

GILBERT FOWLER WHITE (1911-2006),  
WISDOM IN ENVIRONMENTAL GEOGRAPHY\*

JAMES L. WESCOAT JR.

*There is hope for a less hazardous environment, and its achievement will depend upon the linking and convergence, and the integration, of hazard studies into the larger consciousness of sustainability and equity.*

—Gilbert F. White, Robert W. Kates, and Ian Burton, 2001

Gilbert Fowler White was the leading environmental geographer of the twentieth century, and his work helped shape environmental science, policy, and organizations on scales from the local to the international. He pioneered the fields of water-resources geography and natural-hazards research. He was elected to membership in the National Academy of Sciences, the American Philosophical Society, the American Association of Arts and Sciences, and many other scientific organizations. Through these scholarly achievements, and more broadly in his life and work, he demonstrated a profound wisdom.

I first came to know Gilbert through his publications in the basement stacks of Regenstein Library at the University of Chicago—which included monographs on human adjustment to floods, arid-land problems, environmental policy, and water-resources management—long before I met him in person. And now that he has passed, that is the way future generations of geographers will come to know about him and his work. Because some of my initial readings were flawed or superficial, this memorial strives to offer a deeper perspective for future readers as well as a tribute to Gilbert.

Gilbert died at his home in Boulder, Colorado on 6 October at the age of ninety-four, following seventy years of distinguished geographical inquiry and public service. He dated his interest in geography to a combination of an urban childhood in the Hyde Park neighborhood near the University of Chicago and summers spent in the Tongue River Valley of Wyoming, where he worked as a ranch hand dealing directly with issues of semiarid grassland management. He attended John Dewey's Laboratory School, which is affiliated with the University of Chicago and where students built large cardboard models of cities in the classroom and experimental watersheds in sandboxes. Gilbert earned all three degrees in geography—bachelor's degree, master's degree, and doctorate—at that university. He studied under Harlan Barrows, who also gave him his first professional opportunity as an assistant to the Mississippi Valley Commission in Washington, D.C. in 1934. The historian Martin

---

\* I am grateful to Douglas Johnson and Viola Haarmann for inviting this essay; to colleagues, students, and friends for sharing ideas about Gilbert's contributions and qualities; to Florrie for helping me refine these ideas; and to Gilbert, who invited me to sit with him each week, reflect upon the waters of the world, and write a book about them.

\* DR. WESCOAT is a professor of landscape architecture at the University of Illinois at Urbana-Champaign, Champaign, Illinois 61820.

Reuss (1992) described the creative interaction between Barrows and White in their early work on flood hazards during the Roosevelt administration.

Gilbert's long and distinguished career included roughly eight years in U.S. government service, four years in war-relief work in Europe and the United States, nine years as president of Haverford College, fourteen years in the Department of Geography at the University of Chicago, and ten years at the Institute of Behavioral Science at the University of Colorado–Boulder, followed by twenty-five years of active "retirement," working on projects ranging from nuclear-waste disposal in Nevada to international water science in the Middle East, as well as on flood-hazard reduction, the core concern throughout his career. These contributions earned him numerous honors, including the American Geographical Society's Charles P. Daly Medal (1971), the Tyler Prize for Environmental Achievement (1987), the National Geographic Society's Hubbard Medal (1994), the Volvo Environmental Prize (1995), the National Academy of Sciences' Public Welfare Medal (2000), the National Science Foundation's National Medal of Science (2000), the Association of American Geographers' Lifetime Achievement Award (2002), and an honorary doctorate from the University of Colorado (2006)—to name a few.

It is daunting to reflect upon Gilbert's many professional contributions and personal qualities, which were closely linked with one another. Yet in light of his influence on so many people and programs in geography, environmental studies, and natural-resources and hazards management, it seems important to try to discern the essential elements of his work.

Out of respect for Gilbert's empirical bent—that is, his inclination to start with a survey of the facts in a situation—the first part of this reflection offers an outline of his work. Fortunately, Gilbert organized his records meticulously, to the extent that geographer John Thompson and others (2001) were able to conduct a longitudinal restudy of the domestic water-supply interviews reported and preserved by Gilbert, David Bradley, and Gilbert's wife, Anne U. White, in their research for *Drawers of Water: Domestic Water Use in East Africa* thirty years earlier. A significant number of publications have contained comments on Gilbert's work, including a biography entitled *Living with Extremes: The Life of Gilbert Fowler White*, published only months before his death (Hinshaw 2006; see the review by Graham Tobin (2006)). The second section of this essay highlights several key points in these perspectives. It reflects upon Gilbert's ambivalent attitude toward such reviews compared with work he regarded as "more useful." Collectively, neither Gilbert's publications nor the commentaries on his work have yet yielded an overarching perspective on the relationship between his personal and professional contributions, which may be his most significant achievement. Thus the final section seeks to take a step back and offer a broader view.

#### A MULTI-DIMENSIONAL OUTLINE OF PUBLICATIONS

Gilbert's first academic publications, beginning in 1935, were in professional journals like the *Journal of the American Water Works Association*, the *Planner's Journal*,



FIG. 1—Gilbert White with University of Chicago graduate students visiting an alluvial floodplain in the Six Mile Creek Soil Conservation Service Watershed Project near Charleston, Arkansas, en route to the Association of American Geographers annual meeting in Dallas, 1960. (Photograph by A. David Hill; reproduced courtesy of the photographer)

and *Civil Engineering*, which reflected his close association with these fields while he was working on a series of major federal-policy reports with the National Resources Committee and the National Resources Planning Board in Washington, D.C. Although his dissertation required eight years of part-time effort to complete, it yielded the highly influential *Human Adjustment to Floods* (White 1945).

White articulated the concept of “human adjustment” as the choices that individuals and groups make in problematic situations, taking into consideration the alternatives they perceive to be available. It also includes solutions generated to “broaden the range of choice,” an idea that has enduring theoretical and practical significance in geography and beyond (White 1958). For example, White’s theory of human adjustment seems more pertinent to environmental decision making than do related theories of adaptation (for instance, in some climate-change policy documents), because adaptation can only be determined *ex post facto*, after human actions have proved successful or unsuccessful at different spatial and temporal scales.

White showed that human adjustment, by comparison, entails actions that strive to be adaptive but that address unfolding aspirations, risks, uncertainties, and the inherently limited understanding of the consequences of previous actions. Significantly, he also pushed for ex post evaluation of the actual effects of completed projects on the environments and peoples they were intended to benefit.

Decades later, at the University of Colorado, we jokingly reassured doctoral students at a colloquium that, if Gilbert White had taken eight years to finish his dissertation and turned out well, they should not be too anxious. To which some sobering colleagues noted wryly that Gilbert might not earn tenure with that record today!

Gilbert published his first scholarly article in a geography journal in the *Geographical Review* in 1949. His "Toward an Appraisal of World Resources" presents the combination of judicious reporting, critique, and synthesis that distinguished his writing—in this case about the first United Nations Scientific Conference on the Conservation and Utilization of Resources, held at Lake Success, New York in 1948. White published conference-based articles in the *Geographical Review* and other journals to draw geographers' attention to international deliberations on complex environmental problems and initiatives.

A full listing of Gilbert's publications is available online at the Natural Hazards Center Web site (White 2005). In addition, his papers and library are well organized; the major collection is at the U.S. Army Corps of Engineers' Institute for Water Resources, in Fort Belvoir, Virginia (U.S. Army Corps of Engineers n.d.). Smaller collections reside in the archives at Haverford College, the University of Chicago, and the University of Colorado–Boulder. Using these materials and lists as a guide, it appears that Gilbert published a relatively limited but influential proportion of his works in geographical serials (about 15 percent). Although he had little patience with the discipline-based "Is it geography?" question, he consistently described himself as a geographer and his work as geography, and he devoted substantial time and energy to geographical organizations and encouraged others to do so also. He took pride in building bridges between the Association of American Geographers and the National Geographic Society and in nominating geographers to the National Academy of Sciences.

Gilbert's publications do not lend themselves to easy generalization. They require instead a multidimensional outline that may be organized by topics, genres, and trends, as suggested by Kates and Burton (1986). Major topics certainly include: natural hazards in general and flood hazards in particular; natural resources generally, with a concentration on water resources; arid lands; environmental issues; geographical education; and ethical and religious concerns. Over the course of his career, Gilbert's publications are surprisingly wide-ranging in substance, with roughly one-quarter of them addressing water-resources issues, another quarter focusing on floods and natural hazards, the third quartile dealing with environmental issues, and the remaining fourth part addressing arid lands, natural resources, geographical education, and Quaker concerns for peace and service. This diversity of topics helps one understand why Gilbert wondered whether he would have made a greater

difference for people and their environments had he concentrated on helping needy people directly (White 2004).

Gilbert wrote with clarity across a similarly wide range of publication genres, with his thoughts and research appearing in journal articles (generally single authored), books (generally coauthored or edited with geographers or hazards researchers), interdisciplinary scientific committee reports (on which he often served as chair), and prefaces, editorials, and brief notices (generally single authored). In each case, his strongest mode of presentation was the succinct, synthetic appraisal of complex issues, approaches, evidence, and alternatives. In coauthored works he generally prevailed in urging an alphabetical listing of authors that promoted his colleagues. As with his mentors, Harlan Barrows and Abel Wolman, his prodigious contributions to scientific committee reports had collective authorship.

Equally interesting are the trends and cycles in Gilbert's inquiry. Early publications through the 1950s dealt with flood hazards, river-basin development, arid lands, natural resources broadly defined, and Quaker social and educational concerns. Beginning in the 1960s he widened the scope of his flood research to encompass comparative investigation of other natural hazards, and he began to shift from natural-resources management to environmental policy issues. In later years he wrote less about some topics, such as arid lands, although what he did present in these fields was important. A salient example was his work on a diagnostic appraisal of Aral Sea environmental problems; for instance, as chairman of the United Nations Environment Programme's Diagnostic Study for the Development of an Action Plan for the Conservation of the Aral Sea, 1990–1993. Water management and flood-hazard reduction were the enduring concerns throughout his career.

#### BIOGRAPHICAL APPRAISALS

Much of what might be included in a memorial essay has been published in other venues that are readily available in print or online. Several works, however, warrant continuing reflection. The most substantial of these is the recent book-length biography by the Quaker anthropologist Robert Hinshaw (2006). Hinshaw knew White at Haverford, the University of Chicago, and through Quaker and Colorado connections for a half-century. He had the combination of scholarly experience and disciplinary distance to focus on linkages between White's personal history and his professional accomplishments. *Living with Nature's Extremes: The Life of Gilbert Fowler White* is essential reading for geographers.

Several assessments by colleagues in water, hazards, and environmental studies show how Gilbert's professional and scientific work influenced those fields. Twenty years ago, for example, Kates and Burton edited the two-volume *Geography, Resources, and Environment* (1986). In the first volume the editors assembled selected essays and chapters from Gilbert's writings and added their own thoughtful comments; in the second volume they compiled essays on related fields of study by Gilbert's colleagues and former students. Even though eight pages of Gilbert's twenty-nine-page list of publications postdate this Festschrift, the observations of those

close coworkers shed light on White's most active research period by those who participated in it firsthand.

Gilbert agreed to several interview publications and films, as well as the occasional autobiographical or personal essay (White 1994, 2004). Characteristically, these accounts are factual and judicious, focusing on the scientific concerns, events, and



FIG. 2—Gilbert White along Boulder Creek in the Colorado Front Range, October 1992. (Photograph by Ken Abbott; reproduced courtesy of the University of Colorado—Boulder)

studies that influenced his work. As such they are often more informative about the field and what research needed to be done than about the person who shaped it. An oral-history interview conducted by Martin Reuss (1993), a retired senior historian for the U.S. Army Corps of Engineers, is one of the most informative of these, in part because it records Gilbert's observations on the efficacy of different policymakers and policymaking approaches.

But White had limited interest in such reflections. I once tested the strength of his views at a gathering celebrating his work at the University of Colorado–Boulder, asking him in my opening remarks if it was true that he thought such celebrations had little value for the field, to which he responded, “That’s right!” Experience had taught him, and his beliefs affirmed, that people who pursue the issues that interest them deeply will not depend upon the personal views, relationships, or commentaries of others, except insofar as they address those human and environmental issues.

In the late 1970s, however, this attitude may have hindered effective debate about theories of human-environment relations and hazards. The limited debates that did occur in reviews of Burton, Kates, and White’s *The Environment as Hazard* (1978) and White’s *Natural Hazards: Local, National, Global* (1974) did not provide the depth or perspective needed to clarify White’s distinctive approach to water, environment, and hazards research. This approach has strong affinities with pragmatist theories of human-environment relations, notably those of John Dewey (Wescoast 1992). The pragmatist connection did not interest Gilbert much initially, but he seemed to appreciate its utility in graduate education at Colorado in later years.

More significantly, Gilbert corrected the emphasis on Dewey’s pragmatism, which, though illuminating for its comparable logic of scientific and social inquiry, was less influential for his personal views than was William James’s *The Varieties of Religious Experience*. James ([1902] 1982, xix) wrote that “the problem I set myself is a hard one: first, to defend . . . ‘experience’ against ‘philosophy’ as being the real backbone of the world’s religious life . . . and second, to make the hearer or reader believe . . . that, although all the special manifestations of religion may have been absurd . . . , yet the life of it as a whole is mankind’s most important function.” Hinshaw’s *Living with Nature’s Extremes* delves deeply into Gilbert’s combination of personal convictions and professional experience, which many of us who came along later in Gilbert’s career tried to discern in various fragmentary ways. It is helpful, for example, for students and colleagues who may have wished for more concrete advice from Gilbert to know that it was a matter of principle for him to try to encourage people to look within rather than seek external direction from a mentor.

Hinshaw’s portrait poses a different challenge that emanates from its complexity and detail. For example, he has two summary chapters (“Gilbert White: The Man” and “Gilbert White: The Legacy”) and an epilogue, all of which present as much diversity as do Gilbert’s own publications. Hinshaw also offers fresh reflections on the spiritual experiences and paradoxes in Gilbert’s life and work.

At several points Hinshaw notes that Gilbert was not a preacher or a prophet. Nor was he a mystic like the Quaker philosopher Rufus Jones, whom he deeply admired. As when earlier debates about Gilbert’s purportedly atheoretical approach to human-environment relations seemed cloudy, this complex portrait invites one to step back and ask, If not priest or prophet, what was Gilbert’s role?

## CONTRIBUTIONS TO WISDOM IN ENVIRONMENTAL GEOGRAPHY

Everything I have read, heard, and experienced firsthand leads me to think that Gilbert White's personal and professional life has contributed to what may be called a "wisdom tradition" in geography. Although full development of this perspective lies beyond this essay, an initial outline might include four intertwining threads: wisdom in ordinary language; wisdom in modern social research; wisdom in Quaker and Judeo-Christian thought; and, ultimately, wisdom in geographical inquiry and practice.

The words "wise" and "wisdom" occur in many tributes to Gilbert's combination of character and inquiry. They imply many of the qualities associated with wisdom in ordinary language: good judgment, discernment, prudence, discretion, understanding, and sound use of knowledge and experience, among other commendable attributes (see online tributes for recent examples, such as Jessor and Menken 2006). Many, if not most, readers would agree with these associations, but there is more.

Social research on wisdom has many strands, including tests of implicit theories based on ordinary language descriptors such as those noted above. One review of research on implicit theories classifies descriptors of wisdom under the broad headings of cognitive ability, insight, reflective attitude, concern for others, and real-world skills, which seem to fit White well (Bluck and Glück 2005).

Explicit psychological theories of wisdom include the Berlin paradigm, which stresses the "orchestration of intellect and character" and "expertise in the fundamental pragmatics of life" (Kunzmann and Baltes 2005, 116–127). The latter entails the joint use of factual expertise, procedural expertise, life-span contextualism, value relativism and tolerance, and awareness of uncertainty. These faculties of wisdom find expression in the "life planning, life management, and life review" that Gilbert exemplified (Baltes and Kunzmann 2004, 294). The Berlin paradigm is one of several that bear comparison with White's distinctive contributions. Sternberg's (2003, 152–173) "balance theory of wisdom" also has close parallels with Gilbert's ideas about human adjustment and choice, which strive to balance environmental accommodation, change, and location.

The wisdom that emerged from Gilbert's Quaker and broader Judeo-Christian or religious experience was surely important, but it is profoundly difficult to express in words given its nature and Gilbert's privacy about it. William Penn [1693] 1978, 89) wrote about the wise man: "Though you cannot always penetrate his Design, or his Reasons for it, yet you shall ever see his Actions of a Piece, and his performances like a Workman: They will bear the Touch of Wisdom and Honour, as often as they are tried." Hinshaw (2006) sheds light on how White's Quaker beliefs found expression in his work and life. His appointment as a young president of Haverford, for example, indicates his early recognition as a "weighty Friend"; that is, one whose contributions emanate from strong inward leanings that are valued highly by others. Like George Fox ([1694] 1974, 97–100), Gilbert spoke out when he believed that the profession of geography was "out of wisdom."



These Quaker practices invite comparison with wider Judeo-Christian traditions to which they partially belong, which include Old Testament wisdom books such as Proverbs, Job, Ecclesiastes, and the New Testament letter of James (Murphy 2002). Gilbert's references to scripture are few, though his frequently cited challenge to geographers, "What shall it profit a profession if it fabricates a nifty discipline about the world while that world and the human spirit are degraded?" (1972, 104), borrows from the biblical passage, "What shall it profit a man if he shall gain the whole world, and lose his soul?" (Mark 8: 36). The title of *Drawers of Water* refers to Joshua 9: 21: "Let them be hewers of wood and drawers of water," which describes the harsh fate of a subject people. It seems likely given their infrequent use that these passages may have been selected as much or more for their rhetorical power than for their religious significance. Gilbert's contributions to geographical inquiry may contain more scriptural references that relate to these wisdom traditions, just as they include subconscious parallels between White's scientific methods and Dewey's pragmatist logic, but their significance is difficult to assess.

Does wisdom exist in environmental geography? Certainly, individual geographers are deemed wise by colleagues, students, and others in ways that accord with ordinary language and implicit theories of wisdom. This stature often comes through in their work and teaching. In Gilbert's case it helped establish several fields of research and practice that strive to harmonize the relationships among people, place, and environment. Water-resources geography and hazards geography did not exist as subfields of the discipline prior to his work with colleagues such as Edward Ackerman, Harlan Barrows, Ian Burton, Robert Kates, and Abel Wolman. Gilbert's wisdom is transmitted through generations of students, "grandstudents," and now "great-grandstudents" who seek to understand and broaden the range of choice available to people living in and planning for hazardous places. This legacy is also sustained in part by institutions like the Natural Hazards Center and the policies of floodplain management that Gilbert helped establish and support.

It is less clear whether this work builds on a clear wisdom tradition in geography. Geographers' aspirations for human and environmental harmony have deep historical roots that deserve to be studied in the way that Clarence Glacken (1976) retraced ideas about design in nature, environmental influence, and the environmental effects of human action. The more important question from Gilbert's perspective would focus on the future trajectory of these aspirations: Where are they heading, and how can wise geographical inquiry improve the well-being of all creatures and their environs (White, Kates, and Burton 2001)?

In his final days Gilbert withdrew from food, drink, and special medical care, actions that may seem paradoxical after a lifetime devoted to resource management and hazard mitigation, but it is worth recalling William Penn's words: "Though you cannot always penetrate his Design, . . . yet you shall ever see his Actions of a Piece." These actions at the end of life display Gilbert's characteristic clarity of inward conviction and offer a lasting silent lesson. Whereas the wisdom of creating and sustaining life involves marshaling resources and mitigating hazards, wisdom at the

end of life involves releasing resources and embracing hazards. Together they constitute a wisdom and practice of conservation that seeks “a home for all in sustenance and in spirit” (White 1994, 13).



FIG. 3—Gilbert White’s last office in the basement of the Natural Hazards Center at the University of Colorado—Boulder. Though modest in size and location, it hosted hundreds, if not thousands, of visitors over the last twenty years who have fond memories of the stone walk, broom, and screen door that led into a treasure house of books, projects, experience, and wisdom. (Photograph by the author, November 2006)

#### REFERENCES

- Baltes, P., and U. Kunzmann. 2004. The Two Faces of Wisdom: Wisdom as a General Theory of Knowledge and Judgment about Excellence in Mind and Virtue vs. Wisdom as Everyday Realization in People and Products. *Human Development* 47 (5): 290-299.
- Bluck, S., and J. Glück. 2005. From the Inside Out: People’s Implicit Theories of Wisdom. In *A Handbook of Wisdom: Psychological Perspectives*, edited by R. J. Sternberg and J. Jordan, 84-109. Cambridge, England: Cambridge University Press.

- Burton, I., R. W. Kates, and G. F. White. 1978. *The Environment as Hazard*. New York: Oxford University Press.
- Fox, G. [1694] 1974. *The Journal of George Fox*. Edited by R. M. Jones. Richmond, Ind.: Friends United Press.
- Glacken, C. 1976. *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*. Berkeley: University of California Press.
- Hinshaw, R. E. 2006. *Living with Nature's Extremes: The Life of Gilbert Fowler White*. Boulder, Colo.: Johnson Books.
- James, W. [1902] 1982. *The Varieties of Religious Experience*. Harmondsworth, England: Penguin Books.
- Jessor, R., and J. Menken. 2006. Tribute. *Gilbert F. White: Tributes*. [www.colorado.edu/hazards/gfw/tributes.html].
- Kates, R. W., and I. Burton. 1986. *Geography Resources and Environment*. 2 vols. Chicago: University of Chicago Press.
- Kunzmann, U., and P. B. Baltes. 2005. The Psychology of Wisdom: Theoretical and Empirical Challenges. In *A Handbook of Wisdom: Psychological Perspectives*, edited by R. J. Sternberg and J. Jordan, 110–135. Cambridge, England: Cambridge University Press.
- Murphy, R. E. 2002. *The Tree of Life: An Exploration of Biblical Wisdom Literature*. 3rd ed. Grand Rapids, Mich.: William B. Eerdmans.
- Penn, W. [1693] 1978. *Some Fruits of Solitude*. Richmond, Ind.: Friends United Press.
- Reuss, M. 1992. Coping with Uncertainty: Social Scientists, Engineers, and Federal Water Resources Planning. *Natural Resources Journal* 32 (1): 191–235.
- . 1993. Water Resources People and Issues: Interview with Gilbert F. White. Unpublished oral history. Fort Belvoir, Va.: U.S. Army Corps of Engineers, Office of History. [www.usace.army.mil/inet/usace-docs/eng-pamphlets/ep870-1-43/entire.pdf].
- Sternberg, R. J. 2003. *Wisdom, Intelligence and Creativity Synthesized*. Cambridge, England: Cambridge University Press.
- Thompson, J., I. T. Porras, J. K. Tumwine, M. R. Mujwahuzi, M. Katui-Katua, and others. 2001. *Drawers of Water II: 30 Years of Change in Domestic Water Use and Environmental Health—Summary*. London: International Institute for Environment and Development.
- Tobin, G. A. Review of *Living with Nature's Extremes: The Life of Gilbert Fowler White*, by R. E. Hinshaw. *Geographical Review* 96 (4): 711–713.
- U.S. Army Corps of Engineers. N.d. Arthur Maass–Gilbert F. White Reference Room. U.S. Army Corps of Engineers, Institute for Water Resources. [www.iwr.usace.army.mil/inside/products/pub/maasswhite.cfm].
- Wescoat, J. L., Jr. 1992. Common Themes in the Work of Gilbert White and John Dewey: A Pragmatic Appraisal. *Annals of the Association of American Geographers* 82 (4): 587–607.
- White, G. F. 1945. *Human Adjustment to Floods*. University of Chicago, Department of Geography, Research Paper No. 29. Chicago.
- . 1949. Toward an Appraisal of World Resources. *Geographical Review* 39 (4): 625–639.
- . 1958. Broader Bases for Choice: The Next Key Move. In *Perspective on Conservation*, edited by Henry Jarrett, 205–226. Baltimore, Md.: Johns Hopkins University Press.
- . 1972. Geography and Public Policy. *Professional Geographer* 24 (2): 101–104.
- . 1974. *Natural Hazards: Local, National, Global*. New York: Oxford University Press.
- . 1994. Reflections on Changing Perceptions of the Earth. *Annual Review of Energy and Environment* 19: 1–13.
- . 2004. Using Science to Help People. Adapted by J. Baker. In *Lives That Speak: Stories of Twentieth-Century Quakers*, edited by M. Clark, 128–138. Philadelphia: Quaker Press.
- . 2005. Publications by Gilbert F. White. University of Colorado, Natural Hazards Research and Information Center. [www.colorado.edu/hazards/gfw/published.pdf].
- White, G. F., D. J. Bradley, and A. U. White. 1972. *Drawers of Water: Domestic Water Use in East Africa*. Chicago: University of Chicago Press.
- White, G. F., R. W. Kates, and I. Burton. 2001. Knowing Better and Losing Even More: The Use of Knowledge in Hazards Management. *Environmental Hazards* 3 (3–4): 81–92.