature. Geography's place in the national educational reform process is not secure. It is not secure at the national level, and in most parts of the country it is even less secure at the state and local levels. The fact is that our place will depend quite directly on our ability to convince external constituencies who care very little about the nature of geography (or *any* academic discipline) that we understand the major social issues, that we welcome the opportunity to mobilize a transdisciplinary effort to address these issues in America's schools, and that teaching and learning about our own disciplinary core is an important (although not the only) *means* to this end—not an end in itself.

A Different Approach to Geography Education

We have to decide, in essence, whether we are prepared to take quite a different approach to geography education in America's schools. In sort of a biblical sense, are we prepared to lose our disciplinary life in order to save it? Are we prepared to

reorient our basic approach to geography teaching and learning so that it is issue-oriented rather than paradigm-oriented, anchored in issues that policymakers and everyday citizens care about, sublimating our disciplinary concepts and jargon so that they emerge in the context of the issues rather than as explicit themes in their own right, even though this will be harder in many ways to learn to do?

This kind of issue orientation can be supported on pedagogical grounds as well as pragmatic ones. As David Hill has pointed out, and as his GIGI project at the University of Colorado illustrates in such an exciting way, issues that interest students engage their minds in ways that stimulate learning. They also promote interactions with parents and others outside the classroom that contribute in lasting ways to the continuing educational experience and to a fulfilling life.

The counter argument, of course, is that by departing from our disciplinary road-markers we imply that we have no disciplinary core to offer. It seems to me, however, that this attitude expresses either disciplinary tunnel vision (what else could be so valuable to students as our own concepts, skills, and themes) or disciplinary insecurity (if we do not stress our disciplinary uniqueness in geography education, people may think less of us as an academic discipline).

Instead, I think that we should believe in the power of our perspectives, our concepts, and our skills to demonstrate their robustness and value in connection with virtually **any** significant issue. Such a demonstration would be far more persuasive to far more people in and out of the educational system per se than our disciplinary assertions independent of context.

Also, I believe that we have very little to worry about. Part of the reason is that the issues are right for us: global economic competitiveness; sustainable development; effective, affordable social services; and the like. We have been presented with this historic opportunity because many people *outside* professional geography appreciate our potential relevance—and welcome it—more so than many people *inside* professional geography. Part of the reason why we should be bullish is the way we are. Geographers' characteristic aversion to intellectual boundaries, together with our characteristic curiosity and practicality, makes us attractive in a world that is increasingly skeptical about academic narrowness and fragmentation. Still another reason we should be optimistic is the way the world works. For example, public policymaking in the United States is inherently geographical, at least at the national level. At the same time, the world is beginning to drown in geographical data while it cries out for answers to social needs, and our fellow citizens are getting more of their information every year from graphic images on television and computer screens. Thinking graphically is becoming a central part of our way of life. All this makes geography valuable and relevant at a gut level when it is imbedded in real-world issues and problems, although it can seem sterile and irrelevant when it is cloaked in our jargon separate from these issues.

In my view, our choice at this historic time is a simple one. We can choose to concentrate on the national context of the decision to include geography explicitly in our nation's goals for educational reform, and the result will be a new era for

geography in this country. Or we can choose to focus on our disciplinary essence and to assert our uniqueness, in which case we will sink back into a quiet minor-league existence while educational reform passes us by. This is not an easy choice. The former will require more work. It will wrench us out of our comfortable niches. It will send us out into uncharted waters, at some risk. Meanwhile, we can argue for the latter on grounds of purity, principle, and continuity. We can blame our lost opportunities on the myopia of others. We can retreat to familiar shores and, only slightly regretfully, watch the big folks fight naval battles far out in the national educational waters.

It is really up to us, and we will be judged by generations to come for the actions we take in the next year or two. Personally, I hope fervently that we will rise to the challenge and, in the most profound of ways, put geography on the map in American education by listening to what our fellow citizens are asking from us.

Improving Geography Learning in the Schools: Efforts by the National Geographic Society

Robert E. Dulli

The National Geographic Society's Geography Education Program continues to work on improving geography in the nation's schools. A successful network of geography education Alliances is in place across the United States. These state-based Alliances emphasize grass-roots involvement by teachers and other geography educators. Features of the Geography Education Program include inservice teacher training at Alliance-sponsored summer institutes, institutes held at the Society's headquarters in Washington, and specialized institutes devoted to a specific topic such as technology in education, or water issues. In the near future, the Society's projects include urban outreach, technology training and application, development of preservice programs, and the implementation and dissemination of world-class standards in geography. **Key words:** *National Geographic Society, Education Foundation, alliances, summer institutes, urban outreach.*

To describe the National Geographic Society's efforts to help restore geography to America's schools, it is useful to review where we are in 1994 and to outline some of the Society's plans for the future.

The National Geographic Society (NGS) has developed a geography education alliance network across the United States. State geography alliances are partnerships between teachers, professional geographers, other education professionals, state officials, and the public, working to improve geography's place in the schools. The geographic alliance network has evolved over the past eight years from a small network in 1985 to a network active in all states plus Puerto Rico, and the District of Columbia in 1994. Recently, a special initiative has extended support to Canada.

The Society has centered its main efforts to improve geography education on this state-based alliance network, coordinating a national program that emphasizes grass-roots involvement by teachers and other geography educators. The Society believes that if change in education is going to occur in this country, it will have to be a grass-roots movement concentrating on activities at the state, local, and, ultimately, schoolhouse levels.

The Society also believes that teachers are the key elements of educational change and curriculum reform. Therefore, since 1986, we have held summer

institutes for teachers at National Geographic Society headquarters. More than 570 teachers from across the country have attended and learned new, innovative, and creative ways to get students excited about the science of geography. We have also developed a model for these teachers to share what they have learned with other teachers. This has proven to be an effective way to spread the word about geography education. Via this model, in 1992 alone, graduates of past Society institutes taught in excess of 2,000 inservice geography workshops reaching more than 45,000 teachers, who, we estimate, reached almost 3 million students.

The NGS Summer Geography Institute, which has been our main institute since 1986, finished its cycle in 1993. These institutes functioned as our geography basic training for teachers from states just entering the network. Every alliance now has a nucleus of teachers who have attended an institute at Society headquarters. These teachers continue to play very active roles within the alliance.

Sixty-eight teachers attended the NGS Summer Geography Institute in 1993, including six Canadian teachers and two Russian teachers associated with the ARGUS project. Also this past summer, at the state level, the alliances conducted 61 institutes focused on geography. At least four of these institutes had a strong technology component.

And, we brought another 27 teachers to Washington who had already received training at their state-based geography institutes to participate in National Geographic Society's fifth Instructional Leadership Institute (ILI). Teachers at this institute received instruction in advanced geography topics and education policy and reform issues, and they were trained to serve as geography advocates in their states. The teachers who graduated from these institutes are committed to give at least three workshops to their colleagues after returning to their home states. The majority of teachers who graduate from our institutes give many more workshops than we require. This has been a very effective program of teacher sharing, information dissemination, and outreach.

In addition, in 1993, for the second consecutive year, the NGS conducted a Workshop on Water, in California. Two teachers from each alliance state spent ten days studying physical geography and issues relating to freshwater. These teachers returned to their states to assist in coordinating Geography Awareness Week activities and to conduct workshops and various other activities.

Closer to home, in 1993, as part of the Society's District of Columbia Initiative, 28 D.C. teachers attended an institute in Colorado along with 27 Colorado teachers. These teachers, combined with those already trained in Washington, D.C., will become the leaders for a major geography revolution in the District's schools.

A total of 1,572 teachers participated in one kind of geography academy or another in the summer of 1993.

For 1994 the NGS has developed an urban outreach program, which will involve teachers from four urban areas. Teams of ten teachers chosen from Kansas City, Detroit, Portland, and San Antonio attended a two-week institute at Society headquarters. When the teachers return to their homes, they will become the core of their city's connection to their geographic alliance. The National Geographic

Society Education Foundation (NGSEF) will make supporting grants available to these urban areas for follow-up activities, district outreach, and an institute for the following summer.

In addition to the Urban Institute, the Instructional Leadership Institute was expanded in the summer of 1994 to include teachers from 34 states. There will be another Washington, D.C., summer institute, this time in the Southwest involving five other alliances. This year's national institute, modeled after our Workshops on Water, will be a Workshop on Wilderness with teachers attending from every alliance.

Teachers are the key elements of educational change and curriculum reform.

An additional focus for 1994 will be to help disseminate and promote the new world-class standards for geography. The Society has strongly supported this step toward reaching world-class performance by American students in geographic knowledge and skills.

The National Geographic Society has made a substantial commitment to this effort for the past eight years. We have come a long way, and yet there are still many challenges before us, and there are still innovative and exciting things to be done. I am enthusiastic about the opportunities that await us in the areas of urban outreach, technology training and application, teacher education in both preservice and in-service teacher development, and the implementation and dissemination of the new world-class standards. The National Geographic Society as well as the rest of the professional geography community is enthusiastic and determined to see our students obtain the knowledge they need to be leaders in the modern world. I am certain that the best is yet to come for geography education.

Geography and National Education Policy

Terry Smith

The National Geography Standards must be relevant to everyone associated with educational reform. The special advantage enjoyed by geography during the last administration is slipping away. The focus has shifted from the national to the local level. One way geography can demonstrate its relevance is to strengthen its ties with environmental education. **Key words:** *standards, federal government, environmental education.*

I would like to tie together the standards project, Tom Wilbanks' superb presentation, Kit Salter's question about the audience, and Dori Jacobson's notion of a five-year strategic plan.

I think the key challenges boil down to two words:"So what?" The issue, it seems to me, is for geographers to explain to the American people the reasons why they should care about this discipline. If the question can be crisply answered for the public, it will have been answered for elementary and secondary educators, for the writers on the Standards project, and for foundation and government funders.

If you do not answer the question, the opportunity in front of you will slip away for lack of understanding that geography is relevant and useful in addressing contemporary problems. Tom Wilbanks' presentation at this meeting offers a superb outline for making geography's case. And, the geography community will have to carry more of its own burden in this regard than has been the case in recent years.

Since 1990, the federal government has played a strong role in helping you answer the "so what" question. The National Goals for Education stipulated geography's importance. In the current administration, that impetus is slipping away as the federal role in education reform loses its focus. The result is that the national policy "magic carpet ride" you have been on for the past couple of years is essentially over.

[T]he Standards must make geography's relevance to the solution of contemporary problems crystal clear.

The reform focus is shifting to state and local school district levels. The case for geography will have to be sufficiently compelling to the average citizen that it will be embraced locally—at the grass roots. In 17,000 local school districts over

the next ten years somebody is going to have to move the adoption of Geography Standards for their schools.

So, in response to Kit Salter's question, the audience is the butcher, the baker, and the candlemaker. In short, it is the broad cross section of Americans who participate in education decision making.

This reality can offer a competitive benefit for geography, because you have a powerful network of competent teachers willing and eager to advocate for geography. But, you will have to help create the opportunities for them to do the job. The Standards must speak plainly, usefully, and with relevance to the classroom teachers.

Now, I would like to shift for a moment to a strategic consideration. Dori Jacobson has called for a five-year strategic plan for implementing the Standards. I agree. There will be a wide array of strategic opportunities, but I agree that one of the best was reflected earlier in Rosalyn McKeown-Ice's comments about the interaction between geography and environmental education. Geography's relevance to environmental education presents a new strategic magic carpet for you to ride.

There is growing pressure in the country for environmental education. The problem is that nobody knows exactly what that means. The environmental education community does not agree about what it means.

Nevertheless, legislators are adopting statutory mandates for environmental education. The public broadly supports this movement. I'll bet that if you asked a parent whether it is more important for their child to receive more geography or more environmental instruction, most would choose the latter—because they think they know what it means, and because they know it is relevant.

If you are clear about geography's contribution to environmental education, you can grab hold of a new, important magic carpet. It is critical that the Geography Standards address this point and that the amplifying materials underscore it. The environmental education movement offers the next great political opportunity and ought to be part of any long-term strategy.

In summary, the Standards must make geography's relevance to the solution of contemporary problems crystal clear to a broad public audience, be immediately and powerfully useful to teachers, and underscore geography's central role in educating people about the environment.

The Need for Research in Geography Education: It Would be Nice to Have Some Data

Roger M. Downs

The field of geography education is sadly lacking in empirical data that might inform and underpin decisions about standard setting, curriculum design, materials development, teaching strategies, and assessment procedures. Large quantities of high-quality data are necessary if geography is to be successfully implemented in the American education system. This article advances four needs that, if met, would generate the data necessary to make the case for geography in America's schools. We need a new attitude towards research, a series of baseline studies, a research agenda, and a research clearinghouse if we are to make a convincing case for geography in America's schools. **Key words:** *research agenda, baseline data, clearinghouse*

The title[1] is based on a conversation overheard at a recent meeting of the Society for Research in Child Development. Two people got into the elevator in which I was riding and one said to the other, with a considerable degree of passion and enthusiasm: "It would be nice to have some data." The particular subject, a topic in child clinical psychology, is irrelevant to my argument. Both the surface message and its mode of expression are highly relevant to geography educators.

Question: can you imagine two geography educators[2] getting into an elevator and one saying to the other...? And therein lies an essential problem of and for geography education. Not only do we not have the data now but there seems little concerted effort to gather any significant amount of data now or in the near future. As a group, we seem to have confused activity with movement. By activity I mean things like the Alliance Network and electronic bulletin boards and workshops.

Please do not misunderstand me: these activities are vitally *necessary* to the future of geography education, but they are not, to use the classic distinction, *sufficient* if we are to be successful in moving forward. Forward movement requires an understanding of where we are now, where we are going, and how we might get there. Understanding all of these things requires data.

There are many possible explanations for this lack of attention to data. Perhaps in the trash-and-burn attack on positivism and science, we have also lost sight of the value of empiricism, of the need to ground ideas in the real world, in data. Be that as it may, this data-free approach to scholarship is particularly ironic, given the

attendant danger of prescriptive adultism that permeates the field of education in general. By this awkward phrase I mean the projection "backwards" onto children of what we do now ourselves, where "we" refers to professional, adult, geography educators. Not only does such backwards projection run the risk of hubris, but it misses a fundamental point in geography education. Children are not adults-in-waiting. They are not just like us, only smaller but getting bigger. They are qualitatively different in their ways of looking at the world and thinking about that world. Only if we view education in the narrowest progressivist sense of developing views consistent with ours (i.e., adult views based on socially accepted scientific understanding) does the approach of prescriptive adultism play any role. And even then it does not address the fundamental question of how mature, adult, geographic understanding comes into being and how it might be fostered.

The Position

I wish, therefore, to make a claim about the current state of knowledge regarding geography education and then present four needs that, if satisfied, might re-shape the future of geography education. The four needs are:

1) a new attitude and approach to research in geography education;
2) a series of baseline studies of the current process of geography education;
3) an agenda to shape a systematic program of research in geography education;
4) a support system to ensure that the program of research in geography education is carried out and the results disseminated.

The Claim

The Geography Education Standards Core Writing Group has been charged with the responsibility of drafting standards that are prescriptive of what a student should know and be able to do.[3] Standards must be specific with respect to three questions: 1) what should be known (i.e., content); 2) how should it be demonstrated (i.e., levels and types of performance); and 3) when should it be known and demonstrated (i.e., the grades at which the knowledge and performance should be achieved) (National Council on Education Standards and Testing 1992). Any judgmental, prescriptive exercise is necessarily fraught with difficulty but this one has been particularly so because of our inability to turn to an empirical literature in our discipline for guidance on key decisions about what, how, and when.

We lack any significant body of empirical research in geography education that might inform, let alone provide definitive guidance on the decisions that we must make. I would argue that research is incidental and therefore peripheral to the burgeoning business of geography education. Research is not integral to what we do as geography educators and until it becomes so, I will argue (by way of provocation) that we will not be successful in our efforts at educational reform. Research is not valued and yet it can do many valuable things for us. It can help us to make wise choices about the scope and sequence of geographic curricula. It can help us to develop appropriate materials, to evaluate alternative teaching strategies, to identify those students who might especially benefit from instruction in geogra-

phy, etc. The word "help" is inserted deliberately in this illustrative list of statements. I am not claiming that research is the magic panacea for all ills but simply that it is a necessary prerequisite for successful implementation. A grounding in research would allow us to make recommendations with a degree of authority that far exceeds the current grounding in experience, anecdote, and enthusiasm.

If you accept this claim, then what should geography educators do? More specifically, what do we need to do now, why, and how?

Need 1: A New Attitude and Approach to Research

Accepting that you agree with the obvious need to take research seriously, we need to establish 1) an empirically sound, 2) theoretically grounded, and 3) practical, relevant base of knowledge (see also Need 2) for the field of geography education. We need high-quality research in large quantity in order to build cumulative understanding. There can be no separation between data, theory, and practice.

First, much of the existing research in geography education fails to meet generally accepted research standards in terms of design, execution, and reporting. There are too many one-of-a-kind, ad hoc studies that do not lead to a cumulative understanding of essential phenomena. Thus, for example, we lack a range of valid and reliable instruments for assessment. Therefore, we need to pay close attention to the basics of the empirical method: sample selection, hypothesis formulation, data quality, statistical analysis, reporting requirements, research ethics, etc.

We need to increase the pool of geographers willing and able to perform high-quality and relevant research in geography education.

As a particular example, I would argue that we have adopted a one-size-fits-all approach to research. Too often, we have overlooked significant differences that might exist among the multiple audiences that comprise American students. Thus, we need to be sensitive to the obvious classifications (e.g., girl versus boy, race and ethnicity, age) and also the less obvious classifications (e.g., differently abled or challenged students, gifted students, students for whom English is not a first language). Given the broadening and therefore changing nature of the audience for geography, the one-size-fits-all approach is neither sufficient nor acceptable. We must accept the idea that geography is for all students.

Second, we are handicapped by a lack of coherent theory in geography education. Without theory, we cannot build a cumulative structure of understanding, we cannot identify the missing links, we cannot generate provocative questions, we cannot assess the value of our answers, we cannot see where we are going and why we are going there.

As an initial step, therefore, we should make use of the theoretical structures that are being developed in the nexus of developmental psychology, cognitive psychology, and education. Included in this list of structures might be classic Piagetian and Brunerian approaches, the Vygotsky sociocultural approach to ideas

of guided participation and apprenticeship, the ideas of Howard Gardner and Robert Sternberg on forms of intelligence and their application in school contexts.

Third, we need to make strong links between geographic literacy and workplace concerns, using the 1991 SCANS Report as a starting point (U.S. Department of Labor 1991). While geographic literacy speaks to issues of responsible citizenship, personal self-awareness, etc., it is also an invaluable basis for entry into, and career progress within, a range of occupations. If we can understand the emerging workforce needs over the next decade, then we can build a system of instruction that is indeed responsive. For example, to what extent will the demand for people to design, implement, and run geographic information systems generate educational demands? Or relatedly, how can the graphic and spatial skills that are so central to geography be marketed to potential employers?

Very simply, quality instruction demands and depends on quality research.

Need 2: A Set of Baseline Studies or Benchmarks

Emphasis on empirical research is particularly important now because the entire infrastructure of geography education (that is, preservice and inservice teacher training programs, curricula, materials, textbooks, assessment procedures) will undergo rapid systemic change as a consequence of three things: the National Goals process, the NAEP 1994 Assessment (NAEP Geography Consensus Project 1992), and the Geography Standards Project.

In order to understand, manage, and guide this process of systemic change, we need a baseline understanding of the current situation. Baseline studies must consider at least three aspects of the current system of geography education.

First, we must develop a comprehensive survey of the status of geography in the nation's schools: we must obtain baseline information on the scope and sequence of geography in existing curricula.[4] This is essential if we are to demonstrate in a few years that we have indeed been successful in the process of educational reform.

Second, we must develop a baseline understanding of classroom practice in geography instruction; although curricula at all levels from state to school district may mandate geography as a curriculum component, we need to understand what teachers actually do with (and to) those mandates. What do teachers understand geography to be? What do they actually teach? How do they teach it? What materials and resources do they use? How do they assess the results of their teaching? This is just as essential as the need for a baseline understanding of scope and sequences.

Third, we must develop an inventory and assessment of the range and depth of geographic skills and knowledge among students in order to offer a benchmark against which the effects of educational investments in geography can be measured.

Very simply, we need to know where we are now.

Need 3: A Research Agenda

Posing a research agenda is difficult because, on the one hand, we need to do so much and on the other hand, the agenda becomes a vehicle for personal beliefs.

Accepting, therefore, that this article is designed to provoke reaction, I would suggest these two items for our agenda.

First, we need an extensive program of research on the delivery system for geography in the classroom. If we are to achieve systemic change, then we have to understand what exactly can be changed and how it can be changed. For example, we need to understand the relationship between teaching and learning strategies. On the teaching strategy side, we need to evaluate curricular structures in geography education. As members of the Geography Standards Project have debated recently, is geography eclectic or does it have some underlying structure that would drive the scope and sequence of the curriculum? Might that structure be a variant of the expanding-environments model? What is the appropriate curricular relationship between thematic and regional approaches? On the learning strategy side, we have a variety of methods to consider: discovery learning, cooperative or collaborative learning, inquiry-based learning, etc.

Then, of course, we need to consider the outputs from the teaching and learning processes. Although the NAEP process is a wonderful beginning, we also need to consider such issues as the role of authentic, performance-based assessment in geography. How might we bring together experiences that are meaningful in terms of a geographic perspective on the world? How can performances based on portfolios, hands-on demonstrations, field experiences, and practical problem solving help students to display the benefits of geographic inquiry in ways that are personally meaningful?

Second, we need to see the process of geography education within two linked contexts: 1) a life-span, developmental framework and 2) a novice-expert framework. Using these frameworks, we must understand the trajectory of increasing competence in geographic knowledge and skills.

So many questions would follow from such a perspective (one that is commonly used throughout education and developmental psychology). For example, what are the geographic entry skills and knowledge of kindergarten students and the exit skills and knowledge of graduating high school seniors? Answers to these two questions would anchor the path that we must follow.

Given that path, we could present the following question: What does it mean to be and to become a geographer or to be and become a geographically informed person (to use the language of the Geography Standards)? Either question might, in turn, be decomposed into such questions as 1) the nature of geographic expertise, 2) the genesis of geographic expertise, 3) the ontogenesis of geographic expertise, 4) the necessary components for developing geographic expertise, 5) the facilitation of geographic expertise, 6) the identification of aptitude in geographic expertise, and 7) the training of geographic expertise.

Very simply, we need to know where we are going and how we might get there.

Need 4: A Support System for Research

We need the equivalent of a clearinghouse in geography education. The current infrastructure lacks a central organizational focus. Other than the Geographic

Education National Implementation Project (GENIP), there is no place where it all comes together. There is no mechanism for the rapid, accurate, and extensive exchange of relevant information. Although this idea transcends the realm of research in geography education per se, it is nevertheless of fundamental importance if we are to meet the other three needs.

The clearinghouse would have multiple functions: first, it would act as central repository for research data bases and information on techniques of research and techniques for teaching. Second, it would serve as a systematic disseminator of information derived from tests and assessments of geographic understanding on a worldwide basis. Third, it would act as a liaison between geography education researchers and colleagues in allied disciplines, public and private agencies providing research funding, textbook publishers, curriculum developers, the media, etc.

Very simply, the research will be wasted if it cannot be used.

Conclusion

I want to end with the recognition that these four needs are a wish list, a list with many implications. We need to increase the pool of geographers willing *and* able to perform high-quality and relevant research in geography education. That pool is, sadly, too small at present. In addition, this list is expensive, perhaps prohibitively so, but we cannot afford to slight research in geography education if we are to be successful in the long run. By success in the long run, I mean being able to show our sponsors—policy makers and school boards, parents and students—why geography education works and why it pays. We have a considerable degree of momentum now, but I want to be able to take advantage of that momentum by pointing to the value of a curricular approach, to the importance of providing certain learning materials, to the value of field experiences, etc.

All of those arguments could be expressed in terms of personal enthusiasms and illustrated by means of telling anecdotes. In the end, however, the ultimate support, the warrant, lies in the data. Point to the numbers. We know that the process of geography education will be costly. If we want to receive financial support, we must offer quantitative reasons for our case. Research will help to demonstrate the benefits that accrue in return for those costs. It would indeed be "nice to have some data" and to have that data soon.

Notes

[1] Some of the ideas discussed in this article stem from two pieces of work. The first is a position paper commissioned by the Department of Education for the Office of Educational Research and Instruction, the title of which is "Challenge 4: Research Recommendations for Geography." The second is a paper, entitled "An Agenda for the Re-Education of Geographers," originally presented at the Presidential Plenary Session of the Association of American Geographers, Atlanta, 1993, and since published as: "Being and becoming a geographer: An agenda for geography education." *Annals Of the Association of American Geographers*. 84 (2), 1994, pp. 175-191..

[2] We should insist on the use of the parallel terms "geography education" and "geography educator" to describe our task and ourselves. While this may seem a fine distinction, I would hope that every professional geographer is an educator. Similarly, our subject is not so much a special category of

education (hence geographic education), but the process of communicating an understanding of geography to all people by means of education. Of these two points, the former is more important.

[3]The final report of the Geography Education Standards Project, *Geography for Life*, was published on October 20, 1994, and has been submitted to the National Goals Panel.

[4]At this point, you will probably argue that we do indeed know some of these things. I would agree with you. My point is not simply that we need more high-quality research in the future. It is also that we need to assemble systematically all of the things that we do know now. That idea is expressed in Need 4.

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