



UNIVERSITY OF BRADFORD

DISASTER RESEARCH UNIT

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Disaster Management
with Special Reference to
Pre-Disaster Planning

James Lewis ARIBA
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A Review of Disaster Management
1974: With Special Attention to
Pre-Disaster Planning

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PREFACE

The Disaster Research Unit was formed in December 1973 and is a research group within the Project Planning Centre for Developing Countries at the University of Bradford. Unit members are:

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Unit Leader,

Philip O'Keefe, B.A. (Hons), Research Fellow,

Kenneth Westgate, B.Sc.(Hons), is attached to

the Unit as a Research Student.

This series of Occasional Papers will contain the results of the Unit's work. An Index of the Occasional Papers is included on the inside back cover.

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Since its formation in December 1973 the Disaster Research Unit has carried out an exploration of the political and academic organisations involved in disaster related activity and a review of current thinking towards disaster mitigation.

It is clear that since 1970 there has been an eruption of interest, both general and specific, in the world response to the continued impact of natural disaster and the creation of the Disaster Research Unit itself is evidence of the crystallization of some of that interest. Although, because of this continuing activity the timing of this review is considered appropriate, it is nevertheless arbitrary in its arrival in the course of events in which the affairs of man occur. It will, therefore, be obvious that it is not the aim of the paper to provide a conclusive compendium, but to provide others with a review of information gained as a result of the Unit's initiative. There will clearly be omissions for which I must apologise and hasten to explain that absence from this review does not imply the Unit's disdain. (A complete reference of sources is given in Appendix A).

The method used to form the contact on which this review is based has been as methodical as possible within a nebulous and amorphous subject. The more nebulous a subject, however, and the less the formal contact by way of annual conferences and monthly magazines, the stronger becomes the 'underground' network and our links with that network have been the essential activity. Once made, one link suggested another and so on, until suggestion became more and more to be to sources already covered. So the system acknowledges itself and declares itself complete. Relative newcomers to the scene are made known from a multitude of sources simultaneously, being aware of the essential points of a network. Having made an energetic announcement of the Unit's

formation, geographical areas were prepared in which to explore by personal contact; London and the United Kingdom, Europe, and the USA (eastern seaboard) and Canada. Visits in Europe took place in April and in the USA and Canada during August, 1974. They are now concluded for the time being, and this review is a product.

In the United States and Canada activity which can be loosely grouped under an 'academic' heading receives much of its support from governmental sources. Situated in a continent with an on-going series of serious disaster events of some variety its work is understandably inwardly directed and with a view to disaster events appropriate to a highly developed situation. Research is in many cases heavily sociological either being carried out directly by the Disaster Research Center which is part of the Sociology Faculty of Ohio State University or by ex-members of that Center who have moved into other organisations. Research projects cover aspects of the response by individuals and communities to disaster events, to warnings or to the 'hazard' of a situation of ever present threat of a disaster event. This work represents some of the most significant research into disasters anywhere in the world over the past fifteen years. Other current projects at Ohio and related Centres are the relationship between disaster events and mental health, the role of the media in disaster situation communications and the tracing of rumours, emanating from emergency situations of many kinds.

The National Science Foundation in Washington has sponsored the University of Colorado in an assessment of research in natural hazards. A summary report is at present being prepared and is awaited with interest. Considerable research into the forecasting of earthquakes is being continued in the Western USA, and in Los Angeles the Institute

for Disaster Preparedness undertakes the training of local government personnel.

In Canada, there is less distinction between natural and man-made 'hazards' than elsewhere, indicating a clear awareness of the devastating secondary effects from an initial impact of whatever category and of a fragility of interdependence, comparable only to that persisting in the Sahel. Consequently, an inwardly directed activity is maintained. A considerable work on communications in disaster situations and civil defense preparedness has been sponsored. The Emergency Measures Organisation (EMO, now National Emergency Planning Establishment) were responsible for 'The Hazardousness of a Place' (Burton and Hewitt) the place being London, Ontario and the study an analysis of all types of hazard which might afflict that community.

The overview of the DRU of academic research activity in USA and Canada is that whilst it is heavily loaded in some respects, particularly sociological, it is scant in other respects, particularly technological or scientific, these two aspects being undertaken directly by governmental organisations themselves. Even so there appear to be an almost total absence of coordinated technical or scientific analysis of disaster events or natural phenomena in serious research activities being undertaken by governmental bodies such as the National Oceanic and Atmospheric Administration (NOAA) the Federal Disaster Assistance Administration (FDAA) and the Defence Civil Preparedness Authority (DCPA). NOAA undertake what is essentially research into the science of hurricane behaviour; the FDAA (formerly Office of Emergency Preparedness) are the Federal Agency for domestic relief after a disaster area has been declared; and the DCPA, one of the defence sectors of the Pentagon, are concerned with warnings both for natural and man-made hazards, their

dissemination and the response of communities.

Whilst most American and Canadian activity, both academic and governmental is inwardly directed, the two governmental international aid organisations representing the two countries, Agency for International Development (USAID) and Canadian International Development Agency (CIDA) are significant in that they represent the total out-going interest in disasters other than those occurring in the North American continent. As such there is a closer affinity of purpose between DRU and these two organisations than with most others on the Western side of the Atlantic. Another element of extra-continental American activity is the International Tsunami Warning Centre in Hawaii.

Intergovernmental activity is, of course, epitomised by the United Nations, but it is clear that no one office has the responsibility or capacity for coordination of all disaster related activity within the UN. Many separate UN offices regard the UN Disaster Relief Office (UNDRO) as having this role but it has not been the experience of the Unit that this is so. Consequently it has been necessary to explore numerous and varied offices within the UN system including UNDRO. UNDRO are charged with the coordination of international relief activity. With their small team and allegedly inadequate resources, it is perhaps too much to expect them to coordinate the UN as well! Of particular interest to the Disaster Research Unit is the formation within UNDRO of a pre-planning section with a broad mandate paralleling very closely the programme and interest of some of our own, but it appears to be too early for close collaboration.

Some of the work now undertaken by UNDRO was contained in the Centre for Housing Building and Planning in New York, an office which is phasing itself out and whose remaining interests may become absorbed

by UNEP, which itself has a dual interest in the environmental and economic impact of disasters and on the effect of disasters on human settlement. The principle New York contact for UNDRO is Mr. Bradford Morse's Office, which is also currently responsible for the long and medium term Sahel programmes.

Offices associated with disaster activity prior to the formation of UNDRO and in the creation of UNDRO itself are Sir Robert Jackson's office (still called UN Relief Office), who conducted UN relief after the Bangladesh Cyclone in 1970 and the Office of Inter-Agency Affairs. Other activity in UN offices is principally the Flood Control Study within the Resources and Transport Division of Economic and Social Affairs and the Office for Science and Technology, who have undertaken a survey of natural disaster research centres and warning systems.

United Nations Agencies involved in disaster related activity are numerous and include the International Telecommunications Union (ITU) who are promoting a programme of 'earthwatch' monitoring by satellites; the World Meteorological Organisation currently monitoring experiments of hurricane phenomena in the Atlantic, and are combining with the League of Red Cross Societies in a series of surveys to assess the state of pre-planning and preparedness against disaster; the World Health Organisation active in the health and nutritional aspects of disaster events and who provide medical relief supplies taking advantage of disaster events to introduce health programmes which would otherwise take a very long time to initiate; UN High Commission for Refugees (UNHCR) who could perhaps be more active in disaster situations if they were not so restricted by their constitutional motive of assistance to refugees out of their own countries; the World Food Programme and Food and Agriculture Organisation concerned principally with world

food supplies generally and food supplies to drought affected areas in particular. The Special Sahelian Office within FAO has a particular responsibility for the Sahel drought immediate programme. The Protein Advisory Group is currently producing a Manual of Nutrition in Disaster Relief and UNICEF have traditionally been concerned with relief for mothers and children but are discussing the need to be more interested in preplanning. The International Labour Office become involved in the reallocation of labour resources following the disruption of communities following disaster, and UNDP follow up disaster effects by initiating rehabilitation schemes, although how much such rehabilitation takes account of future disaster probability is difficult to assess. The sciences relating to disaster events are admirably activated in UNESCO with ready interest in cross fertilisation with their UN departments, Agencies and external organisations.

To sum up, activity within the UN is essentially relief orientated or at best rehabilitative. Preplanning is either accidental as in the flood control programme or ITU's monitoring and warning methods, or incidental as with UNDP programmes. Only in UNDRO is preplanning considered as a separate activity in its own right and their resources appear disproportionate to a major role.

Reference to remaining intergovernmental activity should include the International Bank for Reconstruction and Development (IBRD) who are little interested in natural disaster being primarily interested in long-term development (sic). OECD and EEC are actively interested in the efficiency of aid programmes; the International Caribbean Emergency Relief Organisation (ICERO) coordinates disaster related activity in the Caribbean and NATO has a body called the Committee on the Challenge of Modern Society (CCMS) which considers environmental forces and has

included natural disaster in its studies, but which appear to be academic and relatively inactive.

Europe also houses principle headquarter organisations of voluntary agencies. In Geneva the League of Red Cross Societies maintains a polite separation from other less experienced voluntary organisations and is successful in calling together a Coordinating Committee of relief organisations in Geneva and in deploying resources to preplanning administered by its Bureau of Preplanning and Preparedness. The International Council of Voluntary Agencies (ICVA) of which the League is not a member, attempts to act in an administrative and coordinating capacity to which most other voluntary organisations subscribe, but are not necessarily involved wholly or partly in disaster related activity let alone preplanning.

Academic activity in Europe ranges from studies in epidemiology at the University of Louvain, which have led to the study for a medical relief kit; the International Council of Industrial Design are working on standard labelling for relief packages and the 'Centre for Psychosociological Studies in Disasters and their Prevention' in Paris, sponsored by the Brigade de Sapeurs et Pompiers conducts research into response to fire in buildings, and also in Paris is the promotion of studies in methods of monitoring the behaviour of volcanoes which may lead to the development of warning systems. Some architectural research in Stockholm explores preplanning and comes close to the aims of the Disaster Research Unit.

Disaster related activity in the United Kingdom is as diffuse and varied as is the rest of the world. Having fewer in type and number of disaster events to deal with our choice is apparently infinite and as it has been traditionally, our motive is out-going with no small

lingering responsibility in areas now known as 'Third World'. Voluntary organisations abound divided by an unpublicised distinction between 'development' and 'relief' whereas all depend on emotional public response to disaster events. The Disaster Emergency Committee attempt to coordinate relief activity preserving separate identity and separate motive. The Committee on International Affairs, a church body, has tried to interest government and military organisations in a Relief Force - the transport of transport, and a well-known architect has marshalled technical expertise into the International Technical Aid Service as a result of interest in natural disaster relief activity which commenced long before it became as topical as it is today. Out of the same era came the interest of the Building Research Establishment into tropical building methods and resistance to high wind and seismic forces. This work is sponsored by the Ministry of Overseas Development who also sponsor the Centre for Overseas Pest Research, essentially locust on plagues. ODM and the Foreign and Commonwealth Office coordinate relief response in world disaster situations and ODM now have a Disaster Unit to facilitate these responses.

Research is significant in seismic engineering at Imperial College and the Flood Hazard Research Project at Middlesex Polytechnic, the one obviously outgoing the other immediately at home in the Severn Valley but readily applicable to other locations when the opportunity develops. The Climate Research Unit at East Anglie University undertakes domestic and world weather research and would appear to be the source of some of the most significant research activity in this subject in the UK at the present time. An architect at Oxford Polytechnic has provided a study of temporary housing used after the Managua earthquake with a view to developing 'temporary' structures to become capable of longer term use.

At Sussex University the Science Policy Research Unit is engaged in international environmental problems, the Institute for the Study of International Organisations is enquiring into the operations and decision-making of relief organisations and Insurance Studies are interested in the role of Insurance activity. Disaster related work at Bradford University includes a research programme in Control Engineering in study and method of measuring the emission of gases from volcanoes in collaboration with the work referred to in Paris which could lead to the establishment of warning devices for eruptions; studies in safety as part of technological management and an interest in the relationship between the aftermath of natural disaster events and 'unpeaceful situations' (as evidenced for instance in Bangladesh, Ethiopia and Niger) in the Department of Peace Studies.

Pre-disaster planning in the UK is usually understood to be a civil defense activity related to air and motorway accidents and involving police and hospital resources - an understandable restriction where natural disasters are comparatively rare or absent. The Home Defence College and the Hospital Centre are both thus involved. The differences between civil defence and natural disasters are more diffuse in the activities of the International Civil Defense in Geneva.

Outside Europe and the North American continent in which the Unit's exploration has been most active, mention should be made of seismic and related sociological research in Japan, work into earthquake forecasting in Russia, a study of tropical cyclone and high wind forces on buildings at the University of Hong Kong and the simple demonstration of physical pre-disaster precautions being undertaken in Bangladesh as a result of a report prepared by the League of Red Cross Societies which represents the greatest evidence of preplanning activity anywhere

in the Third World.

This outline review of world disaster related activity represents the major proportion of that found by the Disaster Research Unit. To give a precise account of activity within each point of contact would be uncalled for, particularly as the Unit's purpose is not to judge, for instance, relief operations, but to accurately determine where it can, with the greatest usefulness, apply itself.

There is no doubt that awareness of the problems concerning disaster relief is on the increase and it is certain that some of these problems could be overcome by the preplanning of relief services. But to be efficient more services must be coordinated and coordination on any scale is difficult to find - either amongst governments or amongst voluntary agencies. In any case the preplanning of relief services is only a small step towards pre-disaster planning as operated by this Unit. Pre-planning might start with regional planning, land use zoning, building regulations, floodplain control and so on, to use titles bandied about along the Western Corridors of Power. Whatever it is called expertise in these aspects has to be assembled and integrated and applied at an appropriate level of understanding and effectiveness in specific locations. Very, very few of the organisations contacted have both understanding and resources. Those with understanding are relatively ineffective (but that is not to say useless) and many of those with resources have little or inadequate understanding. Between these two poles is the colossal need for equation.

Omissions in this paper are inevitable and serve to illustrate the lack of connection between research activity of varying kinds, much of it continuing unaware that it forms part of a larger context. A major step towards communication of these separate fields has been work by

the London Technical Group in an Annotated Bibliography of Disaster Technology and further funds are now being sought to continue this major work which is seen as a catalyst for communication between disparate and similar activities in a common interest.

The major part of all disaster related activity remains relief orientated with abysmally little directed towards preplanning - that which does is usually incidental or accidental. That is the first major omission which has motivated the formation of this Unit. The second is in research activities and lies in those areas which show up as gaps in the graphic review of research activity in Appendix 'B'. The graphic presentation is based on an analysis of the framework of the Unit's area of application and the breadth of preplanning as seen by the Unit. One, precautions against all disaster types (as shown in the common heading) have to be compared against a known vulnerability and analysed risk (second). The economic impact of natural disasters can be explored and their role in a state of low development can be estimated from an assessment of losses from past disasters. Forecasting probable future losses is then the next step, finally compared to the cost of precautions and the possible reductions in future losses after precautions have been taken.

In the graphic review of current research (Appendix 'B') the title is intended to refer to research programmes being carried on at the moment and therefore excludes work which has been completed and which could be contained in bibliographic references. Areas for research activity may be related to the disaster event and placed chronologically according to whether they are near or far or before or after the event in time sequence. From this review of current and recently completed research activity, it is clear that most current consideration is given

to post disaster situations, i.e. relief logistics and resources, co-ordination of relief, psychological and nutritional effects, material requirements and rehabilitation etc. There is a comparatively large amount of research and study activity in these areas which it has not been the purpose of the Unit to explore or portray in detail.

Of the areas of existing research activity which occur before the event, by far the largest number of contributions are within the sector of causes of natural phenomena which may lead to natural disaster. UNESCO are responsible for initiating and sponsoring a large part of this work in the geophysical aspects. The areas between the study of causes and the occurrence of the disaster itself remains and has been made the area for the particular application of the Unit and has been the area of special interest during the exploratory stages here being described. It will be seen in the analysis (Appendix 'B'), that there are major, almost total, gaps in economic assessments of disaster events with flood receiving most attention. Flood and earthquake receive more attention throughout all headings for study, with cyclone a close third. The remaining nine disaster types are scant throughout. Reading across the table sociological studies are heavily attended to throughout half of our disaster types but as in many cases the research programmes are carried out by essentially one organisation (Ohio State University) and in economic studies some attention paid by UNDRO is all there is to report. In other words, even where there is research it is not spread around very much. Similarly Middlesex Polytechnic's flood hazard research programme is essentially the only one responsible for flood related research of any comprehensive kind.

Thirdly, and not shown elsewhere, is the enormous gap, almost a total blank, of study of any kind directed towards third world situa-

tions. These three areas now represent the field of the Disaster Research Unit's application.

APPENDIX 'A'Source Reference

(NOTE: Abbreviations in right hand column are those used in Appendix 'B' for full titles as shown below).

1. IntergovernmentalUnited Nations Offices and Agencies

Under-Secretary-General for Political and General Assembly

Affairs, New York.

Assistant-Secretary-General for Inter-Agency Affairs, New York.

'Relief Office', New York.

Department for Economic and Social Affairs, New York.

Office for Science and Technology

Resources and Transport Division

Office of Technical Cooperation

Centre of Housing Building and Planning, New York.

United Nations Children's Fund, New York.

Protein Advisory Group, New York.

United Nations Development Programme, New York

United Nations Environment Programme, New York (UNEP)

United Nations Disaster Relief Office, Geneva (UNDRO)

United Nations High Commission for Refugees, Geneva

World Meteorological Office, Geneva (WMO)

World Health Organisation, Geneva

World Food Programme, Rome

Food and Agriculture Organisation, Rome (FAO)

Office of the Sahelian Relief Operation

United Nations Educational, Scientific and Cultural

Organisation, Paris

(UNESCO)

International Labour Office, Geneva

International Telecommunications Union, Geneva

Other

North Atlantic Treaty Organisation, Brussels

European Economic Community, Brussels

Organisation for Economic Cooperation and Development, Paris.

International Bank for Reconstruction and Development,

Washington, D.C.

International Seismological Centre, Edinburgh

(SEIS.STN.
EDIN)

2. Governmental

Ministry of Overseas Development, London

Foreign and Commonwealth Office, London

Meteorological Office,

Building Research Establishment

(BRS)

Centre for Overseas Pest Research

(C.O'SEAS
PEST RES)

Home Defense College

Privy Council Office, Ottawa

Canadian International Development Agency, Ottawa

National Emergency Planning Establishment, Ottawa

United States State Department,

Agency for International Development, Washington D.C.

Defense Civil Preparedness Agency, Washington D.C.

United States Department of Commerce, Washington D.C.

Department of Housing and Urban Development Federal

Disaster Assistance Administration

National Science Foundation, Washington D.C.

3. Non-Governmental

International Civil Defence Organisation, Geneva

International Council of Voluntary Agencies, Geneva

League of Red Cross Societies, Geneva (LRCS)

World Council of Churches, Geneva

Catholic Relief Services, Geneva

Caritas Suisse, Geneva (HAGEN)

British Red Cross Society, London

War on Want, London

Freedom from Hunger, London

Christian Aid, London

Oxfam, Oxford

Save the Children Fund, London

Help the Aged, London

National Voluntary Civil Aid Services

Voluntary Committee on Overseas Aid and Development

Board for Social Responsibility,

Committee for International Affairs

CARE, New York

US Red Cross Society, Washington D.C.

Bangladesh Red Cross Society, Dacca

Philippines Red Cross Society, Manilla

Trinidad and Tobago Red Cross Society, Port of Spain

4. Academic

University of Sussex

Centre for Insurance Studies

Science Policy Research Unit

Institute for the Study of International Organisation

University of Leeds

Department of Psychology

Department of Geography

University of East Anglia

Climate Research Unit

University College London

Development Planning Unit

Imperial College London

(IMP COL)

Department of Engineering Seismology

University of Bradford

Department of Control Engineering

Department of Peace Studies

Project Planning Centre

Oxford Polytechnic, School of Architecture

Middlesex Polytechnic,

(MIDDX.
POLY)

Flood Hazard Research Project

Ohio State University

(OHIO)

Disaster Research Center

University of Hong Kong

High Building Research Centre

Catholic University of Louvain

(LOUVAIN)

Department of Epidemiology

University of Colorado

(COLORADO)

Institute of Behavioural Research

Rutgers University, New Jersey

Department of Social Science and Human Ecology

University of Tokyo

Earthquake Research Institute

Avdelningen för Arkitektur, Ktn Stockholm

(KRIM-
GOLD)

Institute for World Physics, Paris

(TAZIEF)

British Association for the Advancement of Science, London

Carnegie Endowment for International Peace, Washington D.C.

Smithsonian Centre for Short-Lived Phenomena,

Cambridge, Mass.

Royal Society, London

International Peace Academy, New York

Institute of Civil Defense and Disaster Administration,

Los Angeles

Hospital Centre, London

Centre for Psychological Studies and Disasters, Paris

(PARIS)

5. Other

International Emergency Technical Aid Service

Intermediate Technology Development Group, London

London Technical Group

(Q.ELIZ.
COLL.)

International Council of Societies of Industrial Design

APPENDIX 'B'

Graphic Review of Current Research

	EFFECT - RESPONSE - AIDS	EARTH-QUAKE	TSUNAMI	LANDSLIDE	VOLCANO	CYCLONE	TORNADO	FLOOD	DROUGHT	AVALANCHE	FOREST GRASS	FIRE	EPIDEMIC	PLAGUE
PRECAUTIONS	LAND USE							Middx. Poly. Krimgold						
	CIVIL ENGIN.	(Tokyo, Skopje, Milan, Imp.Col./UNESCO)						(Middx. Poly. (UNDP/WMO (Control)						
	BUILDING	(BRS. UNDP)				BRS		Middx. Poly. Krimgold						
	LOGISTICS	LRCS (stockpile)												
	INDIGENOUS	DRU												
	ORG. & PRO-CEDURE	(UNDRO (UNDP. (LRCS (Krimgold)												
	LEGISLATION	BRS model bldg. regs.				BRS model bldg. regs.		Middx. Poly.						
	SOCIAL RES- PONSE TO WARNINGS	(Ohio, Colorado (Paris (UNDRO/WMO (UNESCO IGU		(UNDRO/WMO (UNESCO		(UNDRO/ WMO		Middx. Poly. UNDR0/WMO IGU						
	EDUCATION & TRAINING					WMO & LRCS								
	MEDICINE	Krimgold (Q. Eliz. (Col. & (Louvain							(Q. Eliz. (Col.				(Q. Eliz. (Col. & (Louvain	

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1. WESTGATE K. 'A Bibliography of Disaster Reference Material'.