

IN MEMORIAM

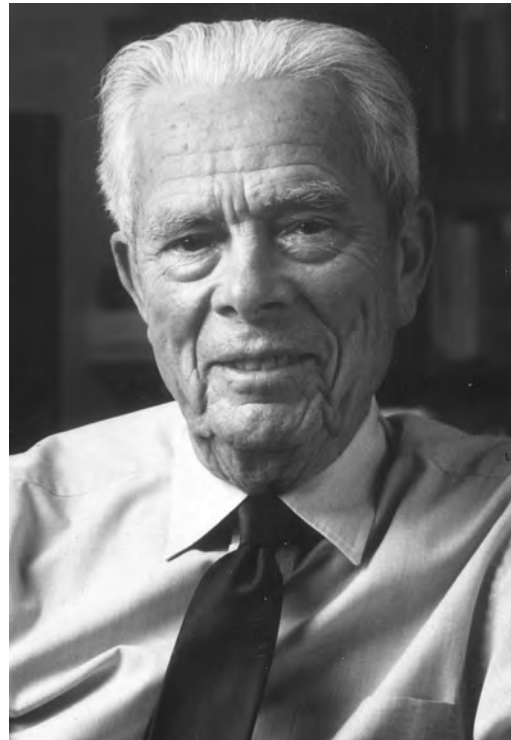
Gilbert F. White, 1911–2006 Local Legacies, National Achievements, and Global Visions

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Independent Scholars

Gilbert White's extraordinary life, as befits an outstanding geographer of the twentieth century, can be appreciated in both spatial and environmental terms. His major preoccupation with the relationship of humankind and nature first took shape in the localities of his early years at his parent's home in Hyde Park (Chicago), and at his father's part-owned 6,000-acre Quarter-Circle-Bell Ranch along the Tongue River near Dayton, Wyoming. In both places Gilbert experienced the strains and stimulation of growing up in a diverse community—the sometimes tense mixture of racial, ethnic, and economic backgrounds in Chicago, and cultural distances between Scottish and American wranglers, Spanish and Basque shepherders, and Crow Indians in Wyoming. Throughout his professional life Gilbert used his sense of place and local community as an entry point into the management of natural resources and hazards and in the resolution of conflicts. His chosen fields of endeavor and his approach to them cannot be understood without some appreciation of the man who, from early childhood, was determined to make a difference and to leave the world a better place than he found it.

Having grown up in the prosperous 1920s only to witness the hardships of the Depression era, Gilbert moved, at age twenty-three, from childhood and student experiences to the planning and policymaking



of the New Deal in Washington, D.C. and then to wartime Quaker service in France and subsequent internment in Nazi Germany. This was followed in the immediate postwar years by a period as President of Haverford College (1946–1955), and then a return to his main vocation in life—research and teaching in geography—first back at Chicago (1956–1969), and then Boulder, Colorado (1970–2006). A detailed chronology and account of Gilbert's life and work may be found in Robert Hinshaw's biography published a few months before Gilbert's death in October 2006 (Hinshaw 2006). A comprehensive publication list, *vita*, honors list, and other materials are available at <http://www.colorado.edu/hazards/gfw/>.

Gilbert White's large volume of research, scholarly publications, and contributions to public policy typically began with place-based questions about the ways in which people thought about, understood, and managed their resources and environment. Thrust at an early age into New Deal Washington, and wartime France and Germany, he addressed national and international problems, and eventually the great global issues of our time. It is this fusion of the local, national, and global that has typified Gilbert's life work. As his research, reputation, and influence in national and international policy grew, he never let go of the need to keep his research grounded in everyday life and community.

This he passed on to his students and their students, who most often built their research around place-based case studies. Gilbert's local legacies included his efforts with wife Anne to provide access to open space in Boulder (ProTrails 2007), Jack Sheaffer's (1960) pioneering design and encouragement of flood proofing, Aminul Islam's (1974) efforts to reduce cyclone deaths on the *chars* of Bangladesh, and Eve Grunfest's (Grunfest, Downing, and White 1978) work to improve flash flood warnings—all examples of practical achievements at the local level.

We build our main account of Gilbert's contribution around five themes that encapsulate some of his major preoccupations. In each case they began locally, but it is toward their national and global expression that we direct much of our story. The five themes are:

- Domestic water supply, and in particular the bringing of safe potable water to all people as a matter of human right, and not simply as another good or commodity.
- Natural hazards and disasters, and in particular the reduction of the toll of deaths, damage, and destruction.
- Peace, globally and regionally, through the cooperation of diverse peoples and interests in the development and management of river basins and water resources.
- The affirmation and deployment of science in general (and geography in particular) beyond the bounds of the academy into practical service to humanity.
- The reconciliation of human wants, needs, and greed, with the character of their environment and global resources to achieve a sustainable and equitable path of development.

Domestic Water Supply

Gilbert's first published paper was based on a government assignment to do a national survey of the effects of the great drought of 1934 on public water supplies. He found that despite widely expressed concerns, the large majority of public water supplies in areas affected by drought proved to be adequate. Where this was not the case the shortages could be attributed to unfavorable geologic and hydrologic conditions or municipal-level failure to make full use of the available resources (White 1935).

In subsequent years Gilbert studied and wrote about industrial water use (often inefficient), interstate and international river basin development and arid lands

(with a United Nations Educational, Scientific, and Cultural Organization Commission). Undoubtedly the culmination of Gilbert's interest in domestic water came with his study of domestic water supply and use in East Africa conducted together with his wife Anne, and London-based epidemiologist David Bradley. As he recalled later:

We went into about 35 different [village] sites and inquired about how people decide to use water. . . . We did something which is rudimentary but nobody had done before. We found out where they had got their water, how much they used, and what it cost them to use it in terms of time, energy, money, and health. . . . In almost all cases people have alternative sources from which they can draw the water. Thus, they make two decisions everyday: how much water they'll draw, and where they will go to get it, which involves who will go to get it, generally "she." (Reuss 1993, 72)

In *Drawers of Water*, White, Bradley, and White (1972) challenged conventional thinking. In creating a new typology of water-related diseases based on modes of transmission rather than specific pathogens, it helped shape a different view of the interventions that could reduce disease. They demonstrated that more water in quantity (not just cleaner water) was needed for health when it came to washing people, clothes, utensils, and food. They also found that providing water sources closer to users does not necessarily increase the volume of consumption. The study proposed a greater diversity and flexibility of approaches to rural water supply, more use of single taps and standpipes, and more community and individual initiatives. Today these findings have been widely incorporated into best practice.

What is especially impressive about this example of local legacy is that thirty years later another team of researchers found it possible to replicate the study in the same villages, using the original random sampling scheme (Thompson et al. 2001). The restudy found that although more people had access to piped water supplies, these supplies were failing more, by lack of maintenance and the heavy use of a population that had increased threefold. Although overall per capita consumption (both rural and urban) had declined by 30 percent in thirty years, in rural areas, without piped supplies, consumption had nearly doubled with significant environmental health benefits.

Speaking to a CIBA Foundation Symposium a year after the publication of *Drawers of Water*, Gilbert argued for a view of access to a basic minimum water

supply not as an economic “good” but as a human right, and went on to ask;

In a period of twenty-five years [by 1998] would it be practicable to improve the water supply for those populations now inadequately served so as to provide water supply and sanitation with low or insignificant health hazard to 95% of the human family? . . . If we extrapolate the trends of the past decade for ninety developing countries the answer is “no”; over [the next] three decades at least half the rural population, or more than 1.5 billion people, still would not enjoy the benefits of improvement. If we assume that the level and tempo of technical development, administrative management, and training and education are stepped up as part of an international initiative based on helping governments to enable people to claim their right to clear water, the answer is a hopeful “yes.” (White 1974a, 49)

This hopeful vision was picked up, partly on the basis of further initiatives by the International Development Research Centre (Ottawa), and the 1980s were designated as the United Nations Decade for Drinking Water Supply and Sanitation. Alas, the Decade, with its aspiration of “Water and Sanitation for all by 1990,” fell far short of its goals. More recently the United Nations adopted the objective of cutting by half the number of people without access to safe water by 2015, as part of the Millennium Development Goals. Recent estimates (if they are to be believed) project that this more modest goal will be met worldwide except in sub-Saharan Africa and the Arab states. In these two regions, at current rates of improvement, it would be 2040 before the “halfway” goal is reached. Thus globally, there will be some 800 million people still needing access to safe water in 2015.

Natural Hazards and Disasters

In 1934, during his government service in Washington, Gilbert began his critical analysis of public efforts to reduce the losses of lives and property damage from natural hazards. His tasks included a role in the review of flood control proposals, about which he “soon became sceptical” (White 1994, 3). “Floods,” he wrote in the late 1930s, “are acts of God, but flood losses are largely acts of man. Human encroachment upon the flood plains of rivers accounts for the high annual total of flood losses” (White 1945, 2).

The federal policy of exclusive reliance on dams, levees, and channel improvements to reduce losses was the focus of his highly influential University of

Chicago dissertation. In *Human Adjustment to Floods: A Geographical Approach to the Flood Problem in the United States* (White 1945), eight types of human adjustment are listed: elevating land, abating floods by land (watershed) treatment, protecting against floods by levees and dams, providing emergency warning and evacuation, making structural changes in buildings and transportation, changing land use to reduce vulnerability, distributing relief, and taking out insurance. Having shown the detrimental effects of heavy reliance on a limited range of options, Gilbert concluded with some general principles: Public policy should consider all possible adjustments, at the same time it should be recognized that choice of adjustments is not neutral but rather can favor one form of floodplain use over others. To identify appropriate floodplain use, public policy should weigh the full range of social costs and benefits incurred by society in employing these adjustments and not just those that are easy to measure.

Further elaboration of these ideas awaited Gilbert’s return to Chicago in 1956. There he launched a fifteen-year-long effort with colleagues and students to examine urban and rural floodplain occupancy (White et al. 1958; Burton 1962), the identification and elaboration of possible adjustments (Murphy 1958; Sheaffer 1960; White 1964a), and their perception and choice in particular places (Kates, 1962; White 1964a).

Building on the largely place-based studies and research findings, new public policies were generated, and within a decade they became part of the Unified National Program for Floodplain Management (U.S. Water Resources Council 1979). The program included not only flood protection and relief, but a broader set of alternatives including floodplain mapping, insurance, land use zoning, height restrictions, and building construction. It is for his advocacy and public recognition of this broad set of alternatives that Gilbert became known as the “father of floodplain management,” and despite his continued critique of the failures of floodplain management to stem the tide of rising flood losses.

His approach found worldwide resonance in a broad range of other natural hazards. The dissemination of Gilbert’s ideas was facilitated under the aegis of the International Geographical Union by a set of collaborative international studies at forty sites in seventeen countries, including research on floods, droughts, hurricanes, and air pollution (White 1974b; Burton, Kates, and White 1978).

A further expression of the hazards geography approach was created by Gilbert soon after his move to the University of Colorado in 1969–1970 to head

the Institute of Behavioral Science. He initiated the first U.S. national assessment of research and its utility across a wide spectrum of natural hazards (White and Haas 1975).

The attention drawn to natural hazards and the mounting losses in the United States and elsewhere was paralleled by a similar interest among sociologists, who preferred to use the term *natural disaster*. The idea of a world safer from natural hazards and disasters led to another global vision, taken up by the U.S. National Academy of Sciences, and leading to an International Decade for Natural Disaster Reduction (1990–1999). Despite Gilbert's expressed reservations, the Decade was, initially at least, heavily oriented around natural science and engineering perspectives.

The lessons of the 1930s and 1940s U.S. flood policy had to be learned over again in dealing with natural hazards at the international level. The Decade (which like the visionary water supply decade before it fell far short of its stated goals) has now been replaced by the International Strategy for Disaster Reduction, which follows Gilbert's precepts much more closely, and has led the International Council for Science to begin the preparation of a decade-long research program on natural hazards that adopts a much wider perspective. This builds in part on our last joint article, "Knowing Better and Losing Even More: The Use of Knowledge in Hazard Management" (White, Kates, and Burton 2001). In the article we examine why it is that despite greatly expanded knowledge of natural hazards and disasters, their human causes, and the adoption of multiple adjustments as part of best practice, global losses continue to rise at a virtually exponential rate.

There is no doubt that a large part of the explanation lies in the rapid growth both in wealth and in population—sometimes freely choosing, but often forced into the occupancy of hazardous locations. With the advent of anthropogenic climate change, these risks and hazard losses are set to climb even more rapidly. It is encouraging, therefore, to see the involvement of a remarkable number of Gilbert's students and his students' students involved in the work of the Intergovernmental Panel on Climate Change, where they are carrying forward essentially the same insights that Gilbert first formulated sixty years ago in "Human Adjustment to Floods."

In the field of natural hazards and disasters that Gilbert did so much to shape, there are many local legacies of places where people can live safer lives, and in a number of countries, where loss of life has diminished even if damages continued to rise. Alas, at

the level of global aspirations, there is much more to be realized.

Peace Through Water

The leitmotiv of Gilbert White's life and his highest aspiration to make a difference was in the realm of peace. His commitment to peace was formed in Washington, D.C. at the Florida Street Friends Meeting House in the late 1930s. It was there also that Gilbert's relationship to his wife Anne was nurtured. This commitment also led to their long separation while Gilbert served as a wartime conscientious objector in France.

As in other areas of his life, Gilbert strove to make his contribution by merging his professional expertise as applied to local or place-based studies, in pursuit of larger goals. An early expression was his support of the development of the Tennessee Valley Authority as a means of harnessing nature's bounty to facilitate cooperative action. After the war he joined a panel of the United Nations to examine ways of facilitating international cooperation in integrated river basin development. This led to an opportunity in 1961 to chair a Ford Foundation advisory group to the United Nations Mekong River Committee on the social and economic aspects of joint international development of the Lower Mekong Basin in Southeast Asia.

The war in South Vietnam and Laos was escalating and Gilbert attempted to interest the world and particularly U.S. policymakers in an imaginative effort to replace hostility with a cooperative arrangement for river basin development (White 1963, 1964b). At the same time he was advising against a Japanese plan that involved the construction of a series of major dams on the Mekong and tributaries in line with his belief in the wisdom of considering the full range of management options. Today, Gilbert's vision of cooperative multiple-purpose and multiple-means river basin development survives as a legacy. The latest Mekong River Strategic Plan for 2006–2010 provides for more effective use of water and related resources to alleviate poverty. But Gilbert's vision of a *peaceful* path to that cooperation was not so successful.

Another opportunity came in 1994 when Gilbert served as Chair of the Committee on Sustainable Water Supplies for the Middle East. From his description of the effort:

Representatives of the principal science councils of Israel, Jordan, the Palestine Authority, and the United States first met in Washington D.C. in 1994 to consider ways

in which they might collaborate for the mutual benefit of their communities . . . [and] concluded that the most critical of these problems was ensuring sustainable water supplies in the Middle East. . . .

While during the period of the study the international political scene in the study area was marked by tensions and contending charges, this situation did not color or interfere with the participation of the committee members or scientific agencies from which they drew their information and expert opinion. . . . All shared the sense that this was a unique opportunity, a chance to demonstrate the ability of concerned scientists and engineers to jointly help lay the groundwork for peaceful solutions to issues of critical social and environmental import in the foreseeable future. (Committee on Sustainable Water Supplies for the Middle East 1999, xi.)

In 2007 as wars and terrorism continue to erupt across the world these examples of Gilbert's idealism and persistent pursuit of peace through professional dialogue might seem naive to some. If so, it is important to recognize that the naivete was born, not out of innocence, but out of a strong conviction in the potential betterment of humankind, and the determination to find ways of reducing conflict and not adding to it.

The Role of Geography and Science

In seeking to apply local knowledge to national objectives and global reconciliation, Gilbert White always sought to draw on and use his professional expertise. He was not content, however, to rely on his own resources and capacities. He sought to involve the whole profession of geographers and the scientific community at large.

Gilbert had little time for the arcane or the self-absorption that often goes with curiosity-driven and reductionist science. Although respecting the choice of others and reflecting and using their achievements, his own predilections were toward the practical application of knowledge in public policy (Wescoast 1992). He eschewed theory for its own sake. He preferred and advised others to choose problems that are salient in real-world terms; to ensure legitimacy by conducting research in a fair, open, and transparent way, recognizing the diverse interests of stakeholders, practitioners, and those adversely affected or at risk. Above all he sought credibility by bringing together diverse agency practitioners and local interests in the identification of problems and the framing of questions, and in recognizing the constant tensions between advocacy and the

merits of scientific evidence. In answer to the narcissistic professional question "But is it geography?" Gilbert responded with his own criteria: Is it significant? Do you (or more often we) have the competence to do it (White 1972)?

An opportunity to promote the role of geography came with Gilbert's election as President of the Association of American Geographers (AAG) in 1961. He wrote:

The contributions which geographic thought can make to the advancement of society are relatively few, simple, and powerful. They are so few and simple that a significant portion of them can be taught to high school and beginning undergraduate students. They are so powerful that failure to recognize them jeopardizes the ability of citizens to deal intelligently with a rapidly changing and increasingly complex world. . . . (White 1962, 279)

As always, achievements in one direction seemed to be overwhelmed by new threats arising elsewhere. Gilbert wrote:

I would be delighted . . . [if] twenty years from now we can all look back with amusement to those harassed days of 1970 when we entertained serious doubt that man could avoid a nuclear holocaust or genuinely prevent global disorganization or keep from fouling his nest irreparably. Humanity's capacity to do any of these things is new and undisputed. (White 1972, cited in Kates and Burton 1986, 318)

Gilbert was dissatisfied with what he took to be the sometimes introverted and complacent worldview of his colleagues. "Let it not be said that geographers have become so habituated to talking about the world that they are reluctant to make themselves a vital instrument for changing the world" (White 1972, cited in Kates and Burton 1986, 321–22). Gilbert had no small prescriptions. He wanted geographers to "commit ourselves to a continuing and persistent questioning of our own teaching and research in relation to its definition and reduction of social problems" (White 1972, cited in Kates and Burton 1986, 321–22). He also suggested that "We can advocate the adoption by our Association of measures to sharpen and support such activity by groups of us here and on the international level" (White 1972, cited in Kates and Burton 1986, 321–22). This might be better achieved if we "give our thoughts to the reshaping of the university as an educational institution. . . . What shall it profit a profession if it fabricates a nifty discipline about the world while that world and the human spirit are degraded?" (White 1972, cited in Kates and Burton 1986, 321–22).

Gilbert's concern with the affairs of the AAG—he launched the High School Geography Project and was instrumental in the establishment of the Association's first full-time office and officer—did not prevent him being active on the international scene, where he pursued similar goals and enlisted a phalanx of geographers in these efforts.

Gilbert's election to the National Academy of Science in 1973 provided a platform for international initiatives including geography but opening out to the wider community of environmental science. Outstanding among these was his role in advancing under the International Council of Scientific Unions (ICSU), a high-level group that could provide national academy-type independent scientific assessments of global environmental problems. The Scientific Committee on Problems of the Environment (SCOPE) was established in 1969 and Gilbert became its president in 1976. Under his leadership SCOPE issued path-breaking reports on a set of global interdisciplinary problems: biogeochemical cycles, ecotoxicology, human settlements, land transformation, and methods for simulation modeling, environmental impact assessment, and risk assessment.

Today the practice of making science assessments at the international level to inform the policy process has become fashionable. An ICSU body, the International Group on Greenhouse Gases, on which Gilbert served with Bert Bolin of Sweden, was transformed into the Intergovernmental Panel of Climate Change (IPCC) with Bolin as its first chair. The IPCC has become a powerful force in the international climate debates and has just shared in the Nobel Peace Prize after completing its fourth assessment. Since then, other assessments have been conducted at the international level with varying degrees of intergovernmental sponsorship (the Millennium Ecosystem Assessment, the Arctic Climate Impacts Assessment, the International Assessment of Agricultural Science and Technology for Development) and numerous proposals for further assessments are being made. Despite their success, Gilbert feared from the outset that the conducting of science assessments under intergovernmental authority might compromise the independence of the international scientific community. Drawing on our own participation in these assessments, we feel that to a considerable extent that independence has been protected, and governmental participation has assured a more responsive decision-making audience for the resulting reports.

A feature of the science assessments is that they also identify the gaps and the needs for more integrated knowledge, including the social and economic

dimensions of environmental issues. This has led to the emergence of sustainability science, with a strong emphasis on identifying place-based problems and offering local solutions (Kates et al. 2001). It is described as “an emerging field of research dealing with the interactions between natural and social systems, and with how those interactions affect the challenge of sustainability: meeting the needs of present and future generations while substantially reducing poverty and conserving the planet's life support systems” (Proceedings of the National Academy of Science 2007).

International science assessments and the emerging sustainability science are both in their own way quite visionary and certainly represent part of Gilbert's not-so-local legacy. Helped in no small measure by Gilbert's vision and persistence, geography, and science more generally, are now effectively contributing to global environmental issues and the longer term vision of sustainable development in a broad interdisciplinary and social conscious way. The contribution has never been greater nor the need more urgent.

Reconciling Humanity and the Natural Environment

Many people in the United States know of Gilbert White as “the father of floodplain management.” In other places and in other communities he is known for quite different achievements. Wherever one looks at Gilbert's life work in all its diversity, the common theme that is most salient for us is his commitment to a search for harmony and reconciliation. Stemming perhaps from his Quaker beliefs and his early life experiences in Hyde Park, Chicago, and along the Tongue River in Wyoming, Gilbert sought to demonstrate the human potential for betterment. His life had a quality that some might describe as saintlike, but Gilbert was not one to proselytize. Rather, in word and deed, the message he conveyed was a deep inner conviction that he could and must make a difference and leave the earth a better place than he found it. In seeking these goals Gilbert chose to use his professional training and skills as a geographer.

Using his geographer's sense of place and community, he always sought to work with others and encourage cooperation, and to improve relations both among people and between humankind and nature. From the floodplain of Boulder Creek, to the bureaucratic turf wars and policy corridors of Washington, and in the villages of East Africa, as well as international and interdisciplinary scientific debates in Paris and Geneva, Gilbert's

message was consistent: We can work together and with our common natural environment for the greater benefit of ourselves and future generations. There can be water for all; the world can be a safer place with less loss of life and property from natural hazards; the water resources of river basins can be developed in a way that promotes harmony and helps to resolve conflicts. Geography in particular and science in general can be instrumental in these efforts. Reconciling humanity with planet earth is an essential part of reconciling humanity within itself.

He wrote, “the human race is a family that has inherited a place on earth in common, that its members have an obligation to work towards sharing it so none is deprived of the elementary needs of life, and that all have a responsibility to leave it undegraded for those who follow” (White 1975, cited in Kates and Burton 1986, 404).

Gilbert White left many local legacies, contributed to national achievements in multiple countries, and helped to create and promote a global vision. To us and the worldwide profession of geographers, however, undoubtedly his greatest gifts were friendship, example, and inspiration.

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