

A REVIEW ESSAY ON GILBERT F. WHITE (Ed.) *NATURAL HAZARDS: LOCAL, NATIONAL AND GLOBAL*. (New York: Oxford University Press, 1974)

James Lewis

Disaster Research Unit, University of Bradford, England

Natural Hazards: Local, National and Global, edited by Gilbert F. White, a product of work by fifty contributors carried out in twenty-three countries over a period of six years, a selection of those coordinated by and emanating from the Natural Hazard Research Group at the Universities of Colorado, Clark and Toronto, is clearly to be regarded as something of a bible in its field. This reviewer is a weather-worn but new recruit to the realms of natural hazard research, having entered the ranks during the closing stages of this book's preparation. To offer a review, even with all the humility that can be mustered, can be only compared to David, but there the comparison ends. I have no "slings and arrows", there is an omnipotent but no aggressive Goliath and no battle! There is to be an opportunity for response from the Editor – perhaps my comparison should be to Daniel?

The book comprises thirty-two papers under the five headings of Introduction, Individual and Community Response, Decision Processes, National Reviews and Global Summaries. There is an excellently ordered table of contents, comprehensive index and the papers include

Editor's note. Certain publications because of their scope, import or significance will be given special, extended reviews usually involving two or more reviewers, with the author allowed a pre-publication response. This review essay is the first one in the journal although it has only one reviewer since a second reviewer failed to meet a designated deadline and no further delay seemed warranted.

ninety figures separately tabled. The Introduction is a single chapter by the Editor, and of the remaining four headings, twenty-two papers come under Individual and Community Response with the remaining nine being divided as two under Decision Processes, four under National Reviews and three under Global Summaries. The book clearly is not intended for a popular readership and relies on a foreknowledge of the "Natural Hazard" programme, and the Editor's name in its appeal to the research specialist. Without that foreknowledge one might expect a comprehensive description of the nature, behaviour and effect of natural hazard events throughout the world. Without that foreknowledge one might similarly be misguided by the Local and National parts of the title in a book intended for international readership and bi-national publication.

Of the twenty-two papers under Individual and Community Response, ten are based on research locations within the USA, four on African countries, with one paper each on India, Bangladesh, United Kingdom, New Zealand, Australia, Mexico and Norway and with a concluding paper with multinational coverage dealing with cross-cultural research. The two papers on Decision Processes, decisionmaking and economic analysis are very much results of research contained within the North American continent and the National Reviews include three specialist papers from North America on

policy, New Zealand on insurance, and the USSR on hazard control and warnings, with a general report from Japan. Of the three Global Summaries two have tables of data of which approximately half derives from North American hazard occurrence; the same proportion can be said to apply to the whole of the book heavily loading the Local and National (US) content.

The Introduction contains reference to the more common extreme geophysical events as “avalanche (snow), coastal erosion, drought, earthquake, flood, fog, frost, hail, landslide, lightning, snow, tornado, tropical cyclone, volcano and wind,” a total of fifteen separate hazards. The book’s contents deal with ten of these (counting “freeze hazard” as frost), omitting detailed reference to fog, hail, landslide, lightning and – surprisingly – tornado. Neither is there detailed reference to bush fire, plague or epidemic. Excluded, for instance, are the earthquake areas of the Mediterranean and South and Central America; the tropical cyclone areas of the Pacific and the Caribbean, and the flood plains of Central Europe or North Africa, the three hazard types of flood, tropical cyclone and earthquake being specified as “ranking highest in the order given . . . in the toll they take in loss of life and damage to human habitation.” Clearly as is also stated in the Introduction, “the selection of particular places and hazards was to a considerable extent fortuitous,” being dependent on the availability of competent investigators and field staff.

“The studies are to be viewed as exploratory and as intended to probe the variety of human responses that are presented in the contemporary human scene in dealing with a selection of natural extremes” but it is not enough to allow “the studies . . . to speak for themselves in outlining problems of methodology and in indicating the main lines of conclusions.” This most of the papers do very well indeed, but the book has a weak structure and severely lacks the framework of a predetermined aim or assignment. There are some very sound state-

ments in the papers and in the Introduction recommending policy, but the results of the papers included are not used to suggest methods of implementing that policy, and even the Global Summaries are not summaries of the chapters or conclusions of the book, but are separately submitted papers. Without this framework of a predetermined role the book is the result of an accretion of valuable but individual papers, with no overall conclusion, which, had it examined the conclusions of some of the papers it contained, could have emphasised some of the book’s valuable contents, indicated some of its drawbacks and omissions and some of the gaps appearing in research so far, and why findings “are . . . more divergent than convergent”.

The stated aim of the collaborative research programme initiated in 1967 was to attempt to “explore the applicability of findings from the flood studies to other geophysical hazards and to investigate the interaction of social and natural systems in a variety of environments and cultures beyond those that had thus far been covered in North America.” As part of the hypothesis for the research programme, which receives detailed description in the Introduction, three types of response to natural hazards are characterised as follows and enlarged upon:

1. Folk or pre-industrial;
2. Modern technological or industrial;
3. Comprehensive or post-industrial

Folk adjustment is described as modifications being more in harmony with nature than demanding control of nature and they are easily abandoned. Modern technological responses are a more limited range of technological actions emphasising control of nature. Comprehensive responses combine features of the previous two groups. Chapter 13, “North-east Tanzania: Comparative Observations Among a Moisture Gradient (Heijnen and Kates) points to the extreme vulnerability of a stage of change between established folk and modern technological response. There

is a tendency, as development takes place, for the “easy abandonment” of folk response to gather momentum in favour of technological response in order to control nature, producing as it does so a society (or community) which has forgotten its previous ability for folk response in its hurry to impose its technological power (or has gone full circle back to denying the earthquake problem at all in San Francisco as suggested in Chapter 20, “Human Adjustment to the Earthquake Hazard of San Francisco, California,” by Jackson and Muckerjee). An over-reliance on technology results. This process produces its own administrative machinery which, because folk responses have disappeared, the ability and power for possible response, i.e. technological, is with officialdom. Government and other power structures become the only medium by which response can be made, which in itself reinforces the power structure and enlarges the gulf which exists between officials and the community at large. All this, it is the contention of this reviewer, is the usual situation within the USA and one is frequently led to wonder how a methodology for sociological research in particular, can be applied to parts of the world outside the North American continent. However, it would be interesting to know how much cross-cultural research has taken place *within* that continent, such as the comparison of responses between Tallahassee in Florida, Pass Christian in Mississippi and Galveston in Texas (Chapter 4, “Attitudes Toward Hurricane Hazard on the Gulf Coast,” Baker and Paton) before leaping into convenient (too convenient) neighbouring research stamping grounds of Puerto Rico, Mexico and the Virgin Islands. What study has been made of response by religious or ethnic minority groups within the USA and Canada, or are these now no more than an artificially preserved remnant of “folk” culture preciously protected against the progress of technology. What of the Pueblo communities in New Mexico, black communities of the “deep South” cotton belt and the rural communities of

Tennessee and West Virginia, but perhaps not to mention the Indian reservations and Menonite communities?

The question which recurs again and again as one progresses through the book is that of how much is research *method*, developed within the North American Continent, applicable to other parts of the world, which will always be less-developed than the average North American location and very often “under-developed”. Until the method has been proven, the application of results cannot even be considered. A major omission of the book is any discussion of research method with the conclusion that it either can or cannot be applied. The Introduction includes the forty-two part Questionnaire and eleven part sentence completion test prepared for use in the investigations and states that “the basic interview was modified from place to place in order to take account of differences in local environment.” On reading Chapter 23, “Problems in the use of a Standardised Questionnaire for Cross-cultural Research on Perception of Natural Hazards,” one is bound to draw the conclusion that there are indeed some major problems as one reaches illiterate and semi-literate societies and even language barriers (sic) and that perhaps questionnaires are not the best way of discovering attitudes inherent in alternative cultures to those of the West as they depend “entirely on the researchers ideas and provide no means of tapping the cognitive word of the respondent on his own terms.” One is left in considerable doubt about the value, outside North America, of the questionnaire that has been used, for anything other than ‘broad though rough comparisons’. And this is evidently the principal research tool of the programme which has sought to explore cultures beyond those of North America. Only eight of the twenty-two chapters on Individual and Community response make any use of the results of the questionnaire or refer to the successful application of other research methods developed within the USA and applied elsewhere. It appears to fail on many

counts either because it is too complicated to achieve spontaneous replies, is too complicated for simple responses based on a fatalistic ignorance of adjustment choice, assumes too high a level of involvement with the subject, too high an ability for articulate answer, assumes a common language and above all common values. Research into natural hazard is at the start, and has been formed as a multi-disciplinary programme. Is there not a clear case here for a strong injection of anthropological input?

Two lessons are indicated as being the result of man's continued and increasing losses as a result of natural events. One is that "there must be a careful sharing of the skills, experience and research capacity of the family of nations." Careful certainly, and the greatest care to avoid the assumption that research methods developed in any one place will be applicable to any other.

The second lesson offered is that "modern societies cannot expect to cope effectively with hazards in the environment by relying solely upon technological solutions but (there must be) the skillful sensitive use of a wide range of adjustments, including engineering devices, land management, and social regulation. To depend upon only one sort of public action is to court social disaster, environmental deterioration and enlarged public obligations." Yes indeed, but care must also be applied here so that, for instance, the range of adjustments to tropical cyclones given in Chapter 30 is not seen as separate but as part of a "comprehensive" programme of adjustment, ("Global summary of Human Response to Natural Hazards: Tropical Cyclones," White, A.U.). Comprehensive adjustment, the third of the three groups of response, are now the area of the greatest application of research and applied research under the heading of Predisaster Planning that has taken place since the completion of this book's preparation. However adequate the research method may prove to be, the mere presentation of results is not sufficient. For the perspective offered by the global summaries of human re-

sponse to floods (Chapter 31) tropical cyclones (Chapter 30) and earthquakes (Chapter 32) "to be an invaluable aid" to the Office of the Disaster Relief Coordinator or to any other official or organisation whether it be a local city mayor or international agency, there must be an intermediate stage of the study of implementation. This involves management study as yet another discipline in the group but which is essential if research results are to be assimilated by those to whom they are the most use. In many ways this book epitomises the gulf between research result and application. "Applied research" rarely seems to be an academic goal but if academics are to achieve real usefulness there must be attention and "care" given to the application of results. *How* will the contents of those three chapters be an invaluable aid is not a question to be left unanswered by researchers. To answer the question thoroughly there must be a tailor-made analysis of the socio-economic pattern of activity of a specified location and environment into which an extreme natural event could occur. Any methodology for a study of this kind, to parallel that epitomised by the response questionnaire is absent from the book, the final paragraph to the Introduction of which admits that it is "a series of loosely coordinated efforts to deepen the understanding of social-physical interactions, to begin to construct a more general theory of such behaviour in extreme situations, and to apply the findings to public action. They are exploratory rather than definitive, but they promise new understanding and practical influence." It is not a *general* theory of behaviour in extreme situations that is required but a methodology for understanding the behaviour of *specific* groups and for conveying that understanding to those who have the responsibility for public action and practical influence. As development continues the onus for response is on officials and organisations. In a number of chapters based on research activity in developed locations, the gap which exists between public and official awareness is referred

to with one side or the other in the initiating role. (Chapters 6, 7 and 8, "Flood Hazard at Shrewsbury, United Kingdom," Harding and Parker; "Perception Research and Local Planning: Floods on the Rock River Illinois," Moline; and "Flood Information, Expectation and Protection on the Opotiki Floodplain, New Zealand," Ericksen). The way in which their understanding grows will determine whether there is to be an ever-widening gulf between of-

ficial policy and individual perception and whether people will eventually benefit from the actions of those with responsibility. The way in which people *do* cope with the hazards of nature has to find a medium for influencing the way in which people *will* cope in the future. Many of the chapters of this book are stepping-stones which lead us in the right direction, but the book itself could have been a bridge.