

THE IMPLEMENTATION OF RESEARCH INTO
PRECAUTIONARY PLANNING FOR NATURAL
DISASTER

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Introduction

The very concept of 'implementation' will be regarded by many researchers as an anathema. Can research afford to be concerned with the implementation of its results? Will not consideration of implementation serve to sully research output which above all must proceed in an impartial and unbiased working environment if it is to achieve academic excellence?

Perhaps as part of a change of emphasis from research apparently disassociated from society's immediate needs, the formation of the Disaster Research Unit was conceived as an attempt to respond to a problem area which had been variously recognised during preceding assignments of its co-founders over several years. From the earliest stages of its inception the work of the Unit was to be directed towards the analysis of requirements for taking precautions against natural disaster. Whilst at that time (pre-1974) international attention was directed towards relief after each disaster event, it was realised that attention to pre-disaster situations was probably more important. Thus a problem had been identified and was confirmed by preliminary but extensive inquiry amongst those knowledgeable in related subjects and activities. The programme for the Unit was to analyse the problem, to define a set of answers to respond and to show how effective they could be. A research programme was established, in itself the first response, to meet the demands of a world problem which had been recognised (Lewis, 1974).

It follows that a research programme formulated to respond to a recognised need, having applied itself in a particular direction for a functional purpose will want to go further than the satisfying of academic requirements of research. The analysis of information and thinking and the subsequent logical presentation of discovered fact will be the culmination of the academic process. If the application, which occurred in the first place, is to have practical signi-

ficance however, there must be a subsequent stage between academic fulfilment and practical manifestation. That stage is implementation. The process of implementation therefore follows the identification of accepted recommendations from research. It is the penultimate stage before action and as such requires the initiative of the researcher. The implementation process identifies goals, assesses the means and describes the method. Action itself is the role of the administrator and the practitioner. As the process of implementation proceeds and gathers momentum towards its completion the administrator takes over and action therefore remains the prerogative of the indigenous administrator. It must never be, or appear to be, the prerogative of the alien (likely) researcher. Action comes from within; implementation prepares the way.

Not all research results can be expected to relate directly to decision-making. The evolution of ideas over time is a long process spanning generations if needs be. The evolution of relationships between research and implementation can be longer and over several generations. Action has not always been the automatic and immediate result of thought. Indeed it may be true to say that the prerequisite for change is successive generations. Thinkers have usually set the scene, but not taken part in the action that has been up to succeeding generations to implement. Action, the implementer of change, has only been made possible by thought, but thinkers and activists have remained separate as personalities and separate in time. It is logical then that theorists and implementers should be separate as members of separate processes.

Llewelyn-Davis (1976) aptly describes the normal process of evolution of thought and action, but in natural disaster there is a condition of urgency to be considered. Urgency within response to each event and urgency in overall response in an emerging subject late on the scene.

It was recognised from the outset that in applying itself the Disaster Research Unit would not only be relating to other Universities and research undertakings, but to intergovernmental and international agencies, organisations and national governments with a concern and responsibility for response to natural disaster occurrence. The Unit was not only concerned with the research credibility of its output, it was equally concerned to achieve credibility amongst administrators and practitioners. This too has led to the recognition of the need for study of the processes of implementation in their own right. Where the concept of implementation (outside teaching) may be an anathema to academics it may be the very *raison d'etre* of the administrator and practitioner.

The results of long and expensive research programmes have often concluded logically and academically but impractically, without any indication of which way to go or which area to tackle next, except to propose subject areas for further research. Instead of more and more research, what is required are short programmes to define a process of implementation which will take into account interim or final conclusions of the research programme and relevant administrative resources and capacities. Neither therefore is it sufficient for researchers to offer the comment that the results of their work will be 'an invaluable aid' to officials of relevant organisations (White, 1974). Without subsequent attention to an intermediate stage of implementation the work of most researchers will remain on the shelf and whether 'invaluable' or not will never become an 'aid' (Lewis, 1976a). Whilst researchers are able to devote considerable time in applying themselves to a problem in conceptual and physical isolation the administrator is constantly forming policy on the basis of advice. As a day to day and continuous process there is rarely additional capacity for the assimilation of volumes resulting from years of research relevant to perhaps only part of the administrators total area of concern and responsibility. The reader of research findings will all too often become another

victim of the 'so what' syndrome. A concluding statement of facts closes the researcher's work but should this new knowledge cause us to respond? How will this new knowledge be used, what should the response be and how should a response be organised? These are clearly concerns which apply to many areas beyond those of disaster research. In his succinct review of the comparatively new applied science of environmental psychology, Charles Mercer is clearly concerned with practicality of research results (Mercer, 1975).

There are close relationships between environmental psychology, both urban and rural, and some aspects of disaster research. It is perhaps worth examining some further parallels in Mercer's work, particularly because both subjects are in their early formative years and both subjects have evolved out of recognition of problems created in areas which have been excluded by traditional mono-disciplinary academic activity but which have grown in impact as part of and as a result of the dynamics of social change and the resulting development of ideas.

Whilst recognising the pressures on the researcher in environmental psychology to respond to demand from architects and urban designers to provide them with 'answers' upon which to base their design decisions, Mercer is emphatic in his references to the 'hazard of empiricism' and the dangers of quick empiricist findings when unrelated to a theoretical framework. This 'hazard' is real where problem areas have developed ahead of research and investigation, and where research is therefore responding to and applying itself to a need. (Where there is no identifiable need the pressures are fewer but criticism that research is unrelated to need is no doubt rampant.) But whilst a research framework is the pre-requisite if 'enormous numbers of investigations into particular problems' are not to be undertaken 'without anyone making any attempt to provide a theoretical framework into which they can be fitted', Mercer implies that the

theoretical framework for research is itself the first step towards a practical response to the problem recognised.

The need for an ultimate closer relationship between research and the decision-maker is clearly evident when Mercer writes

'Research, be it environmental psychology or any other "ology", will not make ... decisions for us, it can only clarify the options. Science can serve social values, but cannot create them".

Some research therefore may be expression by the theorists of thinking which may set the scene for further research in specific areas before implementation can be contemplated. The 'so what' response should not be applied too quickly or too often therefore and is not intended ^{here} to be a rule of thumb. It is necessary first to understand the place of the particular pieces of research in the time span of initiation of the research undertaking whether in an 'ideas' or in a 'project' environment.

If the 'so what' is applied too soon or, in other words, if practical results are demanded too early, or if research demands that it keeps itself apart from implementation of results, even at the time stage when implementation is justified, confusion ensues, wasted effort is rampant and damaging non-understanding of the research function results.

Research itself is required for the establishment of further research programmes within a theoretical framework which must first of all be provided. It could be valuable if research concluded with practical indications for the next step whether these were seen to be theoretical or empirical, academic or practical. Just as researchers are at pains to explore their subject with thorough analyses of relevant foregoing research, so they should be similarly

conscientious with concern for future work.
^{inc} ^{of their}

Commissioned research is a 'step in the right direction' towards implementation as a goal but there has been criticism from administrators that project research or commissioned research undertaken by Universities has been 'impractical' and has complicated the issues rather than clarifying them (~~L. West~~). This may have been the result of projects having been undertaken before an adequate theoretical framework had been established for the researchers programme. Hopefully the experience of the project assisted the theorising, but that is of little compensation to the administrator who had hoped to see solutions to some of his problems.

For projects to be successfully completed their formulation must be compatible with the motives and ideologies of the research group who will undertake them. If the attention of the researchers are to be concentrated on the reasons for the project itself their answers may not be at all forthcoming. This points to very early liaison between the administrator responsible for the concept and the formulation of research projects and the researchers themselves. The administrator will need to see the state and colour of the theoretical framework into which his project will fit and the researcher will need to know the background requirements which led to the instigation of the project.

For the formulation of terms of reference the identification of the researchers role will be pre-requisite. To change the world or to work along with it? To accept the reality of a situation or to attempt to change that reality?

If the reality of the context for the problem for which research is to attempt to find an answer is unacceptable to the researcher, then he ought not to proceed with his research. If he wishes to 'change the world' and alter reality

then his research belongs to the realm of ideas and thinking and not to action in a foreseeable future. (Perhaps this is the acknowledged role of the 'academic', where else could such attitudes survive.) There will be little point in taking a research project if the only answer to it is that it was wrongly conceived. That answer should be given, and the opportunity to give it must be available at the commencement.

Disaster Research

The work of the Disaster Research Unit was applied to the identification of precautions to be taken against natural disaster and the co-ordination of precautions to form a precautionary strategy in a comprehensive process of precautionary planning. A research framework was established for the Unit (Lewis, 1974) in terms of economic cost effectiveness of precautions which called for a quantitative analysis of precautions themselves, an analysis of risk from natural disaster and probable losses and an assessment therefore of the effectiveness of precautions to be taken. The fusion and co-ordination of precautions, support from the results of work by the other two sectors of the Unit and 'an appropriate ... administrative organisation' would be the 'overall strategic precaution' of a national policy and the Unit's aim. Moreover, this aim was not to 'deal with disaster occurrences as separate events but to see them and their threat acknowledged as part of the human environment' and to have precautions against them included in national plans for development (Lewis, 1974). Some achievement of those aims was manifest in the Unit's work. The process of disaster occurrence was analysed and described 'not as a single isolated event but as one stage in a dynamic ecological relationship'. Disaster is the interface between an extreme physical event and a vulnerable population (Westgate, 1976). An increasing number of disaster occurrences observed in the world is attributable not to an increase in the probability of

the physical event but to the increased vulnerability of the human population (Baird, et al, 1975). Precautionary planning is described as

'a policy implementation over time which sets its objectives in the form of targets for mitigating the effects of disaster by a comprehensive co-ordination of indigenous resources and infrastructure'

(Lewis, et al, 1976)

The research framework, established for the Unit, of identifying and analysing precautions and their effectiveness had itself to be related to the 'dynamic ecological relationship' and the 'human environment' in which disaster would occur. Having established a research framework, theoretical analysis proceeded to explore the disaster process and to identify strategies for the mitigation of disaster occurrence as a response to that process.

Two parallel avenues of activity thus emerged. On the one hand, theoretical analysis of the disaster process and on the other identification of precautions against that process in the form of precautionary planning. Planning however is a practical pursuit and relies on practical analysis of environments in which disaster could occur, assessment of indigenous resources and infrastructure and administrative methods and capacity in which the 'policy implementation' of precautionary planning could be adopted. Theoretical analysis required academic facilities and resources, precautionary planning, following the formation of a conceptual base required working locations and relationships with administrative organisation with whom planning processes would be implemented. The one was a theoretical process best suited to an academic research group, but the other was a practical process of implementation best suited to a professional unit. The two sectors of activity could not, to be logical and to be within the terms of reference and motive for the Unit, be undertaken separately. Theoretical analysis could continue unimpeded 'at home' in a University but processes of precautionary planning itself took place as assign-

ments and projects overseas. Conversely, given the motive for the establishment of the Unit the close relationship for research to assignments and projects provided a reality to the research environment. The planning process required and enjoyed the close relationship with theoretical research but could not be 'researched' in itself. Planning is policy implementation.

To all these arguments the 'pure' research specialist might still respond by asking nevertheless, if theoretical analysis could continue unimpeded 'at home', why if only to achieve a reality in the working environment did projects in aspects of precautionary planning have to be undertaken. If academic standards can be attained and research activity be so justified - why bother with implementation of results? It would certainly be easier, for researchers, and for University administrators, if the Unit's work had been contained in Bradford, in the North of England, and in an island off the North coast of Europe relatively free from major disaster occurrence. But could it be justifiable to only make academic currency, based on data and not experience, of suffering and deprivation for others? In a study in the social sciences is it justifiable and is it possible to undertake 'pure' research without the desire and motive to implement results?

Implementation

The implementation process must be studied in its own right to determine how best to communicate the results of research so that they may be incorporated in administrative decision-making and action-taking. The implementation process is also worth study on its own simply because it has received scant attention in the past probably for reasons touched upon in the opening paragraphs of this paper. It has not been a respectable subject for research. Results of research projects and methods used for their implementation rarely appear

as published research material. Project reports themselves, in any case, are often restricted in their use for some time after their execution. The results of research projects, with one exception (Lewis, 1975b) have therefore not appeared in the series of Occasional Papers published by the Disaster Research Unit; the Unit's Newsheet (Lewis, 1975 and 1976) being the only published source of information on them and that has had to be necessarily brief. Projects cannot be forecast, therefore they do not appear in research proposals or, as such in theoretical frameworks for research (Lewis, 1974). Response to them has to be pragmatic. Research is supported and subscribed to or paid for in advance; projects are negotiated and paid for on completion.

Implementation therefore is a latent process but the success of practically motivated research depends on it. The process must become recognised and its methodology assessed. Initiation of the process in any case as has been stated, lies with the researcher.

One particular aspect of disaster research especially where it is related to precautionary measures, which has already been referred to, is that it is a new subject. Outside the USA and Japan and some European countries any precautionary approach to disaster is new. For precaution to commence by relating disaster as a continuous ecological process is totally new and by no means in common use even amongst disaster researchers themselves. The results of disaster research, theoretical analysis and the identification of precautions to be taken are not commonly understood, nor even is the subject area commonly understood as one where research is being undertaken. For there to be any possible precautions at all to be taken against natural disaster is only just beginning to emerge as a response to phenomena which have traditionally been held to be 'acts of god' about which not only was there nothing that could be done, moreover, there was nothing that should be done.

The subject is not one which might be compared to civil engineering for instance or education of health programmes where there is now common acceptance of the need for improvement and 'development programmes'. There is no basic qualification to be obtained in the subject which will declare a common ground and a common language for researcher and administrator to commence discussion. It is ~~not~~^{most} likely that the only safe assumption will be that nothing is known in advance about the subject. Furthermore, because of the interdisciplinary nature of the subject, there is unlikely to be any one sector of an administration able to absorb all aspects of precautionary planning. Co-ordination at a senior level will be required which will be more difficult to achieve in the first place but will make the process more effective in the longer term. This senior role of co-ordinator is extremely important in an inter-disciplinary subject relating to many sectors of an administration. It will be necessary to achieve a fusion of inter-departmental interests and prejudices, and both stated and unstated policies subject to all kinds of political pressure and manoeuvre, where the political value of the ultimate precautionary planning strategy may be minimal. The process of implementation must include methods of increasing an understanding at all 'levels' of background theory and of the possibility of and potential for precautionary planning. For the commencement of the implementation process there needs to be therefore a synopsis of research results in immediately understandable and assimilatable terms.

The first step therefore is to attain an awareness and a basic understanding of the problem, both to assist with initiation of research programmes and to assess the results.

It can be said that the continued publication of research findings, a normal part of the research process, will eventually change the level of understanding of any subject. This is no doubt true but it is a long term process. It could

never be assumed to have taken place. It is in any case more likely to proceed in countries where research is an indigenous and predominant activity, particularly in the developed countries of the world. It is another significant aspect of disaster research, particularly that of the Disaster Research Unit, that much of it relates to the high frequency of disaster occurrence in developing countries where research is less indigenously active and where the results of research from other countries are slower to penetrate. Other methods of achieving wider understanding are seminars and post-experience courses. Intergovernmental seminars in precautionary planning for natural disaster have been submitted introducing the subject of precautionary planning (Lewis, 1976b; Westgate, 1976). It will no doubt not be long before post-experience courses also become established. These are slow processes nevertheless and do not yet remove the need to assume only that commencement of a process of understanding must begin at square one.

Having achieved some understanding of the subject amongst administrators the next stage is the generation of realisation of awareness of responsibility and capacity for initiating implementation. The generation of awareness may follow naturally from an understanding of the subject but capacity for initiating change is dependent on resources. It is here that the real process of implementation can begin because whereas theoretical analysis and planning theory can be 'general' the formulation of an actual plan or planning process has to be tailor-made to a particular location with specific resources and infrastructure. It is here that the implementation process commences on the basis of detailed knowledge of the location in question and proceeds in relation to the needs and potential of a particular place. The administrator will be able to assist the gathering of information which will enable the researcher to adjust his findings on the basis of real need and resource, feeding back to the administrator a planning method commensurate to his country's needs and capacity.

It is important to recognise a further and final step in the researchers potential for involvement with the implementation process. It is often the case, where implementation of any kind has been considered at all, for recommendations to stop with definitions of what has to be done. Just as it is important to show what to do, it is of equal importance to show how to do it - particularly in a subject such as precautionary planning for natural disaster where the absence of common ground and common understanding precludes the possibility of common knowledge about the potential outcome of implementation. The implementation process must therefore include recommendations of appropriate planning techniques.

Two assignments undertaken by the Disaster Research Unit are useful to illustrate a variety of implementation processes in operation. The first to be undertaken was a study in predisaster planning carried out in the Bahama Islands, at the request of the League of Red Cross Societies in 1974. This study explored and analysed social and economic structure and activity within the island group and identified the potential for disaster occurrence, both natural disaster in hurricane and man-made disaster in epidemic, aviation, industrial and marine accident, fire and food shortage. The official and public awareness to this disaster potential and what to do about disasters if and when they occurred was then examined. A report was jointly published by the League of Red Cross Societies and the Disaster Research Unit (Lewis, 1975) which contains recommendations for improved precautionary planning and physical infrastructure. The distribution of the Report in Nassau was followed by a follow-up assignment in 1975 to work out ways of implementing some of the Report's recommendations and to achieve improved precautionary planning in the Bahamas. The first assignment found a considerable awareness amongst the public to hurricane but less awareness about the origins or damage potential of hurricane or what to do about one when it threatened. Awareness amongst the public to man-made

disaster was even more difficult to identify. Governmental awareness to all disaster potential was considerable, and a large number of disaster plans had been prepared by various sectors. Recognising this as a basis upon which to proceed the report recommended attention to co-ordinating planning activity and further attention to the longer term aspects of planning and emergency administration.

The follow-up assignment (Lewis, 1975b) enjoyed considerable increased attention and awareness to disaster due to the distribution of the Report itself. ~~and~~ Several working sessions at a senior co-ordinating level in government were arranged to formulate proposals for administrative reorganisation which would achieve a high degree of co-ordination and integration of detailed attention in an overall precautionary strategy. It is significant to note that of all recommendations proposed in the first report it was administrative reorganisation (only) which occupied the whole time of the second assignment.

Precautionary planning in the civil and voluntary sector of the community is co-ordinated by the Bahamas Red Cross. Several meetings to involve the Red Cross membership and Disaster Committee membership were held as were discussions and working sessions where improvements to Red Cross precautionary planning were proposed. The project in the Bahamas is proceeding with the continued attention of the Government and the Red Cross. In the meantime a third short visit has been made to Nassau on behalf of the League of Red Cross Societies.

Throughout the Bahamas assignment several methods of familiarisation and working methods were used and included press releases, radio news items, public lectures, public meetings, working groups, and many discussions with government officers and individual working sessions with senior government members. It is interesting to comment that the addition of 'man-made' disasters as part of the

project, whilst considerably extending the terms of reference, had the positive value of giving the potential impact of hurricane some perspective and comparison. Moreover, it provided a 'non-seasonal' disaster context in which administrative procedures and public response need not suffer from seasonal lapse.

Considerable effort was devoted to the preparation of the report for the first part of the Bahamas Study to relate and to integrate a methodology for the administration of precautionary planning with the existing administrative system. (The work of Alec Baird in this respect was acknowledged in Lewis, 1975b). Precautionary planning was not to be another technocracy preconceived and imposed as part of 'methodological imperialism'. It was to be a flexible process to be adjusted to and by available administrative resources. Ultimate conceptual analysis for its own sake places greater, possibly unachievable, demands on local resources by removing potential for flexibility.

A second and rather different project was undertaken early in 1976 to advise on the administration of a disaster fund. The fund had been established by a regional organisation representing a ten country membership in the South Pacific (Lewis, 1976c). Whilst the Bahamas Study examined the whole range of disasters and disaster response in a single island group, the South Pacific project was concerned with a single element of disaster precaution - financial planning (albeit for the full range of natural disasters being earthquake, tsunami, volcano, flood, hurricane and drought), over an area extending over half an ocean and involving the countries of the Cook Islands, Fiji, Gilbert Islands, Nauru, Niue, Papua New Guinea, Solomon Islands, Tonga and Western Samoa. The considerable awareness to problems caused by disaster shown by the region in establishing the Disaster Fund had to be related to the theoretical analysis of the disaster process and an analysis of needs that disasters created, before recommendations with regard to management of a fund could proceed. The project

was conceived as a Pilot Study which has recommended interim management guidelines for the fund, but which has also identified areas where further study could make management of the fund more efficient. In an attempt to relate the desire for a disaster fund to the overall requirement for precautionary planning, one recommendation in the report of the pilot study was for a regional seminar. Partly as a result, the first South Pacific Preparedness and Relief Seminar was held in Suva in September 1976, under the auspices of the Commonwealth Secretariat and the League of Red Cross Societies. The initiation of the Disaster Fund was first announced at the Seminar. The first commitment by the Disaster Fund was made in accordance with recommendations contained in the Pilot Study Report, and was to the Government of the Solomon Islands following the earthquake on Guadalcanal in April 1977.

Conclusion

It is conceivable that research programmes initiated as 'problem solving' could be applied to problems recognised as emergent in the future or to situations now emerging which indicate severe future problems to which research resources must now be applied. In this case the usual time spans required for securing funds, setting up research teams, actually undertaking research itself, publication of findings, promulgation of results and eventual implementation and action may perhaps meet the time scale demanded by the slow emergence of the foreseen situation. In disaster research there are, no doubt, research programmes, current or conceivable, of this kind; and perhaps there are problems which can only be answered by long term research application of this kind. There are many other problems demanding immediate attention and implementation. Natural disasters have occurred for literally 'ages' with little being done to mitigate their effects. The rapidly emerging applied science of pre-disaster planning has catalysed a severe need for immediate

implementation of research results to answer so many serious problems left unattended for generations - problem situations which show no sign of abating of their own accord. For disaster research resources to ignore these immediate problems, in academic preference to longer-term pursuits, would be practically and morally inappropriate. Disaster research has a responsibility to serve both ends.

The problem that now arises, if this approach is accepted, is how to serve both, at the same time and from the same place. As Llewelyn-Davies has ^{said,} ~~pointed out,~~ the theoriser usually precedes the activist and certainly the experiences of the Bradford Disaster Research Unit were of divisive incompatibility in such a small group in an academic base. In a larger group with the facility for greater self-determination it might have worked. The proliferation of individual research and professional application which follows the discontinuation of an attempt at the unified interdisciplinary approach to precautionary planning attempted at Bradford, will lead to further fragmentation of effort. That may be the only way to achieve the variety of activity and approach to the multifarious problems of disaster, but would appear not to be the most efficient. The emerging pursuit of 'disasterology' is ripe for an injection of co-ordinating strength and unified purpose. A Centre for Overseas Disaster Studies would not be an inappropriate development to commence at this stage.

How is a subject like natural disaster best served? How is any service measured? What is the end-product other than to add up the total amount of relief after each disaster occurrence? If disaster losses, as has been indicated, are on the increase (Baird et al, 1975) it will be easy to show increasing efforts in relief endeavour. In the face of a potential for increasing losses, a reduction in relief required would be an indication of successful mitigative and preventive preplanning. How will that be acceptably proved?

Disaster mitigation is a process, not a production and processes are not so easy to measure, especially where the process involves a state of mind, attitudes and awareness to endemic problems. Only successful implementation of precautionary strategies will show results by which accountability will be assessed, and only by assessment will mitigative and preventive strategies achieve any recognisable improvement.

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