

Post Disaster Surveys: experience and methodology

David King examines and questions research methodologies
used in disaster studies in Australia.

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Rapid response post disaster studies take place immediately after a disaster has occurred, so the researcher carrying out the study needs to have a clear methodology and research aim as soon as the disaster happens. The question raised by this type of research is whether or not there is a right way of doing it, or at least a standard methodology. This question has concerned researchers in the Centre for Disaster Studies at James Cook University since we initiated a fresh emphasis on the social impact of catastrophes in the mid 1990s. This paper will begin by illustrating our own experience in post disaster research to show the range of problems encountered in this kind of research, and the general findings and issues that the studies raised. Following the summary of the centre's research, the paper will go on to examine what other researchers have been doing in the field of post disaster research, and to attempt to classify these types of studies to conclude whether or not there is a standard or typical approach and method. Fleming (1998) wrote an early review of the Australian post disaster program, prompting an ongoing evaluation as studies eventuated.

Sending rapid response teams to examine the impact of a hazard immediately after the event, has been a role of the Centre for Disaster Studies since it was first established in the 1970s. The Centre was originally established in 1979 following a decade of concerted disaster research initiated after the devastating impact on Townsville of *Cyclone Althea* in 1971, and *Tracey* on Darwin. The creation of a centre following a serious natural disaster mirrors similar initiatives in emergency management and hazard research in other parts of Australia. The shock of a catastrophic event prompts a determination to 'do something' to be better prepared 'next time'. Inevitably in Australia there have been sufficient 'next times' over the succeeding years to justify the continuation of centres and institutes once established. While the Centre for Disaster Studies was initially concerned primarily with understanding the physical causes and impacts of hazards, the emphasis since the mid 1990s has been more concerned with the social and community impacts of disasters.

The Centre for Disaster Studies was able to maintain its role of carrying out immediate post disaster studies through the introduction of Emergency Management Australia's *Post Disaster Grants Scheme* in the mid 1990s (Fleming 1998). The centre had been re-established in 1994 with a completely new group of researchers who had had no previous involvement in disaster research. Involvement in post disaster studies thus provided rapid experience, and North Queensland provided no shortage of events. The first study carried out by the new centre was not actually a disaster declaration. *Cyclone Gillian* never eventuated, but it was the first time in a number of years that a major city, Townsville, had received a cyclone warning. Thus the Bureau of Meteorology was interested in learning how the community had responded to its warnings. This began a very successful relationship between the centre and the Bureau of Meteorology. Most of the succeeding post disaster studies drew on funds contributed by the three agencies of Queensland Department of Emergency Services, the Bureau of Meteorology and Emergency Management Australia. Thus between 1997 and 2001 the Centre



Examining the impact of a disaster immediately after the event has been a role for the Centre for Disaster Studies since it was first established in the 1970s.

Table 1: Post Disaster Studies Carried out by the Centre for Disaster Studies Since 1995

Place	Year	Hazard	Name	Research Method
Townsville	1997	Cyclone	Gillian	Questionnaire, warnings & behaviour
Cloncurry	1997	Flood		Questionnaire, interviews
Cairns Mareeba Innisfail	1997	Cyclone	Justin	Longitudinal Questionnaire & short survey questionnaire
Townsville	1998	Floods	(Syd)	Household Telephone, Business & Mag. Island surveys interviews
Burketown Normanton Karumba	1998	Floods		Questionnaire, interviews
Innisfail Cairns – Barron River suburbs Port Douglas & Mosman Wujal Wujal	1999	Cyclone	Rona	Flooded buildings survey Evacuation questionnaire Warnings & behaviour questionnaire Warnings & impact interviews
Broome	2000	Cyclone	Rosita	Questionnaire, interviews
Cairns	2000	Cyclone	Steve	Longitudinal Questionnaire
Mornington Island	2001	Cyclone	Abigail	Questionnaire, Interviews
Total	17/13	5	2	9

carried out 17 separate studies in 13 different towns and communities (nearly all in North Queensland) following 9 separate hazard events. These are listed in Table 1.

Partners and research needs

As the emphasis of the Centre's research changed, so also did the role of post disaster studies, although the impact on people was always paramount even when understanding the process of the hazard dominated the research. While post disaster surveys in the 1980s were funded from the Centre's own budget, university re-structuring in the 1990s has resulted in all of the Centre's post disaster studies needing to be funded directly from government agencies and departments. The Centre has thus had to work in much closer partnerships with organisations outside the university, and has had to be more responsive to their needs, rather than engaged in purely academic research. In microcosm this is an example of a national and international process, whereby government funding agencies are demanding more focussed or applied research from universities. While that shift in focus and funding has prompted a vigorous debate about academic freedom and the ongoing need for pure research, this has been less of a problem for the Centre for Disaster Studies because its research has always been applied to the practical problems of dealing with and learning from disasters.

Part of the reality of that process of applied research is the need for the researcher to work with several funding agencies at once. These can affect the independence of the research and may result in competing or even

contradictory demands being placed on the researcher such that research objectives are watered down and outcomes must be sensitive to the politics of the sponsoring organisations. Fleming (1998) illustrated these issues of agency control of research and manipulation of results to ensure a final product that satisfied the organisation. However, the greatest threat to small research centres like the Centre for Disaster Studies, is for the research initiative to be taken entirely away from universities and shared out amongst government agencies, each with a narrow area of responsibility. The very nature of disasters, in demanding a totally integrated response from all agencies, runs counter to such a trend and reinforces the need for multi-organisational collection and sharing of research data. Thus an independent post disaster study complements the specific information gathering of agencies that are responsible for mitigation, response and recovery.

Because post disaster surveys are carried out in direct liaison with funding partners, those partners, government agencies and local government, play a direct role in formulating the research question. Some of these questions remain fairly standard across a number of studies, but much of the information gathered is specific to the severity, timing and location of the event, as well as local issues. Some of these local issues are strongly political or become political controversies later. This is the nature of a disaster as a catalyst of crisis and change. Political controversies cannot be ignored in post disaster studies but in working with government agencies and

the public it is a tension that requires sensitivity in communicating those issues. While the partner agency may influence or define the research questions, inevitably the research design is primarily driven by the disciplinary background and previous experience of the researcher, as well as relating to the broader literature on research methods. If this background does not fit with the needs of the sponsoring agency the researchers may find their work ignored, or their services dispensed with (Fleming 1998).

The partner agencies have roles that directly relate to the management of the disaster event. They have clearly defined responsibilities and procedures in monitoring or warning of a hazard, or in responding to the crisis both during and immediately after the event, and/or managing the clear up and recovery. They may therefore carry out their own surveys in the form of needs assessments for disaster victims and communities, and they will very likely assess their actions at some period after the hazard in a formally structured de-briefing. Post disaster studies carried out by the Centre for Disaster Studies and similar researchers are not of this type, and will attempt to avoid being in the way during the most immediate post disaster period. Instead the purpose is to capture a bigger picture of the disaster that will contribute to the de-briefing and attempt to relate the experiences of this disaster to those of other catastrophes, most often as they have been reported and analysed in the academic literature. The rapid response post disaster study must be comparable to other studies of its kind, hence the need to use or be aware of the research methodology of previous work. It would be extremely useful if there were guidelines available to the sponsoring agencies that could mitigate against excessive or unwarranted influence over the researcher.

However, the post disaster study must still take place as soon as practicable after an event to record peoples' experiences and memories while they are still fresh, but equally without adding to the stress. The results of the study also need to be available for de-briefing sessions which may be some weeks or at most a few months after the event (depending on the severity of the disaster and the agencies involved). This means that most post disaster studies will necessarily be rapid surveys. The researchers must also be able to respond quickly, work with partner agencies and produce useable results in a short time frame. Some professional teams of rapid response researchers exist, but generally government agency funds will not support permanent employees whose only role is to study a disaster, and once an individual is involved in the management or response work, it is no longer possible to carry out an independent big picture analysis. The rapid responders have included many academic researchers and university staff who become involved in local events as part of their wider research. Many have not been primary

disaster researchers but have switched to the impact of a catastrophe when it has been close to home.

By drawing on a pool of researchers in a region that is regularly impacted by predictable natural hazards the Centre for Disaster Studies has been able to attend a large number of hazard events over a short period. All may be described as relatively low impact events in that loss of life was minimal and structural damage was either concentrated or at least did not amount to total devastation. The 9 events have all been floods or cyclones, or a combination of both, with repetition of events in the same places. Thus as well as relating North Queensland/North Australian experiences to the broader literature, the Centre has also had the opportunity to cross relate its own post disaster studies, especially within the same communities and even individuals.

Post disaster experience

From all of these studies we can summarise seven main groups of impacts or issues. These are: 1. the unequal distribution of the impact; 2. loss of services during the event; 3. a lack of expectation of the impact; 4. late or minimal preparation; 5. community or neighbourhood response; 6. confusion concerning warnings and the media; and 7. a level of resilience.

In all of the disasters we have studied, only a portion of the community experienced severe loss or impact. These were places that were especially physically vulnerable. Some such as the Black River Settlement outside Townsville, or housing along the terrace of the Cloncurry River, should never have been there in the first place. Apart from responsibility of local government, the residents of these places were clearly ignorant of the hazard on their doorsteps. Other developments, such as the trend to enclosure of spaces underneath houses (often as granny and teenage flats), equally exhibits an attitude that the flood hazard is no longer a threat (King 1998, Goudie & King 1997).

The loss of emergency services and utilities during a hazard has already been illustrated. Apart from the Townsville flood, this has occurred in all natural disasters. Generally people expect that they will lose power and water for a while, but it is a more serious oversight for emergency service operations to be located in the more vulnerable parts of the city (King 1997, 1998). This has been an historical trend, where these services have been sited in a central location, which in the case of the old city centres is most likely to be in the vicinity of the wharf and sea front. Thus apart from the sheer size of a major disaster in a city, the police, fire, ambulance etc. may not be able to get out of their buildings, let alone provide widespread assistance.

The most common response from people who have experienced major loss, was surprise and disbelief, often backed up from community and personal knowledge,



Type of impact varies enormously so survey questions must also suit various places and events.

that the river had never risen so high before, or the floodwaters had never been so extensive. This is usually quite true, for any individual, but the devastating natural hazard is a predictable process at the State level. People who experienced severe loss of property, experienced that loss precisely because they never expected it (Goudie & King 1997).

The disbelief is compounded by a universal lack of adequate preparations, whether for flood or cyclone, or at best hurried and minimal late preparations. Part of this derives from stoicism, part from a desire to be in control and not to be panicked. The result is that people end up out of doors once the strong wind has already started and debris becomes airborne, or as flood waters rise, they are out in deep water moving belongings, people and pets. This has happened in many instances in the dark. In remote communities the lack of preparation has resulted in a widespread lack of food, necessitating expensive airlifts (Berry 1997).

In all disasters people reported checking on or helping their neighbours. There were tales of genuine bravery and risk, some of which made good media stories. Most risk taking and rescue could have been avoided, though, if people had acted earlier, or had never built in such vulnerable locations (King 1998). In the remote communities people expect to rely on their neighbours, but are unlikely to request assistance until the last minute. In the cities, the numbers of people needing help runs into thousands, so that reliance has to be on

friends and neighbours. Clearly everyone in the community has to know how to deal with the hazard, because the reality is that during and immediately after an event, many thousands of people are going to be actively involved in providing assistance.

All of the post disaster studies contained questions on warnings and messages from the authorities. The media transfers messages, so that part of regular preparation is to have a working battery radio. Prior to and during an event both television and radio stations relay cyclone and bad weather warnings. The technical language of warnings has caused some confusion, but the Bureau of Meteorology has responded by simplifying its messages. There is also controversy over the use of sirens, and the location and use of emergency shelters. But after all disasters the greatest criticism has been against the media, for inconsistency in the timing of broadcasts of messages, and for either exaggerating or playing down a threat. There is an expectation gap between the public and the media, in which commercial television receives the greatest criticism. Despite advances in communication technology, remote communities in North Queensland occasionally still fail to receive any warning at all, as transmitters fail, or remote area broadcasts are made from very distant locations where there is no knowledge of local conditions. This was the experience of Wujal Wujal aboriginal community on Cape York Peninsula as Cyclone Rona passed virtually overhead (Cottrell et. al. 2001).

Finally there is a level of resilience inherent in communities, that emerges from the interviews and responses of participants. Natural disasters such as floods and cyclones in Northern Australia are seen as part of the pattern of life and seasons. A lack of physical preparedness is countered by a higher level of mental preparation, or perhaps risk acceptance. The disaster is usually primarily an economic one as damage and crop loss devastates a region, and the response to this is to clear up, rebuild, re-plant and get on with life.

Some questions were common to all surveys, especially those concerning warnings. However, with just the three floods the type of impact varied enormously because the places and events themselves were very different. The Cloncurry flood was a river inundation that severely damaged dwellings in a part of the town, while the issues in the Gulf floods were primarily the problems that related to isolation, damaged infrastructure and allied health concerns. Townsville's flood was a high rainfall event that inundated the whole town, temporarily isolating almost every household. Similarly the cyclones were different and by the time of cyclone Rona we decided to do completely different surveys in different places that had been impacted, according to the local issues. In Innisfail river flooding had been a major issue so the post disaster survey looked at the impact on houses that were in the flood zone. In Cairns the population of two riverside suburbs was evacuated at night, so the survey examined the evacuation experience. In Douglas Shire (Port Douglas and Mossman), as well as Wujal Wujal aboriginal community to the north, the issue was the rapid onset of the storm and the adequacy or inadequacy of warnings. Thus the studies in these communities concentrated on those issues.

Most post disaster surveys were necessarily short, consisting of rapid appraisal method questionnaires, either administered face-to-face or by telephone, and backed up by interviews of community leaders, key informants and experts or officers responsible for components of the response.

The most useful surveys, though, have been the longitudinal community surveys of the Cairns northern beaches suburbs carried out by Linda Anderson-Berry. These began in 1996 as a TCCIP (Tropical Cyclone Coastal Impacts Program) project to examine awareness and preparedness for cyclones and storm surge. The northern beaches were selected as a relatively new outer suburban area in a vulnerable location along the coast. The first survey was independent of any hazard event (there had not been a cyclone warning in the area for six years). The initial survey drew on earlier awareness and preparedness questions that had been used in Townsville during the 1970s following *Cyclone Althea*, but the northern beaches survey instrument was greatly expanded and generated extensive data. It was also complemented by surveys in schools of grade five and nine children.

Shortly after the main community survey had been administered to a sample of 700 households, cyclone Justin crossed directly over the northern beaches. Then in 2000 cyclone Steve crossed in the same place. Thus post disaster studies following Justin and Steve, re-administered the same awareness and preparedness questionnaire, with some modifications, to the same sample of households. While there was some change in residence, many of the same people participated in the sequence of studies enabling a measurement of change over time, and in response to subsequent experience.

The longitudinal surveys were significantly different from the much shorter rapid appraisal method surveys carried out after other disasters. While the shorter surveys generated comparative data, the repeated community surveys give depth and much greater understanding of the processes at work in the community. However, it was chance that provided the opportunity to resurvey the same community. Generally it will be the rapid appraisal type of survey that will have to suffice. Thus it has been an appropriate point at which to examine the experiences and methods of other researchers who have been involved in post disaster studies.

Review of post disaster methodology

Tables 2 and 3 summarise an analysis based on 130 post disaster reports primarily available in the libraries of the Australian Emergency Management Institute at Mount Macedon and on the web site of the Natural Hazards Research Applications and Information Center at the University of Colorado. Emergency Management Australia modelled its post disaster grants scheme on the Colorado scheme. However, a few of the reports that were examined came from outside both of these schemes. All dealt with immediate post disaster studies, although some of them very usefully made comparisons of experiences across several events.

These studies have been classified in Table 2 according to the place of study and the type of hazard. The Australian studies were carried out by Australian based researchers, but most of the other non USA and USA studies were carried out by United States based researchers under the National Science Foundation Quick Response Scheme, which unlike its Australian equivalent allows funds for researchers to travel outside the USA. Outside the Caribbean, most American researchers had an existing research link, or ethnic connection with the overseas disaster site.

Table 2 has sub categorised studies according to the type of hazard that was involved in the disaster. In fact most of the studies were primarily concerned with societal response to a catastrophe, rather than being a study of a particular type of hazard. The hazard is not the centre of the disaster, but rather the impacted community. The hazard is the framework, but it inevitably configures aspects of response, mitigation

and warnings. Besides, the disasters are powerful events that we name and construct within the framework of the character and form of the hazard itself.

Cyclones (Hurricanes), floods and earthquakes dominate, and with tornadoes and bushfires account for the vast majority of hazards. All necessarily benefit from post disaster study because of their predictability and the need for the population to be physically and mentally prepared for a hazard event. Table 3 classifies the main research methodology used in these studies

All 130 reports that were reviewed for this paper concerned experiences that were gleaned directly from actual disasters. However, 25 were reports or bibliographies that either examined a number of disasters to draw comparative conclusions or they were annotated bibliographies. Most of these have been classified as reviews in which a general analysis of previous hazards summarised findings and experiences. Three of the

reviews were of the same hazard but as it unfolded in different locations, such as El Niño for example.

Case studies

Case studies of disasters were used as examples to examine Emergency Management issues and policy analysis, as well as reports that were primarily concerned with mitigation. Physical assessments of disaster impact used methodologies that were appropriate to the discipline, such as engineering or geomorphology. These were entirely case studies of specific events, but there was little or no involvement of human participants involved in the disaster. The aim of these studies was to add to knowledge of the process of the hazard itself and in some cases the strengths and weaknesses of built structures.

The majority of the quick response studies were case studies of a specific disaster, with a broad aim of

Table 2: Hazards and Regions Covered by 130 post disaster studies and reports

Region/ Hazard	Australia	USA	Central America & Caribbean	South America	Japan	Pacific	South & South East Asia	Europe (inc. Turkey)	Total
Flood	2	16	1	2					21
Cyclone/Hurricane	3	14	7			4	1		29
Bushfire	5	3							8
Earthquake	1	5			2		1	4	13
Tornado		7					2		9
Drought							2		2
Blizzard/ Ice Storm		3							3
Volcano			2						2
Landslide								1	1
Severe Storm	1								1
Plane Crash		2							2
Massacre		4							4
Chemical Spill		2						1	3
Bus Crash		1							1
Ship Loss								2	2
General & Other	2						1	1	29
Total	14	57	10	2	2	4	7	9	130

Source: Emergency Management Australia, Natural Hazards Research and Applications Center University of Colorado, Bureau of Transport and Regional Economics

Adamson, S. 1997, Allen R.D. & Rosse, W. 1998, Benight, C.C. 1996, Benight, C.C. & Harper, M.L. 1997, Blanchard-Boehm, D. 1997, Bush, D.M. et al 1996, Butler, D.R. 1997, Caporale, R. 2000, Carley, K. & Harrold, J. 1993, Coarsey-Rader, C.V. 1995, Comfort, L.K., 1996 & 2000, Dow, K. & Cutter, S.L. 1997, Drescher, K.D. & Abueg, F.R. 1995, Dymon, U.J. & Boscoe, F.P. 1996, Edwards, B. et. al. 2000, Enarson, E. 2000, Fischer, H.W. III. 1999, Gant, D.B. 1996, Hapke, H.M. 2000, Jones, R.T. 1993, Krause, G. & Dyer, C.L. 2000, Langley, A. & Jones, R.T. 2000, Legates, D.R. & Biddle, M.D. 1999, McEntire, D.A. 1998 & 1999, Mitchell, W.A. 1996, Montz, B.E. & Tobin G.A. 1997, Neal, D.M. 1995, O'Brien, P.W. & Payne, J. 1997, Paul, B.K. 1995, 1997, 1999, Peraz-Lugo, M. 1999, Perry, J.B. et. al. 1996, Pine, J.C. 1999, Rao, et. al. 1985, Rodrigue, C.M. & Rovai, E. 1998, Rossi, I. 1998, Rodilsky, J.L. 1999, Rubin, C.B. et. al. 1985, Sattler, D.N. & Kaiser, C.F. 2000, Schmilden, T. & K. & Ono, Y. 1996, Schmidlin, T. & King, P.S. 1997, Schmidlin, T. et. al. 1998, Smith, Emm & North, C.S. 1998, Sylves, R. 1996, Tiefenbacher, J.P. et. al. 2000, Tobin, G.A. & Montz, B.E. 1997, Tollinger, M.L. & Dixon, D. 1999, Waelde, L.C. et. al. 1998, Wilson, J. & Oyola-Yemaiel, A. 1998.

Note: 25 reports were comparative analyses or annotated bibliographies of multiple events and hazards.

Table 3: A Classification of Methodologies Used in 130 Post Disaster Studies and Reports

Type/ Method	Physical Assessment	Policy Review	Mitigation	Emergency Management	Review	Case Study
Case Study	10	2	4	2	3	na*
Questionnaire		1				48
Interviews		1				28
Secondary Sources						17
Post Trauma Methodology						23
Observations						7
General Analysis		2	4	1	21	3
Focus Groups						3
Economic Analysis						2

Source: Emergency Management Australia, Natural Hazards Research and Applications Center University of Colorado, Bureau of Transport and Regional Economics

Adamson, S. 1997, Allen, R.D. & Rosse, W. 1998, Benight, C.C. 1996, Benight, C.C. & Harper, M.L. 1997, Blanchard-Boehm, D. 1997, Bush, D.M. et. al. 1996 & 1999, Butler, D.R. 1997, Caporale, R. 2000, Comfort, L.K. 1996 & 2000, Coursey-Rader, C.V. 1995, Dow, K. & Cutter, S.L. 1997, Drescher, K.D. & Auberg, F.R. 1995, Dymon, U.J. & Boscoe, F.P. 1996, Edwards, B. et. al. 2000, Enarson, E. 2001, Fischer, H.W. III. 1999, Gamble, D.W. 2000, Gant, D.B. 1996, Hapke, H.M. et. al. 2000, Krause, G. & Dyer, C.L. 2000, Langley, A. & Jones, R.T. 2000, Legates, D.R. & Biddle, M.D. 1998, McEntire, D.A. 1998 & 1999, Mitchell, W. A. 1996, Montz, B.E. & Tobin, G.A. 1997, Morrow, B.H. & Ragsdale, A.K. 1996, Neal, D.M. 1995, O'Brien, P.W. 1997, Paul, B.K. 1995, 1997, 1999, Perez-Lugo M. 1999, Perry, J.B. et. al. 1996, Pine, J.C. 1997, Rodrigue, C.M. et. al. 1998, Rossi, I. 1998, Rozdilsky, J.L. 1999, Sattler, D.N. & Kaiser, C.F. 2000, Schmidlin, T. & Ono, Y. 1996, Schmidlin, T. & King, P.S. 1997, Schmidlin, T.W. et. al. 1998, Sylves, R. 1996, Tiefenbacher, J.P. et. al. 2000, Tobin, G.A. and Montz, B.E. 1997, Tollinger, M.L. & Dixon, D. 1999, Waelde, L.C. et. al. 1998, Werner, L.S. et. al., 1998, Wilson, J. & Oyola-Yemaiel, A. 1998.

* Note. There were case studies in each of the separate methods and case studies also constituted a method themselves.

assessing the impact, response and behaviours of participants. The studies carried out by the Centre for Disaster Studies fall into this same broad category, and altogether they form the bulk of post disaster studies.

It is in this kind of post disaster study, where the researcher is approaching the disaster to find out what happened and to search for lessons that may contribute to mitigation and Emergency Management, that a variety of approaches may be employed. The most commonly used research tool is a rapid appraisal questionnaire administered face-to-face or by telephone in the majority of studies, or by drop off and pick up where the researcher has a longer time in the field. Face to face or telephone surveys are necessarily short and thus can only cover a brief set of issues. However, after a disaster many people are still excited or shaken by the experience and are frequently willing to talk to the interviewer for an extended period. These extra anecdotes can contribute to key informant type interviews and provide valuable insights.

Drop-off and pick-up surveys require a face-to-face introduction and thereby achieve a much higher return rate than a mail out. They also allow for many more, and much more complex, questions. Their shortcoming is the need to prepare much more substantially before entering the field, which requires a sound knowledge of the community and the likely impact of the disaster before designing the survey instrument.

The questionnaire is often supplemented by some other source of data and information. The most common sources are interviews and secondary data. In some cases these have been the entire survey method, especially where the impact is small or remote. Key informant interviews may include those whose role is to respond or manage, as well as members of the public. Several reports used the term 'snowballing', a technique whereby the interviewee refers the researcher on to other informants. Where the population is not known and a proper sample cannot be drawn, this technique is highly effective as links will usually go in diverse directions. Some researchers used tape recorded interviews, but these can seem intrusive and the majority (like newspaper reporters) still rely on field notes and log book.

Secondary sources are records made by management agencies, databases such as the census, local government records and databases etc. A number of researchers made extensive use of textual analysis from newspapers and reports at the time of a disaster. News reporters invariably exaggerate and sensationalise stories, but they will often capture the main issues even if numbers and names are not always accurate.

Observations were generally used as a backup to a main survey method such as interviews and questionnaires. For very experienced researcher's observation techniques are valid, especially if categorised from a checklist of



The devastating natural hazard is a predictable process at the State level.

issues, impacts and questions. In particular, observations are used to contribute examples and to underscore statements made by participants. Researchers may also be participant observers. This has been the experience of staff of the Centre for Disaster Studies and clearly was the case for several of the researchers involved in the quick response studies. The researcher loses some objectivity (which is not necessarily an essential characteristic) but participant observation fills in the linkages between issues and gives powerful insights into vulnerability and resilience.

Only three studies used focus groups as a method of data collection and analysis. This research method can be extremely powerful, but may be inappropriate immediately after a disaster and can be extremely difficult to organise. Only two studies carried out an economic analysis, and both were done by skilled specialists using economic analytical techniques designed for disasters. Clearly this area is one where more research needs to be done to contribute to mitigation.

Post trauma studies

Entirely separate from the bulk of the rapid response surveys were specialist studies that employed post trauma methods. These were concerned with all groups of participants, emergency managers, response and rescue personnel and those who had suffered loss or trauma in the disaster, although not usually all

participants in any one study. For example some studies looked at police post trauma experience, some at teenagers, some at the elderly, women, medical staff etc. The researchers were mainly psychologists, with some (probably) psychiatrists who engaged in more direct medical analysis. Generally these studies were either more longitudinal, with surveys close to and then repeated at some distance from the event, or they were entirely distant from the event, in some instances by a number of years. As the aim of these post disaster studies was to understand the longer term impact on peoples' mental health or state of mind, the greater distance from the event was an important component of some of the studies. Most used highly technical standardised post trauma tests and questionnaires. From the methodology statements these standardised survey instruments did not appear to have been significantly modified for the type of location or hazard.

Very few of the case study post disaster surveys used both the general approach of questionnaires and interviews etc., as well as post trauma specialist surveys. They were either one or the other – quite distinct groups of researchers and surveys. Furthermore the post trauma methodologies were oriented to specific psycho-social models or theories. The general case study quick response surveys approached a broad range of models and concepts as a structure to the methodology, depending upon the disciplinary background of the researcher.

The difference between these two types of post disaster studies, the post trauma studies and the general quick response case studies, significantly separates the methods employed. The post trauma studies are less likely to have to take place immediately after the event and thus may not contribute to the de-briefing. Research into understanding how people deal with and recover from trauma may contribute to Emergency Management, mitigation and our understanding of vulnerability and resilience. While these studies are primarily individual responses, they may also aid our understanding of community and the individual in the community. The methodology is also standardised and frequently takes place in a controlled or clinical environment.

By contrast, the quick response case studies are primarily fieldwork based and are much more hazard and location specific. A variety of methodologies are used to gather information, but questionnaires and interviews are the dominant methods. Results and lessons learned contribute directly to an understanding of individual and community behaviour in response to a disaster, and provide insights into ways in which Emergency Management and mitigation may be enhanced. They generally do not extend beyond the immediate post disaster period because that is the way in which most post disaster studies are funded. Researchers who have been involved in a number of post disaster studies are able to discern common trends and patterns, but this has also been achieved by third party researchers who have analysed experiences from multiple events and reports.

Conclusion

However, a limitation to a number of studies is that they are too isolated, too location and hazard specific, or even too discipline or model specific. Some researchers, possibly coming to an inter disciplinary disaster study for the first time, explain their models and methodologies as though they have never been tried or examined before, or who regard the event they are studying as unique. Generally though, post disaster studies employ common methods, drawing most significantly on either standardised post trauma methodology, or on rapid appraisal methodology.

A significant contrast between Australian and USA studies is the ability of the United States to fund research in other countries. A strong case could be made for Australian researchers to carry out studies within the immediate Asia Pacific region, especially where a significant Australian aid response is involved. The United States quick response studies have been running for a much longer period and have developed as time has passed. A tradition of such studies in Australia will also very likely develop over time. An important role has been played by research students in the US, who have

worked with more senior researchers and gone on to lead educational and research programs of their own. This opportunity is more limited in Australia, although disaster education programs are on the increase, and a greater number of younger researchers are entering the field both in universities and in government departments.

A small flaw in post disaster studies is their snapshot of a moment in time. A much deeper understanding of the impact and behaviour of a community is enhanced through longitudinal studies, or at the very least, return visits at a time significantly after the event. This opportunity will also develop as more researchers and more research interest become focussed on understanding disasters. This is particularly likely as the former emphasis on response has shifted to longer term recovery, and most importantly, to mitigation, education and preparedness. These policy directions have undoubtedly been influenced partially by the experiences of post disaster studies and the desire to contribute knowledge and understanding to long term mitigation and prevention. Thus the developing policy emphases and the experiences of post disaster surveys reinforce one another in moving towards the bigger picture – the long term and mitigation. While a snapshot in time, post disaster studies are a record of history and provide us the opportunity to learn from that history so that we may avoid repeating past mistakes.

It is reassuring to find that one's own work complements that of a wide range of similar studies and fits into a category of research methodology common to many of the others. This paper began by reviewing our own post disaster studies in order to illustrate the diversity of events and situations and research problems. In summarising these studies and drawing common conclusions and issues, the point is that the synthesis of often crude and rapid fieldwork provides us with a bigger picture of disaster experiences that helps us in understanding vulnerability and resilience, and in devising effective mitigation strategies. It is a common criticism of geographers that they carry out fieldwork and subsequently try to work out what it all means. Rapid response surveys, many also carried out by geographers, frequently do the same thing. Unclear aims and vague research questions are clearly a problem of many post disaster studies, but the immediacy and uncertainty of the situation frequently leaves little choice but rapid fieldwork. Consequently it is crucially important that the research methodology is legitimate and replicable. In the studies that have been examined in this paper this is almost entirely the case. Standard social science methods were used within a framework of the diversity of disciplines, the towards overall research aims, and the constraints of speed and sensitivity towards victims and managers.

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