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Some Contemporary Issues in Disaster Management

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In this paper I want to set out some of my views on a number of contemporary issues confronting disaster management but I do not have the space to address all the issues I think are critical nor do I doubt that there are numerous other issues that have not occurred to me. My assessment of some salient current issues derives from two perspectives; until recently I had responsibility for policy development and program management of disaster recovery services in Victoria, Australia and now I have added the perspective of the academic and researcher at Cranfield Disaster Management Center in England and formerly at RMIT University, Australia; research into social impacts and community responses is an activity that links these two positions. While I am generally pessimistic about how well disaster management can keep pace with a changing global risk environment I acknowledge that our thinking has changed significantly in the past decade. In particular we have been—or were—moving away from a hazard-centric and reductionist approach to disaster management to an approach that accepted the reality of social, cultural, political and economic drivers of hazard generation, risk and vulnerability.

The attacks on September 11, 2001 have in some ways altered the direction of disaster management, especially in the developed world. Previously there was a growing acceptance across the disaster management community that locally based initiatives were fundamental to effective disaster management, and there was a re-ordering of priorities away from response and control to mitigation and recovery and there

was a view that disaster management should include social, economic and political development activities. This latter placed disaster management in the body of theory that sees disasters as an outcome of structural processes rather than simply the impact of an untrammelled "natural" hazard."

The terrorist attacks of September 11 and subsequently caused a shock to the United States, British and Australian governments (among others) with the result that the emerging trends identified above have given ground to a renewed emphasis on and a revived authority to the command and control paradigm with its emphasis on hazard control, response activities, hierarchical management, and legislated and defined authority manifested through mandated government agencies.

The attacks may not have been predictable in any rigorous way, however, they could have been anticipated. Terrorist activity against nations is not new, and the United States has suffered a number of terrorist attacks in recent years prior to September 11, 2001, including one on the World Trade Center itself. The attack could have been anticipated, or imagined because the many active terrorist groups across the globe are vocal in their denunciation of the United States and other Western countries and they have been inventive in their targets and in the ways in which they have attacked their victims.

The attack of September 11, 2001 was not an isolated, individual event but a manifestation of deep social, cultural, political and economic differences the extent of which are evident to an observer who views the subject dispassionately.

Given this, the attacks were not evidence of new circumstances or threats but the actualization of knowable (within certain limits) threats. In a meaningful way therefore the response of the United States, Britain and Australia to September 11 is therefore a response not to the threat per se but to the failure of Western intelligence services and of Western imagination.

The failure of the West to anticipate and understand terrorism (as one manifestation of risk and disaster) does not justify the reversal in direction for disaster management that is now occurring. The establishment of the Office of Homeland Security in the USA and the less formalized but no less intense emphasis to counter-terrorism in the UK and Australia illustrate this change in direction, as though existing intelligence, security, defense and counter-disaster agencies were inadequate to deal with a newly recognized—but generally in its risks and impacts recognizable threat. The tragedy of September 11 remains undiminished but that tragedy does not indicate and is not evidence of recently

changed circumstances in the world, nor of a new risk environment. This risk environment remains the same after September 11 as it was before, but now it has been identified and openly acknowledged by the Western world.

Therefore the new approaches to disaster management being developed prior to September 11 have no obvious justification for being changed. If these new approaches are more effective than the command and control paradigm in reducing risk from all other hazards then it is likely that they will be equally effective in reducing the risk of terrorist activities, risk and disaster management being more than response activities but including mitigation and recovery activities as well.

Having said that terrorism is not a new threat but only a newly acknowledged threat, a number of researchers have argued recently that new types of hazards are arising that we could not, or we did not, foresee a decade ago. These include attacks on computer networks, the rapid global spread of disease and climate change. Whether these require new disaster management arrangements remain to be seen. I believe that the existing arrangements generally provide a workable structure for managing emerging hazards but will require some refinement and will require the continuation of the new developments in thinking and practice identified earlier.

But this leads us to ask what risks will we face at the end of another decade. Our capacity to predict the emergence of new risks is less robust than we may like because what we take to be hazards and risks do not necessarily arise independently; often they are identified as new risks as values and standards change. What was considered safe or acceptable at one time may at other times be considered unsafe and unacceptable. We therefore have to predict—forecast, estimate and imagine might be better words—not only the hazard agents we may face in the future (and in the 19th century who could have foreseen ozone depletion) but also estimate the absolute and relative values we will place on these and on the losses they may generate. To make this more difficult hazards exist on a scale that is relative to other social imperatives such as education and health. We have to ask therefore not just what hazards may exist and may arise, and not just how we will value these but also how we will value both losses and the work to mitigate or remediate losses measured against all other social imperatives.

It seems to me that a major issue confronting the achievement of more effective disaster management is emphatically not in itself an issue of more resources or of increased capacity of dedicated resources and arrangements. Rich western countries already have a great depth of

resources to call upon and less developed countries would require such a massive increase in dedicated resources that the attainment of that increase is not feasible and in any case other programs such as health and education should have a greater priority. Instead what is required is better use of the resources that we have and a better—in terms of more efficient (faster, less costly and better planned) and more effective (timely, appropriate and managed well). This in turn requires us to be more imaginative in how we respond.

To be more imaginative should not be taken to indicate quixotic or fanciful behavior. The reverse in fact, it requires us to be more disciplined and rigorous in how we conceive of our field of work, how we identify and analyze issues, how we develop solutions and how we apply and evaluate those solutions.

This is not about doing more with the same but doing different things, and doing things differently with the same resources and skills that we already possess.

How can we apply our imaginative capacity so that we can move beyond the (often very effective but equally often very limited) approach we now have which we conceptualize as "disaster management?"

It requires a degree of creativity and boldness to progress and to think differently. These qualities are often possessed by individuals and groups outside the mainstream or tradition of (disaster) management. Non-Government Organizations, communities, local activist groups and local people have a depth of knowledge and a range of skills that disaster management agencies and Governments have not begun to use effectively. After recent storms and floods in England local people have spontaneously provided support to other members for the community who have been affected, but within the existing arrangements there is no scope for pre-event or post impact support or encouragement to local people.

Involving new partners in disaster management will bring a new potential for more creative and imaginative approaches and will help us move from conceptualizing disaster management just in terms of process, in other words in terms of linear progression, to thinking about much more difficult concepts which actually reflect real world behavior.

In the remainder of this paper I want to touch briefly on a few of the ways in which we may re-imagine the field of disaster management.

Complex Adaptive Systems

The study of disasters has largely been driven by a linear cause and effect model of interaction, whether these are between the social and

the natural environments or within the social environment (and to a lesser extent within the natural environment). But there is increasing evidence, though not as well documented as it should be, that linear and deterministic relationships are not the most important (nor the most interesting) interactions and processes that apply to the evolution of risk and the dynamic inter-relations of risk, society and the environment and which explain why and how disasters occur.

Complexity theory is still in its early stages of application to the study of people and communities but it may promise to have a lot to offer the social sciences in their understanding of how societies respond to risk and to hazard impact.

Complex systems, and these must include social systems where human agency itself suggests a degree of unpredictability and complexity, have the following characteristics:

- The system and system behavior is not reducible to its individual elements
- The system is not easily predictable, and in particular is not predictable from its constituent elements
- Sensitivity to initial conditions may be high and slight changes in these may lead to very different outcomes
- Networks, interactions and processes are more important in understanding the whole than is the understanding of individual elements
- Phase shifts (or threshold changes) occur where a significant change in the system or its behavior occurs often over an extremely short period of time and often are not predictable from given initial conditions.
- Emergence is the phenomenon of the unpredicted development of new elements, characteristics and networks.
- Systems are dynamic, they change over time but do not necessarily change in ways that are foreseeable or are constant, rates of change and directions of change may vary.
- Complex systems have the property of irreversibility—they cannot be "unwound"—and in some cases it may not even be possible to work backwards along a causal network to identify discrete causes and consequences. This relates in part to sensitivity to initial conditions, discontinuous change characterized by phase shifts, and emergence; all of which limit the capacity for retrospection.

Complexity theory is only now influencing social science research and the adaptation of the methodology from a quantitative, natural science epistemology to one that gives greater emphasis to qualitative

assessment, narrative and context is in its early stages. But the promise is great that the methodology and methods can be developed and applied sensitively and rigorously.

On the available evidence we can see hazards and their transformation into disasters as demonstrating many of the elements of complex systems. More particularly social and community responses to disasters do not follow simple or linear paths. Community level reactions to disaster are often not predictable; outcomes are not easily foreseeable either from the pre-disaster state or from our understanding of the hazard potential and the existing community dynamics. Emergence is a particular phenomenon of communities when confronted by a threat or a hazard, especially where new groups and new priorities arise that have no obvious continuity with the local history. In this sense disasters often represent a hiatus in community life that can be exploited for a sustainable future or ignored for a replication of the pre-disaster risks and with the consequent repeated threat to development and well being.

Complexity theory also emphasizes that we need to understand the context and the history of the communities at risk and of the hazards to which they are exposed. Looking into the past and projecting community trends and aspirations in the future is essential if we are to make sense of the present. In the present, risk assessment needs to incorporate a method for evaluating the broader social, political and economic dynamics within which communities exist.

This may sound true enough. However, most risk assessments, and therefore most disaster management planning, is conducted on the basis of short term, ahistorical and linear appreciation. This may serve well enough for individual instances of hazard containment but is counterproductive for the development of longer-term strategies designed to systemically and equitably reduce risk.

Understanding Vulnerability, Resilience and Adaptation

I have said that we were moving away from a simple approach to disaster management that focused only on managing the hazard by assuming that it existed in isolation from the social context in which it occurred. In this progression it is accepted by many researchers and practitioners that the assessment of vulnerability as a measure of susceptibility to damage or loss is a necessary precursor to the development of any set of disaster management arrangements.

There are often difficulties with vulnerability assessment, for example it is not common for researchers and practitioners to rigorously

define which level of social life they are examining and the temporal frame within which they are examining vulnerability. These are more or less technical issues that can be dealt with as our methods become more refined and are applied with more rigor. More serious is the conceptual hiatus that has occurred when vulnerability is considered separately to the countervailing qualities of resilience. We tend to examine the weaknesses of people and communities without looking also at their strengths and capacities. This has led us to focus on protective and reactive efforts rather than development and capacity-building activities which are designed to achieve a sustainable and safe future.

However, resilience is gradually gaining more prominence and this will greatly improve assessments of risks and exposure. Nonetheless both vulnerability and resilience are management measures and it can be argued that they have been derived from the needs of agencies, particularly relief and recovery agencies, to reduce complex issues to manageable bits. There is nothing inherently wrong with this approach—it is very practical—so long as we acknowledge that we are reducing complex and dynamic situations to static elements.

Vulnerability and resilience are respectively indicators of loss potential and capacity to recover from loss and as such are still directly linked to the hazard agent and still direct attention to a hazard-centric approach. We need to move beyond this and to look more closely at the adaptive capacities of communities. What capacity do they have, for example, to learn and to invent and implement long-term positive responses to risk? In the end we should be concerned not simply with reducing vulnerability or improving resilience except as these are means of developing longer term adaptations based on agreed and sustainable standards of health, well-being and livelihood. The focus of our efforts should be less on managing risk and its elements and more on developing sustainable communities.

Adaptation has been a central concept in environmental science and ecology and now the pioneering work of Hewitt, White, Kates, Burton and others needs to be brought back into focus for the contribution it can offer social science (and not just geography or environmental management) in the study of hazards, risk and disasters. Adaptation involves long term, sustainable and social and often physical adjustment of the hazards and the potentially affected community so that a response to the hazard is no longer needed (or is greatly reduced) because the environment and the society are brought into a degree of concordance. For example, such adjustments may involve particular changes to agricultural practices so that they are better suited to local conditions or to land

use management so that housing and other critical infrastructure is not sited in close proximity to hazards, or in individual or social behavior to reduce hazard impact.

Such progress will need to be based on broader principles of respect for the environment, inter-generational equity, equity between different groups and cultures, human rights and acknowledgement of the value of diversity.

Linking the Individual and the Community

We accept that disasters impact at different levels of society, from the individual up to the nation, even globally, and we accept that these levels are inter-related and inter-dependent. However, we have no methods or mechanisms for linking these or of situating them in an interactive network. How do communities support disaster affected individuals? What contributions do individuals or small groups make to the intangibles of community life? Are communities mediators between the individual and national agencies?

Many authors have argued that the risk horizon extends beyond the individual hazard agent and is drawn very far in the distance. Unsafe conditions, dynamic pressures and underlying causes extend out to that horizon. The notion that to understand risk and vulnerability we have to look beyond the hazard agent is widely accepted by researchers but less so by practitioners who are constrained by political priorities and the need to achieve a short term and demonstrated impact on the world. But it raises a compelling question. If the origins of hazard, risk, vulnerability and mitigation extend beyond the policy and organizational arrangements that we characterize as disaster management then how do disaster practitioners and disaster researchers argue for and justify their concern with much broader policy issues? Perhaps we need to re-define what we mean by the field of disaster management. But this is semantic sleight of hand. It still leaves us with an extremely wide and deep field of endeavor that any one individual, or even research center or agency, would be unable to encompass. An obvious answer is that we need to develop stronger and more intimate alliances. This is easy to say, harder to do in practice, especially when research institutions may increasingly be in competition with each other for resources (government grants, research funds, consultancies, students). In any case, many people have been arguing this for a long time without, it seems to me, any significant change in how we work together.

Achieving this broader reach in contributing to the development of policy and strategic management is only the first step. This will give us

the mandate, and access to the expertise, to develop methods of inquiry to understand how individuals and communities and other social entities are linked and how they interact. At the moment in the disaster management community we assume, rather than have evidence for, the "Russian Doll" nesting hierarchy of the web of different social levels. But much of our policy and much of our practice is presaged on the belief that there are substantive links that are amenable to manipulation and development. Identifying, understanding and developing those links is a pressing need for disaster management given the (recent) emphasis on local and community participation in the planning and management processes.

Risk Assessment and Culture

Risk assessment as a comprehensive and systematic process of identification, evaluation and priority setting is well established in disaster management practice. It has allowed us to set out issues in a more transparent fashion, to allow comparison between different risks, different areas and different communities and is moving us towards a view of the risk landscape that permits greater local contribution to policy, planning and management.

But we are still strongly attached to a reductionist approach, often almost a mechanistic method that ignores the culture, values, norms and beliefs of the communities that we are examining. This act of ignoring or avoidance occurs for a number of reasons. As researchers and practitioners we often do not have access to the tools to assess intangible elements of personal and community life. Social science methods are essentially still the provenance of a group of researchers who exist on the periphery of disaster management, especially in policy development and strategic management. Consequently the methods of the sociologist, anthropologist, psychologist, philosopher and social worker are not readily accepted by disaster management agencies.

The hazard-centric approach with its emphasis on reductionist, natural scientific methods is still the dominant approach, particularly in the higher echelons of response agencies, and this continues to bias research and investigative perspective. This approach has served us well but needs to be balanced by alternative and complementary methodologies. Disaster management practitioners have been slow in acknowledging that their own views and methods are located in and reflective of particular values and so have found it difficult to recognize and then critically query their socially weighted research methods and their assumptions about what constitutes "risk" and "safety."

What disaster management agencies identify as hazards and risks may not be seen as such by local communities who often put greater emphasis on other threats to sustainable and satisfying social life. Our views on proper governance, family relationships, local support networks, religion and a host of other issues will derive at least in part from our own personal and professional history. This blind spot is an impediment to an acceptance on equal terms of the beliefs and values, and opinions and knowledge of local people.

This does not mean that local communities are always astute and judicious in their assessments of risk and remediation strategies. But it does indicate that we come to risk assessment with a set of values that may unintentionally and blindly bias against the capacities of local people. It indicates too that with variant and often competing perspectives the assessment process itself and the resulting risk management program will most often be a negotiated settlement arrived at by the engaged parties hopefully having a status that equitably recognizes their competence and their interest in the risk management program.

The archetypal bias is to impose a Developed world perspective on Developing world communities. But it applies in other areas also including gender relations and religion. This bias can most obviously be seen at the moment in the response of a number of Western countries to the Islamic world. Bias is actually too weak a word. The developed world perspective is in many ways a traditional perspective of a particular group of power brokers and these typically have been Christian, wealthy, white males. I do not want to demonize this group, but their way of viewing the world has framed other perspectives and essentially imprisoned other ways of seeing and other interpretations in a dominant and domineering paradigm. This dominant approach is not without its own internal critical assessment process and nor is it unreflective, but its own momentum and its own success in re-configuring the world to meet its own needs does give it the inertia of a juggernaut. Equally valid interpretations of hazard and risk, and equally worthwhile alternative perspectives need to be encouraged. Encouraged because they have their own validity and truth for particular groups; encouraged because ways of seeing the world may not be transferable; encouraged because diversity is good in itself; and encouraged because no group has an exclusive grasp of the various realities that make up social existence. This is seen clearly where the needs of women, minority ethnic groups and the disabled (among others) are often, and often unintentionally and without awareness, excluded from the disaster management process with the consequence that inequities and inefficiencies and unmet needs arise and may be sustained.

If the world of hazards and risks is in part at least socially constructed then we need to ask ourselves which "worlds" we as disaster researchers have constructed and accepted as objects of research and action.

Finally there has been a general lack of understanding by many disaster managers that the elements at risk include not only lives, houses and infrastructure but also include for many people equally or even sometimes more important intangibles such as religious belief, the rules of social life, family and group support, the natural environment, hopes, expectations and history and the expectation of the future. These are entities that can be lost or damaged by disasters, and even by the disaster response and recovery processes where these are managed insensitively. Nevertheless few risk assessment processes substantially take these issues into account in any risk assessment and are rarely considered when developing disaster management programs. Yet these are the very things that are most precious to people and which, once damaged or destroyed, cannot be replaced.

Trans-national and Trans-generational Risk Management

In recent years we have made some progress in acknowledging cross-boundary risk transference, usually from the developed to the developing world and often associated with industrial and commercial activity, as well as cross-boundary effects and impacts of industrial activity where this leads to environmental damage. Acid rain and ocean oil spills are examples of cross-boundary impacts where the area affected is not the area generating the hazard, in this case environmental pollution and associated health risks. Other examples abound. The burning of native forests in Indonesia has caused at times significant air pollution in Malaysia and Singapore, as well as increasing flood and other hazards locally and engendering a trans-generational risk of significant and possibly irremediable ecological damage. The effects of the damage to the Chernobyl nuclear power plant were felt across Europe and will be felt across many generations of the nearby inhabitants of the plant.

Trans-generational risks also exist with the industrial and everyday use of new chemicals which may cause genetic damage. This risk extends beyond the traditional rapid onset accident of a chemical spill or leak to the frequent use of persistent products whose toxicity is cumulative.

Environmental change, and in particular global climate change, is the highest profile example of trans-national and trans-generational hazard impact where the consequences will be felt for many generations

(indeed they may not be reversible) and where the excessive emission of greenhouse gases was originally and is still largely caused by Northern hemisphere industrialized nations.

Managing these processes—it seems hardly appropriate to call them events—is beyond the capacity of any single government and beyond the capacity of any single region. While individual countries may periodically take a leadership role, they cannot alone stem or reverse the impacts of rapid, anthropogenic environmental change. The developing world is understandably reluctant to curtail its emissions where such restraint would seem to put them at a social and economic disadvantage with the developed countries. In turn, the developed world is unwilling to sacrifice its already opulent living standards for the sake of future generations.

It is difficult to see what global institutions or global regulatory system could be applied to manage and restrain these processes given that they are embedded so deeply in the economic, political and social systems of countries and of commercial and industrial systems which, some argue, have a life of their own that supervenes that of the nation-state.

It is unlikely that considered and deliberate government policy will effect sufficient change sufficiently quickly in the risk environment, particularly in the developing world. Efforts will continue to be made but the problem is so great that it is beyond the capacity of individual governments, or even public-private partnerships, to achieve significant, necessary change. Change, if it occurs, will be driven by local people; through community organizations; through new alliances using imaginative methods (here I think of the protestors in Seattle and Melbourne to the World Trade Organization). It is communities that will adapt to, and in turn modify and mitigate, hazards.

However they are driven, these changes will have to include transnational policies and programs to deal with disasters and in turn this will require mechanisms for the development of legal protocols, monitoring and enforcement. This may be outside the scope of the disaster manager—but then who else will advocate for these issues. And in whose bailiwick does lead responsibility fall, given that this is at the heart of the problem that such trans-national and trans-generational planning and management is at the moment no one's responsibility?

Across border issues, or out of jurisdiction issues (on the high seas, in space, or in the Antarctic) are difficult enough to deal with. Transgenerational issues will be more problematic because legal and ethical systems cannot easily deal with rights and responsibilities that extend into the distant future. Genetic damage that replicates itself across generations, toxic chemical or biological agents that render areas

uninhabitable are difficult to manage and become more so as time elapses; although the damage remains, the cause and those responsible are forgotten. Disaster management at this time has no arrangements in place to deal with anything other than short-term issues. Mitigation activities are directed at just a few years into the future (and climate change due to global warming is no exception, all the efforts so far have been to contain the "inevitable" impact rather than to develop hazard mitigation strategies or to develop adaptive strategies.)

This therefore compels us to ask the question of what the provenance and authority of disaster management is in these cases? Should disaster management address long term and structural issues or should it be the canary in the mine for other agencies and programs? Does disaster management as a discipline and a profession have unique skills that it can share with or lead others? Is disaster management a systematic area of enquiry in its own right? What can we learn from other disciplines—environmental science and ecology, human rights, development studies?

These issues I have touched upon are just a few of the many critical matters that I think face contemporary disaster management. At least disaster researchers and practitioners and policy makers as well as local communities need to reassert the approach that was gaining greater strength prior to September 11, 2001, which placed emphasis on alternative priorities and alternative decision-making processes. Further, perhaps we need to be more imaginative and more resourceful in looking at the hazards which we face and which we create and in developing means of mitigating these. This may well require us to develop a much longer temporal perspective for risk management—looking at generations rather than a few years into the future; looking more broadly at regional and global consequences rather than national consequences; and examining ways in which we can share knowledge—vertically from governments with communities; across different disciplines; and from formal disciplines to traditional knowledge.

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