

Produced by the Geographical Association  
of Zimbabwe

Edited by: O. Namasasu  
Department of Curriculum Studies  
University of Zimbabwe  
P.O. Box MP 167  
MOUNT PLEASANT  
Harare  
Zimbabwe

Free to paid up members of the Geographical Association  
Price to non-members Z\$ 4.00

\*\*\*\*\*

CONTENTS

Page

Editorial .....	iii
Towards a Decolonised Radical Southern African Geography .....	1
Meeting the Challenge: Geography and and Geographers in National and Regional Development .....	14
Aspects of the Growth and Structure of Pre-Colonial African Towns: The Case of Kano in northern Nigeria .....	20
Flood Hazards in Geography? .....	36
More Causes Than Drought, Many Experiences To Share - An Interview with Hussein Idris .....	46
Von Humboldt and Ritter: Contributions to Geographical Methodology .....	50
Use of Conservation Education Camp .....	56

# 'FLOOD HAZARDS' IN GEOGRAPHY?

by

C.M. Namafe  
University of Zambia

## INTRODUCTION

It is amazing how the public media such as the radio, television and newspapers keep presenting a particular view of water in general and floods in particular. Floods are normally reported to the public mainly when places, people or property are drowned or destroyed. Recently, for instance, the Zambian press carried a newspaper caption entitled: "Chama, Lundazi cut off: Floods wash away bridge," (Times of Zambia, 1986). The authors of such articles, even though they do not realize it, are bearers of a dominant viewpoint regarding the role of water and floods in environmental experiences. This dominant view has reigned supreme especially in Western society, but it is anachronistic. It is a view of floods as "hazards". The same view has recently been catapulted to the fore of much geographical research. Since geography and history are sometimes held to be crucial in forming the national image, (Helburn, 1972), it would be instructive to pursue how and why the concept of 'flood-hazard' became incorporated into geographical discourse.

## LITERATURE REVIEW

In most geographical research, the predominant view of floods is that of "hazards", as outlined by Gilbert F. White's monograph (1945). The real beginning of modern environmental perception among North American geographers appears to have originated from Chicago with the work of White, Burton, Kates and their collaborators on the 'hazard' of floods (White 1961, quoted in Brookfield 1969). Gilbert White himself, now regarded as the doyen of 'flood-hazard' research, began research into natural hazard perception in the mid-1950s. He later produced a voluminous book which outlined the concepts, theories and methods to the study of floods, (White, 1974). Ever since, White and his associates have formed a clearly defined school whose influence has been pervasive, (Waddell 1977). His collaborators spread to many Third World countries like Tanzania, Jamaica and Bangladesh where they sat in university departments doing research and teaching floods as "hazards".

In reviewing the work of the 'hazard' school, Waddell (1977) has argued that the studies exude particular geographical methodologies, ideological bases and concepts. He summarizes the import of these studies in these remarks.

If one disregards the limitations imposed by the rigor of the approach, it can reasonably be argued that the basic assumptions and methods are appropriate to the type of society for which they

were originally conceived - a Western urban-industrial, capitalist state characterized by a resolutely anti-environmentalist ideology, a population that both is massively mobile and has lost most of its sensitivity to the natural world, and a central government whose responsibility for managing environmental problems is ill-defined. (Waddell 1977, p. 73).

In an anthropological assessment of the school, Torry (1977) who suggests that there has been no systematic critique of this body of literature in print, found that there has been some vague and inaccurate treatment of the traditional coping strategies whose recorded adjustments are mainly limited to incidental, value-loaded statements. In their response to Torry's (1979) criticisms, Burton, Kates and White (1981) revealed their attitudinal stance with regard to rural flood-plain experience when they indicate that

We do not consider it necessary, however, to spend two years in the village gaining the local understanding we lack ... (p. 287).

Recently, even though there has been some introspection and charting of new directions in the "hazard" studies, a significant number of Western scholars drawn from various fields still "subscribes to models of adjustment, choice and risk mitigation wherein perception of hazard risks and perception of adjustment to hazard are fundamental components", (Mitchell 1984, p. 33). In fact, paralleling Waddell's (1977) affirmation of the creation of a clearly defined school of thought within geography, Mitchell (1984) has noted the emergence of "hazard geographers", just as there are others like "humanistic geographers" or "phenomenological geographers".

One of the latest statements on the 'hazard school' is that by Hecht (1985) who reviews a series of papers edited by Hewitt (1983). Hecht (1985) raises similar points such as its "crude scientism, ethnocentrism, insensitivity to culturally varied indigenous adaptive strategies, ahistoric emphases and the absence of any political economic context." Paul (1984) made some studies in Bangladesh along the lines of 'natural hazards' research developed by White and his associates. Paul (1984), however, discovered that the residents of Bangladesh "perceived floods as a benevolent agent providing sustenance to the farmers". Similarly, Leigh and Sim (1983) surveyed the attitudes and behavioural responses to floods held by residents of tropical Malacca in the Malaysian peninsular. Their results indicate that despite the fact that the residents are aware of the flood "hazard", they are nevertheless optimistic and complacent towards the flood "problem". The authors, who are students of the 'hazard' school, could hardly explain this apparent contradiction in results.

Ward (1978) is one of the few geographers to suggest that floods are not natural "disasters" but natural phenomena jointly consisting of physical and socio-economic processes. However, his argument has not been effective partly because it utilizes prevailing anti-flood arguments, terminologies and methodologies.

Maltby and Turner (1983) direct attention to the wetlands of the world, reminding readers that these neglected areas have long been misused because they were regarded as "Wastelands". While the work of the above critics has been of value in elucidating the pitfalls of wetlands of the world, only a partial picture emerged. This partly because no synthetic work was made which could reveal the underlying messages and processes behind both the 'hazard school' and the neglect of wetlands. The 'hazard school', the Dutch hydro-agricultural projects and the 'Wetlands-are-not wastelands' arguments are all commonly denominated by the role of water as an environmental issue (Namafé 1986). It is significant to note that the 'flood-hazard' academic notion is a distillate of the early 17th Century Dutch water experiences. Hence, the geographic notion of 'flood-hazard' is not simply any title but an official embodiment of the Dutch experience being advanced to a global setting. In this case, much of the flood "language is capable of becoming the objective repository of vast accumulations of meaning and experience, which it can preserve in time and transmit to following generations", (Luckman and Berger 1966, p. 36). Thirdly, concealed in the 'flood-hazard' phrase is a battery of subsidiary concepts, such as those of dominance and competition, with which that particular human experience has been sustained and advanced to a semi-global extent, with some recent extensions to Zambia. It is evident, therefore, that if alternatives to the 'flood-hazard' or 'water-control' notions are to be sought, an understanding of the Dutch water experiences, strategies and techniques over the past three centuries is of crucial importance.

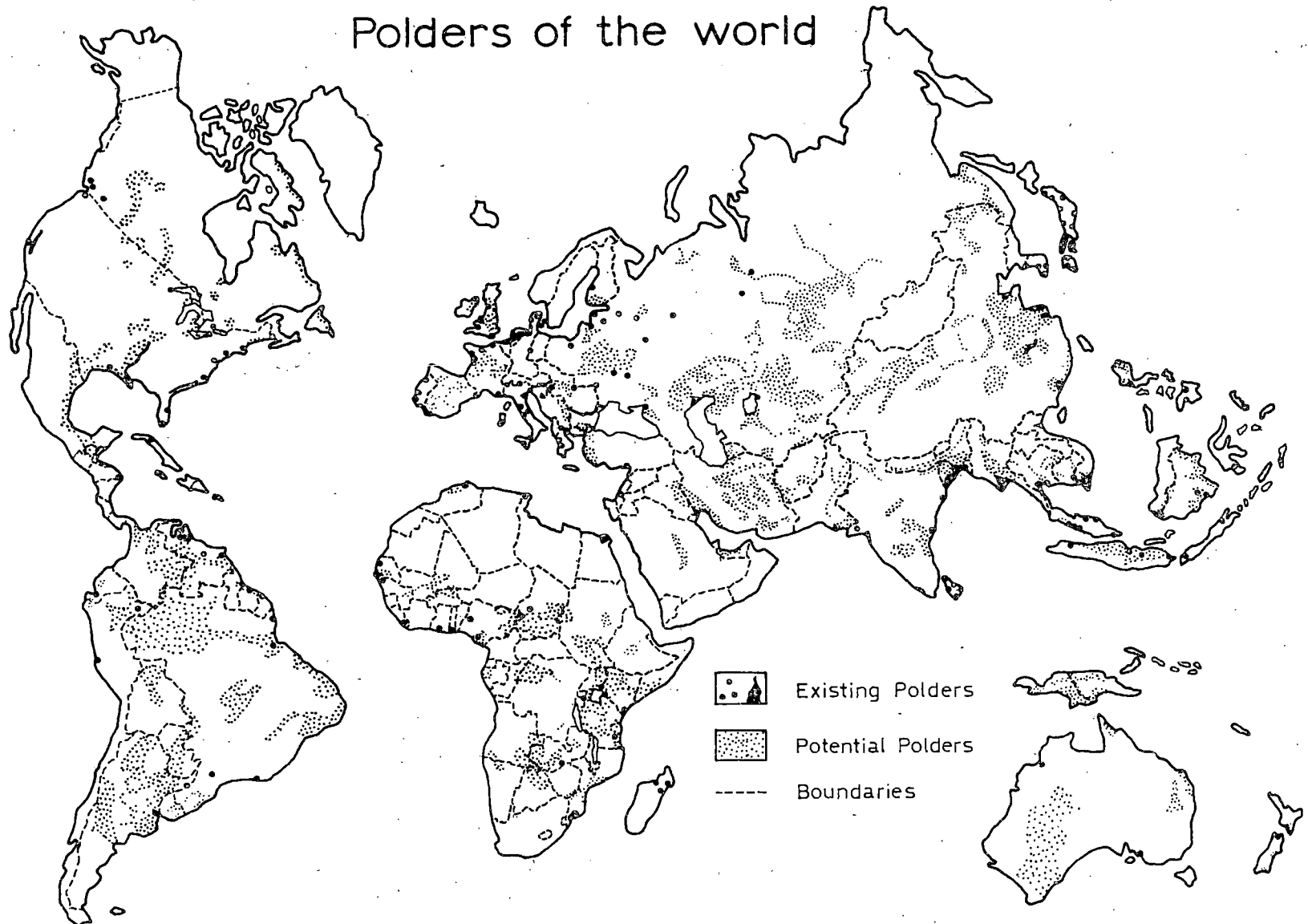
## THE PRE-MODERN ERA

The nature of changes which occurred in the Western world some three centuries ago have some impacts on the modern experience and treatment of water. In the history of the relationship of human civilisations to the natural environment of water, three themes appear to be basic and most influential:

first, the influence of the environment on the development of civilisations; second, human attitudes towards nature; and third, the impact of civilisations upon the natural environment. (Hughes, 1975, p. 3).

Moreover, the period between 1500 and 1700 ushered in a significantly different way of thinking and organizing the world. Some of the main changes derive from philosophers such as Francis Bacon and René Descartes. According to Leiss (1974), Bacon formulated the concept of mastery (used interchangeably with 'control', 'domination' or 'conquest') over nature much more forcefully than had been done previously. He emphatically argued that the attempt to master nature through scientific progress was not only a morally 'innocent' act but would also increase human material progress which he passionately advocated for. René Descartes himself argued for the certainty of scientific knowledge and the reduction of all quality to quantity through measurement.

# Polders of the world



Source : Dept. of Civil Engineering Delft University of Technology

ICT

Figure 1

The historical and philosophical underpinnings such as those described above came to bear on peoples' perception of ordinary, everyday events over the past centuries. The Dutch historical experiences of floodwaters since the seventeenth century illustrate most of the points briefly cited above, i.e. processes concerned with scientism, cartesianism and commercial interests. In fact, the Netherlands itself was a haven for early-modern philosophers of modern science. The freedom of thought which prevailed in the Netherlands attracted some of the boldest and most influential thinkers of the century, such as Rene Descartes, Baruch Spinoza and John Locke, (Wilson, 1968, p. 165). The Dutch conditions depict, to some extent, an influence of environment on human character: in this case, they developed both a rational and an emotional hatred for water, (Groenman 1959). A few of the available records allow us to depict a gradual spatial and temporary diffusion of their water experiences from a core (that is, the Netherlands) to the entire global setting, (Barker 1906, Wilson 1968).

#### THE EARLY DIFFUSION OF THE DUTCH EXPERIENCES OF WATER: IMPACT ON ENGLISH FENLANDS

About half of the Dutch land was virtually below sea level, an enormous swamp, (Barker 1906). Coupled with this is the fact that the area had high populations which made high demands for land. Jan de Vries (1974) states that in general, the drainage conditions of the Northern Netherlands around the 1500 can best be described as defensive. Despite dyke construction, the threat of inundation had, in fact, become greater. Consequently, the Dutch village elders viewed half of their village land as valueless "because it was habitually flooded or boggy", (Jan de Vries 1974, p. 30). The same author contends that "the uniqueness of our region's historical circumstances is indeed striking. The battles against the sea ... produced an environment without a parallel in Europe," (ibid. p. 236). It is easy to imagine how the experience of the marine and riverine floods induced the inhabitants of Holland to dread floodwaters. The seriousness of this situation can best be illustrated and deduced from the following "emotive" description from Barker's (1906) monumental work on the experiences of the Netherlands:

At present 1,550 miles of sea-dykes, a distance more than twice as great as that which separates Lands' End from John O'Groats, defend Holland against her most dangerous, her ever-threatening and her most implacable enemy. (ibid p. 12, my emphasis).

The relevance of these points for the modern perception is firstly, the type of language used to describe the then and subsequent human experience with water, which is mainly tinged in some negative phraseology like "flood-hazard", "flood-problem", "flood-cost", "flood-damage" and so on, and secondly, the human attitudinal attachment to land rather than water as well as the language spawned from such a relationship. For example, the phrase "gaining ground" is usually innocently used but in actual fact is derived from the Dutch relationship to water, as indicated in the passage below:

The Dutch have recovered a considerable part of their country from the sea, but they have to keep up an unrelenting struggle to retain the ground they have gained. The Dutch themselves take it all as a matter of course, but foreigners have maintained that this eternal fight against the water has shaped the character not only of the land but also of its inhabitants (The Netherlands Government Information Service, 1967, p. 5).

It emerges, therefore, that the human-water relationship has mainly been on a single plane of defense or attack.

The above experiences and perceptions of water had some implications for the Dutch agricultural endeavours, namely, land reclamation. Land reclamation is essentially a hydraulic problem with the double purpose of improving both health and agriculture, and the removal of stagnant waters resulting from the flooding of rivers, (Harris 1957, p. 309). Behind each such project with water lies some attitude and theory about water, (Thijssen 1961). According to Harris (1957) the real originators of land reclamation in Northern Europe were the Netherlands, from motives forced upon them largely by self-preservation; their approach was predominantly "of a defensive or an offensive character," (ibid 1957, p. 301).

#### AN ALTERNATIVE VIEW

An alternative view of land reclamation, however, exists. As distinct from the traditional view which dichotomizes nature and culture as a structural dualism, an ecological approach adopted here basically acknowledges a complex of co-evolution and co-adaptation of natural and cultural systems. Such an approach can help reveal the dynamic and mutual influences of human culture and the natural environment of fens (marshy land, swamp or bog), which are areas in which water plays a significant role. As Merchant (1980) points out, it is important to determine how environmental quality was affected by the transformation from peasant economies for the purpose of subsistence to capitalist control for the purpose of profit. The fenlands, marshlands and floodplains of seventeenth century Holland and England clearly illustrate the impact of an expanding rural market economy on both the ecosystem and its associated subsistence economy. The importation by England of Dutch hydraulic engineering technology which was more suited to reclaiming new lands from the sea, often disrupted the lives of people whose economy was integrally linked to the marsh and floodplains, (Darby 1956, Thirsk 1957). In the seventeenth century, a period of drainage and reclamation of these marshes started and stretched over the next three centuries, ultimately changing the area into neatly planted fields of grain, sugar beets and potatoes, separated by the geometric arrangement of canals. When such reclamation measures were introduced, social struggles between the rural fen inhabitants and drainage undertakers developed, (Darby 1956, Thirsk 1957, Merchant 1980). Frequently, the drainage undertakers would use the weight of propaganda at their disposal to try to convince the fenland occupants of such things as the relatively low productivity and unhealthy nature of the floodplains and the marshes. The marsh

and fen occupants attempted to counter the propaganda by presenting their own picture of the fenland economy as follows:

The undertakers have always vilified the fens, and have mis-informed many parliament men, that the fen is a mere quagmire, and that it is a level hurtfully surrounded and of little or no value; but those who would live in the fens, and are neighbours to it, know the contrary ... (Quoted in Darby 1956, p. 29).

Solidarity among the displaced people of the fens was often expressed in taverns where drinking songs for the occasion included:

come brethren of the water, and let us all assemble,  
to treat upon this matter, which makes us quake and  
tremble,  
for we shall rue it, if't be true, that fens be  
undertaken, and where we feed in fen and reed, they  
will feed both beef and bacon.

---

The feather'd fowls have wings, to fly to other  
nations; But we have no such things, to help our  
transportations;  
We must give place (oh grievous case) to horned  
beasts and except that we can all agree to drive them  
out by battle",  
(Quoted in Merchant 1980, p. 60).

Merchant (1980) adds that intellectual opposition to the fen projects was centred on both social and ecological arguments, but after the civil war (1642-1646) and despite setbacks, the projects were continued under the banner of progress, commercial growth and national supremacy.

In Zambia, today, Loziland, has traditional peasant economies for the purpose of subsistence, in which capitalist control for the purpose of profit is slowly taking root through the inception of a Dutch-aided hydro-agricultural rice project. It must be realized, however, that such measures in England not only yielded social conflicts and environmental degradation, but there was a whole complex ideology and philosophy about the status of water and wetlands which was simultaneously propagated. Today, one writer in Britain can thus remind us that "wetlands figure prominently in our national consciousness usually as forbidding, dreary and hazardous places", (Proctor 1983, p. 418). The wetlands referred to include fens, swamps, bogs, floodplains and marshes, all of which evoke a particular sense in which water plays a key role. And mainly due to the status in which water has persistently been held, all such habitats are usually considered as "wastelands" in Europe (Stamp 1950, Netherlands Newsletter 1949).

## CONCLUSIONS

The modern diffusion of the Dutch water experiences is achieved through polder-type hydro-agricultural projects (such



as the one in Loziland) and academic literature on land reclamation. As White (1945) has observed:

It has become common in scientific as well as popular literature to consider floods as great natural adversaries which man seeks persistently to overpower. According to this view, floods always are watery marauders which do no good, and against which society wages a bitter battle. (White 1945, p. 1).

The above statement clearly shows the philosophical, historical and theoretical heritage which colours much of modern Western thinking about floods.

As the preceding discussion has shown the "flood-hazard" concept which appeared in geographical studies in Western society has a very long history behind it and can, in fact, be linked with the dominant imprint of a single nation and culture, namely that of the Netherlands.

It is, however, rarely realized that the concept is actually an ideological move which has synthesized philosophical, psychological, sociological, political and pedagogical issues in a single effort. The rapid pace of modern life in Zambia, and a complex constellation of cultural, social and political factors seem to impede a long-term accumulated understanding of how floods work and how the Zambian people, in particular, can effectively relate to them.

---

A follow-up article on the implications of teaching the 'flood-hazard' concept is to appear in the next issue of GEM - Editor.

#### REFERENCES

- BARKER, J.E. (1906) *The Rise and Decline of the Netherlands: A Political and Economic History and a Study in Practical Statesmanship*, London: Smith, Elder and Company.
- BROOKFIELD, H.C. (1969) "On the Environment as Perceived", *Progress in Geography: International Review of Current Research*, London: Arnold, pp. 52-80.
- BURTON, I., KATES, R.W. and WHITE, G.F. (1981) "The Future of Hazard Research: A reply to William I. Torry", *The Canadian Geographer*, Vol. 25, No. 1 Spring, pp. 286-289.
- DARBY, H.C. (1956) *The Draining of the Fens*, Cambridge: Cambridge University Press.
- GOUDIES, A. (1984) *The Human Impact: Man's Role in Environmental Change*, Cambridge: MIT Press.
- GROENMAN, S. (1959) "Calm Amidst the Raging Waves: Why the Netherlands is Reclaiming the Zuider Zee", *Delta*, Vol. 2, No. 4 Winter, pp. 5-15.

- HARRIS, L.E. (1957) "Land, Drainage and Reclamation", In Singer, C. et al. (eds), *A History of Technology*, New York: Oxford University Press.
- HECHT, S.B. (1985) "Reviews, Environment and Planning D", *Society and Space*, Vol. 3 pp. 381-386.
- HELBURN, N. (1972) "Implications of Curriculum Decisions". In Gunn, A.M. (ed) *High School Geography Project: Legacy for the Seventies*, Montreal: Centre d'Éducation et Culturel, Inc.
- HEWITT, K. (ed) (1983) *The Risks and Hazard Series I, Interpretations of Calamity*, Winchester: Allen and Unwin.
- HUGHES, J.D. (1975) *Ecology in Ancient Civilisations*, Albuquerque: University of Mexico Press.
- JAN DE VRIES, (1974) *The Dutch Rural Economy in the Golden Age 1500-1700*, London: Yale University Press.
- LEIGH, C.H. and SIM, L.K. (1983) "Attitudes and Adjustments to the Flood Hazard in a Mixed Ethnic Community in Malacca Town, Peninsular Malaysia", *Singapore Journal of Tropical Geography*, Vol. 4, No. 1 pp. 40-52.
- LEISS, W. (1974) *The Domination of Nature*, Boston: Bacon Press.
- LUCKMAN, T. and BERGER, P.L. (1966) *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, New York: Doubleday and Company.
- MALTBY, E. and TURNER, E. (1983) "Wetlands of the World: Wetlands are not Wastelands", *Geographical Magazine*, July, Vol. 55 pp. 12-17.
- MITCHELL, J.K. (1984) "Hazard Perception Studies: Convergent Concerns and Divergent Approaches During the Past Decade", in Saarinen, T.F., Seamon, D. and Sell, J.L. (eds) *Environmental Perception and Behaviour: An Inventory and Prospect*, The University of Chicago: Department of Geography, Research Paper No. 209.
- NAMAFÉ, C.M. (1986) *Environmental Education: A Comparative Study of Modern and Traditional Systems in Zambia*, M.Ed. Thesis (Unpublished), McGill University, Canada.
- NAMAFÉ, C.M. (1987) *The Dutch Hydro-Agricultural Rice Project in Western Zambia: An Assessment*, Research Proposal (unpublished), University of Zambia, Lusaka.
- NETHERLANDS GOVERNMENT INFORMATION SERVICE (1967) *The Zuyder Zee Works: Fifty Years of Toil Described in Five Minutes*, 8th Edition, The Hague.
- Netherlands Newsletter, (1949) "The Fruits of the earth: Agriculture in the Netherlands", Vol. 4, No. 1 pp. 1-19.

- PAUL, B.M. (1984) "Perception of and Agricultural Adjustment to Floods in Jamuna Floodplain, Bangladesh", *Human Ecology*, vol. 12, No. 1 pp. 3-20.
- "Folders of the World" (1982) Symposium and Exhibition, "Agora", Lelystad, The Netherlands.
- PROCTOR, M. (1983) "Wetlands of the World 6: Islands of Bog, Fen and Moor", *Geographical Magazine*, Vol. LV, No. 8 pp. 418-423.
- SLICHER VAN BATH, B.H. (1963) *The Agrarian History of Western Europe A.D. 500-1850*, London: Edward Arnold.
- STAMP, L.D. (1950) *The Land of Britain - Its Use and Misuse*, London: Longmans, Green and Company Ltd.
- THIJSS, J.TH. (1961) "The Dutch Hydraulics Laboratories: A Miniature World of Water", *Delta*, Vol. 4, No. 2 pp. 5-14.
- THIRSK, J. (1957) *English Peasant Farming: The Agrarian History of Lincolnshire from Tudor to Recent Times*, London: Routledge and Kegan Paul.
- TIMES OF ZAMBIA (1986) *Chama, Lundazi Cut Off: Floods Wash Away Bridge*, Monday, February 24; and *Times of Zambia (1986) Floods Kill Five Ethiopians*, Saturday, April 19.
- TORRY, W.I. (1979) "Anthropological Studies in Hazardous Environments: Past Trends and New Horizons", *Current Anthropology*, Vol. 20, No. 3 pp 517-540.
- WADDELL, E. (1977) "The Hazards of Scientism: A Review Article", *Human Ecology*, Vol. 5, No. 1 pp 69-76.
- WARD, R. (1978) *Floods: A Geographical Perspective*, New York: Macmillan Press.
- WILSON, C. (1968) *The Dutch Republic and the Civilisation of the Seventeenth Century*, New York: World University Library, McGraw-Hill Book Company.
- WHITE, G.F. (1945) *Human Adjustment to Floods: A Geographical Approach to the Flood Problem in the United States*, Chicago: University of Chicago, Department of Geography Research Paper No. 29.
- WHITE, G.F. (1961) "Introduction: The Strategy of Using Floodplains"; in White, G.F. (ed) *Papers on Flood Problems*, University of Chicago, Research Paper No. 70.
- WHITE, G.F. (1972) "International Dimensions", in Gunn, A.M. (ed) *High School Geography Project: Legacy for the Seventies*, Montreal: I.G.U. Congress.
- WHITE, G.F. (1974) "Natural Hazard Research: Concepts, Methods and Policy Implications"; in White, G.F. (ed) *Natural Hazards: Local, National, Global*, New York: Oxford University Press.



This work is licensed under a  
Creative Commons  
Attribution – NonCommercial - NoDerivs 3.0 License.

To view a copy of the license please see:  
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

This is a download from the BLDS Digital Library on OpenDocs  
<http://opendocs.ids.ac.uk/opendocs/>