DECISION-MAKING IN EMERGENCY ORGANIZATIONS UNDER CONDITIONS OF CRISIS AND UNCERTAINTY

SYNOPSIS

The intention of this paper is to gain some insights into the process of Australian crisis management under conditions of uncertainty in the specific context of disaster. The paper is divided into four sections. Section 1 highlights the general point that organizational decision-making under conditions of uncertainty is dependent to a large degree on (i) the type, function, and mission of the organization; and (ii) the experience, perceptual qualities, and intentions of the organizational actors involved. Section 2 presents a brief discussion on decision-making under uncertainty in the wider organizational context. Section 3 outlines some specific problems relating to uncertainty in the disaster management context. Within this context, Section 4 introduces the argument that the level of risk-taking within contemporary Australian counter-disaster agencies is low, and that disaster managers could be considered as 'risk-averse'.

1. Introductory Comments.

One of the fields of organizational behaviour which is presently receiving increased interest in the research community is decision-making under conditions of uncertainty. Interest in this particular area has been generated by such spectacular events as the 'Challenger' space shuttle explosion, the 'Piper Alpha' oil-rig explosion on the North Sea, the stock market crash of 1987, several commercial airline accidents and crashes,[1] and the 'Spirit of Free Enterprise' ferry capsize (in which a charge of corporate manslaughter has recently been laid against P&O, the owners of the ill-fated vessel). Added to this list are many less dramatic but nevertheless equally de-stabilising events within the corporate world such as unexpected product failures; sudden market shifts; cash or credit restrictions; industrial relations crises particularly wildcat or prolonged strikes;[2] hostile takeovers; unexpected negative shifts in public perception and support towards specific organizations; the introduction of and changes in government regulations; extortion; unsettling management succession; technological developments; and acts of terrorism directed against the corporate organizational world.

All of these events impose conditions of uncertainty on the focal organization which can also be transferred to the organization's input- and output-organization set. They can place organizations 'at risk'. The more dramatic ('worst case') instances of these scenarios might contribute to organizational and/or network failure, decline and eventual termination ('organizational death') of the enterprise. Less significant outcomes to these changing conditions of uncertainty might result in suboptimal organizational performance which, in turn, could lead to a slow bleeding of the enterprise, as public/market confidence is reduced, or resources are directed away, or recruitment drives fail to attract quality personnel, and so on.

These scenarios and the analytical frameworks being developed around them are part of the growing field of current research into 'corporate crisis'.[3] Much of this work has its origins in the more focussed research of disaster studies, where the emphasis has been on developing an understanding of large-scale

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[1] For instance, see the paper by Nick Pidgeon, this volume.

[2] In the specific context of unanticipated industrial crises caused by key worker groups, the concept of 'environmental jolt' is apposite. See,
A D Meyer (1982), Adapting to environmental jolts. **Administrative Science Quarterly**, 27: 515-537..

[3] A special 1985 edition of **The Columbian Journal of World Business**, 22(1) provides a useful illustration of the range of studies to which crisis management studies is currently being applied.

collective stress/social crisis impact. Within the disaster context, planning for and coping with broad spectrum crises, as well as sustaining organizational and network preparedness in the context of emergency management, requires assessing constraints imposed by geography, resources, and time against the essential tasks of performance under acute conditions.[4] The focus of much this research has been on the organization.

A complicating factor relating to the 'organization' side of the equation is that while organizations have common characteristics which permit them to be considered as one type of social phenomenon, the concept of 'organization' masks many different types of structural and processural arrangements. Thus, there is a need to differentiate among organizations. As Hall correctly points out, "common sense tells us that large and powerful national or multinational organizations are different from small local organizations" (1987:35). Thus, organizations come in different sizes and have different types of ownership. Equally varied are the myriad different tasks organizations are created to perform, under equally variable conditions and circumstances. This leads to some important questions for the researcher. Should we, for instance, anticipate the likelihood that differences between decision-making styles and strategies may exist between types of organizations? Will decision-making strategies be transferable between different organizational contexts?

There is also the human factor. Because humans are the single most vital - and arguably the most unpredictable - ingredient within any organization, the personality of individuals comprising the organizations work-force, and the effect the 'mix' of different personalities can have, the human factor can profoundly influence not only what is regarded as an uncertain event, but how the organization as a whole copes with, and responds to both certainty and uncertainty.[5] This is

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[4] The following four books, which provide excellent summaries of the disaster research field, also illustrate the relationship between this area and the current field of corporate crisis research:

Drabek T E (1986), **Human System Responses to Disaster: An Inventory of Sociological Findings.** New York: Springer-Verlag.

Dynes R R (1970), **Organized Behavior in Disaster.** Lexington, Mass: D C Heath & Company.

Mileti D S, T E Drabek & J E Haas (1975), **Human Systems in Extreme Environments: A Sociological Perspective.** Boulder, Colorado: Institute of Behavioral Science. Program on Technology, Environment and Man. Monograph #21. The University of Colorado.

Quarantelli E L (ed) (1978), **Disasters: Theory and Research.** Beverley Hills, Calif: Sage.

[5] In this context, the concepts of 'organizational culture' and 'organizational climate' are significant.

particularly relevant in relation to senior decision-makers[6] and/or to the organization's dominant coalition.2[7] To a significant degree however, the role expectations of all positions are largely determined by the broader organizational context which helps to define the parameters of individual actions, and which reduces many possible idiosyncratic actions that might otherwise become troublesome. However, under conditions of uncertainty, the prescriptions and proscriptions associated with a particular position may not be explicated (indeed, they may not have been anticipated), and hence guidelines and precedents are likely to be lacking. In this context, Smart and Vertinsky's comment that

> "uncertainty, complexity, and other factors are not constant features of organizational environments, but are dependent on the prior beliefs of individual members" (Smart & Vertinsky, 1984:200)

is very salient. According to these researchers, individual tolerances for ambiguity and uncertainty thus become critical factors in determining organizational responses to environmental stimuli (p.201). To complicate matters further, it appears as though our attitudes to uncertainty, risk and hazards are culturally bound.[8] Hence, similar outcomes may be attained through very different decision processes. Thus, assumptions about human nature must be considered in organizational analysis.

Any discussion about uncertainty must also make reference to risk, risk-taking propensity, and probability. These concepts will not be discussed at length here because they have been dealt with in a much more competent and complete manner by

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[6] See for example,
M F R Kets de Vries & D Miller (1987), **The Neurotic Organization: Diagnosing and Changing Counterproductive Styles of Management**. San Francisco: Jossey-Bass.

[7] See, for example,
Mintzberg H (1983), **Power In and Around Organizations**. Englewood-Cliffs, New Jersey: Prentice-Hall.

[8] See for instance,
R R Dynes (1978), A comparative study of disaster: A social organizational approach. **Mass Emergencies**, 1. p 21-31;
R Kates (1971), Natural hazards in human ecological perspective: Hypotheses and models. **Economic Geographer**, 47. p 438-451;
W I Torry (1979), Natural disasters, social structure and change in traditional societies. **Journal of Asian and African Studies**, 13(3-4). p 167-183;
B A Turner (1981), Organisational responses to hazards. Pp. 49-85. In H Kunreuther (ed), **Risk: A Seminar Series**. Luxembourg, Austria: IIASA Collaborative Proceedings Series #CP-82-S2. International Institute for Applied Systems Analysis.

Smithson,[9] although a few points will be made here for the sake of completeness. Risk is an uncertainty to which a probability can be assigned. Probability is important in decision-making because it provides a mechanism for measuring, expressing, and analysing the uncertainties associated with future events. Probability is measured on a scale from 0 to 1. A probability near 0 indicates that the event is very unlikely to occur. Hence, the chance of successfully scaling Mt Everest unaided within one hour has a probability of 0. A probability near 1 indicates that the event is almost certain to occur. The chance of dying therefore has a probability of 1. Other probabilities between 0 and 1 represent varying degrees of likelihood that the event will occur. In the final analysis, assessment of risk is subjective. In the context of coping with organizational uncertainty, risk is related to the propensity for decision-makers to adopt either a risk-taking or a risk-averse stance. We will refer back to this point at a later stage in the paper.

To summarise the discussion so far, what the preceding paragraphs have tried to show is that when one seeks to find out how organizations cope with uncertainty, or for that matter how organizations cope, react to, or respond to anything, one must bear in mind that the concept of 'organization' masks considerable diversity. Furthermore, organizational actions are the result of decisional outcomes made by organizational actors who are bounded by personality, position, experience, and culture. Thus, considerable heterogeneity exists between actors abd this implies a diversity of decision-making strategies and outcomes within organizations..

2. Uncertainty and Organizational Decision Making.

"Uncertainty," wrote James D Thompson, "appears as the fundamental problem for complex organizations, and coping with uncertainty as the essence of the administrative process" (1967:159). Pfeffer (1981) notes that the emphasis on uncertainty coping in organizations grew originally out of the work conducted by Cyert and March and was extended by Thompson. As Hickson and his colleagues noted, "organizations are conceived of as interdepartmental systems in which a major task element is coping with uncertainty" (1971:217). This perspective has been pursued in the literature along various themes. Uncertainty coping is seen as a critical task or activity within organizations, in part because organizations are viewed as social entities in which uncertainty is reduced through the use of standard operating procedures, forecasting, buffering, and other activities that permit the rationalisation of organizational activity, while at the same time keeping the organization adaptive to external constraints (Pfeffer, 1981).

Practically every social scientist who has studied decision-

[9] See the paper by Mike Smithson, this volume.

making in the organizational context emphasises that making critical decisions under circumstances where crucial information is absent or under which the possible outcome is unknown ('strategic choices') is a very fuzzy business. The 'muddling through' process that many analysts suggest is characteristic of much routine organizational decision-making is inappropriate when such vital decisions have to be made. Strategic choice is pervaded by uncertainties, doubts, complexities, and complications. These conditions are exacerbated when the threatening situation is novel, and hence previous experience is not available. Under these circumstances, it is appropriate to define uncertainty in terms of the degree to which future states of the world cannot be accurately predicted (Feldman, 1988). In this respect uncertainty is the opposite of information, whereby information can be regarded as a condition in which knowledge about causal relations is known by the decision-maker.

Uncertainty and complexity are connected. There appears to be consensus amongst behavioral scientists that humans lack the capability to deal with complexity (see for instance, Gioia, 1986; Janis, 1985; Tversky & Kahneman, 1974; Van de Ven & Hudson, 1985). Janis, for instance, remarks that as decision complexity increases solutions become increasingly error-prone, with means becoming more important than ends, and with rationalisation often replacing rationality. Research conducted by cognitive psychologists on the capacity of humans to handle complexity suggest that individuals create stereotypes as a defence mechanism to deal with complex situations. As decision complexity increases beyond a certain point, people become more conservative and apply more subjective criteria, which are further and further removed from reality.[10] There are, of course, variations to this general assertion. Smart and Vertinsky (1984) cite studies which found that: corporate managers who perceived their environment to be complex and dynamic (and therefore uncertain) tended to employ more comprehensive strategies; that managers in more uncertain environments tended to assume greater risks and employed more tentative strategies than managers in less turbulent environments; and that managers in more uncertain environments attempted to anticipate events and implement preventive actions rather than merely respond to events that had already occurred.

When confronted with uncertainty, Pfeffer suggests that decision-makers tend to rely on what he refers to as 'influence-based criteria', such as similarity, prior experience, and advice from significant others, because for the individual making the decision,

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[10] Miller (1956) states that "for the average person, stereotyping is likely to begin when seven (plus or minus two) factors, steps, or individuals are involved in a decision - this number being the information-processing capacity of the average individual." In, Van de Ven & Hudson (1985:441-2).

> "these bases of discrimination are one of the few ways to make the decision and because choosing on such a basis provides more certainty and confidence in the decision" (Pfeffer, 1981:77).

Reliance on this method however, indicates how shortsighted decision-making can be. Even when a decision-maker is vigilant erroneous appraisals and choices are certain to be made if one relies on rules of thumb and other cognitive shortcuts:

> Considerable evidence from psychological research shows that all sorts of people often make various types of cognitive errors, such as over-estimating the likelihood of events that can be easily and vividly imagined, giving too much weight to information about representativeness, relying too much on evidence from small samples, and failing to discount evidence from biased samples. All these types of errors probably increase whenever a person's motivational state is not conducive to doing the difficult mental work required to prevent sloppy, uncritical thinking and premature closure. (Janis, 1985:185)

In an interesting article titled, "Acting First and Thinking Later", Starbuck expresses a similar concern:

> People, including organizations' members and top management, act unreflectively nearly all of the time, because they adhere to well-established behavior programs. Indeed, most organizational actions originate in action generators, which are automatic behaviour programs that are activated by job assignments or clocks rather than by informative stimuli (Starbuck, 1985:338).

The assertion here is that people and organizations act consistently in that their actions resemble previously successful actions. The suggestion by Starbuck is that most actions repeat familiar patterns and most innovations are no more than incremental variations on familiar themes. Within the organizational context, Starbuck asserts there is an inevitability to this pattern because not only do people, on the whole, act unreflectively, but senior decision-makers have vested interests which require stability and that the settings in which actions take place are, on the whole, stable.[11] Starbuck further argues that people make the majority of their decisions after they have begun to act and have seen some of the consequences of their actions.

Related to this is the argument presented by Weiss (1980) that much of the literature relating to organizational decision-

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[11] The observation by Van de Ven & Hudson (1985) that individuals are very efficient processors of routine tasks lends support to Starbuck's 'unreflective thesis'.

making inaccurately portrays the reality of events. Weiss asserts that a predominant perception given in the literature suggests the existence of a group of authoritative officials who become aware of a problem or an opportunity that falls within the organization's jurisdiction, and which requires action; that this group then sets about considering all options (both advantages and disadvantages) for dealing with the situation, and then makes a conscious choice. Weiss attests that the truth is different: Many decisions 'happen' without the acknowledged responsibility; without the boundedness of time and events; without purposiveness; without calculation; or without having any perceived significance (p.402). Be this as it may, all organizations as a matter of routine must learn to identify and deal with minor uncertainties. Under some circumstances, minor non-routine events may create major organizational crises if they are misinterpreted, remain unattended or are not dealt with appropriately.

Just how the organization adapts to 'environmental jolts' of this type is largely determined by the reactions of key decision-makers. In terms of the adaptive process, the reactions of senior organizational personnel appear to depend on at least three factors: the perception of the individual decision-maker; the goals of the organization; and the private goals of the specific individual/s responsible for executing the required action. Recent research on social cognition has provided some insights into how decision-makers analyse changing environments. Of particular interest is a paper published by Kiesler and Sproull (1982), which examines how managers fail to notice, or misinterpret, available information about the existence of a potential threat.

Kiesler and Sproull argue that problem-sensing is dependent on noticing, interpreting, and incorporating stimuli. Noticing 'problem stimuli' requires the individual to distinguish this particular stimuli from all other stimuli. For organizations, incoming stimuli should be channelled to an appropriate actor (the 'receiver') who acts on behalf of all the organization stakeholders (rather than on purely individual interests), and is able to construct meaning for, or assign meaning to the stimuli. The receiver then determines the significance of the stimuli in relation to the organization's task domain, response repertoires, and current system of functional priorities. Kiesler and Sproull state that most of the work being conducted on how problems go unnoticed in the organizational context focus on 'detection errors'. That is, although relevant material about a threat is available, "other information has a stronger signal and therefore obscures either the existence or meaning of the relevant [threat-carrying] information" (1982:549).

A related factor associated with organizational response to uncertainty is highlighted in a recent discussion by Weick (1987). Citing Buckley's concept of 'requisite variety', Weick suggests that,

> the variety that exists in the system to be managed exceeds the variety in the people who must regulate it. When people have less variety than is requisite to cope with the system, they miss important information, their diagnoses are incomplete, and their remedies are short-sighted and can magnify rather than reduce a problem (Weick, 1987:112).

It is necessary to point out in this context that organizational policies and procedures often come into being without systematic consideration being given of the relevance of the policy, or whether alternative or substitute policies might have been more suitable (see Weiss, 1980). In addition it is not uncommon to discover that the soundness of an original policy or procedure has not been thought through or tested for current relevance. The implication this has regarding organizational response under conditions of uncertainty can be profound: If, as the literature appears to indicate, it is the case that organizational response to uncertainty is heavily influenced by decision-making repertoires that are contained within the specific organization's frame of reference, and if - for some organizations - those repertoires are inappropriate, then for those organizations decisions based on their current store of policies and procedures may jeopardise rather than protect the organization. Such a possibility should not be dismissed, although it is probably unlikely. In any case, it is obviously a situation that would be extremely difficult to verify.

3. Decision-Making Uncertainties in the Emergency Management Context.

Two contextualizing factors need to be made when considering the Australian scene. The first is that by and large, most Australian disaster-relevant agencies, if they have had any experience of the type of large-scale social crisis event that are of disaster proportion (and most have not), then that experience is largely derived from natural hazard impacts. Examples of such events for the period 1986-89 in which mobilisation of the disaster-relevant organizational network (DRON)[12] was required are: major flooding in Sydney during 1986 and 1987[13]; flooding in Western Australia, Northern Territory,

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[12] For a discussion of the composition and function of the Australian disaster-relevant organisational network (DRON) refer, N R Britton (1984), Australia's organized response to disaster: Background and theoretical analysis. **Disasters**, 8(2):124-137.

[13] See J Handmer (1988), The performance of the Sydney flood warning system, August 1986. **Disasters**, 12(1). p37-49.

Queensland and northern New South Wales during 1988[14]; and again in northern New South Wales, 1989[15]); and tropical cyclone impact in 1986, 1988, and 1989 in the North Queensland area.[16] The fact that these are all 'natural' hazard impacts should not be regarded as correctly portraying the potential hazardousness of the Australian social landscape. Rather, this list highlights the argument that the operational experience Australia's disaster management system is strongly influenced by knowledge gained from a specific types of social crisis episodes (that is 'natural' hazard impact). This emphasis should not however, be taken to suggest that a problem may exist when emergency services are required to confront technologically-induced disaster events (Quarantelli (1988) summarises this message will). The point being made is simply that Australia has not yet been impacted by large-scale technically-induced emergencies. The unfortunate reality is however, that this will inevtiably change over time.

The second contextualizing factor relates to the fact that there is a very real dearth of systematically-acquired knowledge concerning organized behaviour in the disaster context. There are three main reasons for this:

1 most studies on Australian disasters are descriptive rather than analytical;

2 most of the studies have focussed on the hazard agent rather than on the social, political and economic consequences, and certainly not on organizational or administrative actions;

and

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[14] See N R Britton (1989), **Flooding on the Clarence River: The Experience of the Emergency Services, April, 1988.** Townsville, Qld: Centre for Disaster Studies. Disaster Investigation Report #8. James Cook University.

[15] N R Britton & C M Moran (forthcoming), **Grafton Revisited: The Impact of a Second Major Flood Event on Local Community Emergency Services.** Sydney, NSW: Disaster Management Studies Centre. Crisis Investigation Report #1. Cumberland College of Health Sciences.

[16] See for instance,

J Oliver & C Wilson (1986), **Cyclone Winifred: Impact Study Report.** Mt Macedon, Vic: Research Report #1. Australian Counter Disaster College;

E Butterworth (1989), **Cyclone Winifred: The Socioeconomic Aspects.** Townsville, Qld: Department of Behavioral Sciences. James Cook University;

G J Webb (Compiler) (1989), **Cyclone Aivu: A Detailed Account of the Procedures Followed Prior to, During and in the Aftermath of Cyclone 'Aivu'.** Ayr, Qld: Council of the Shire of Burdekin.

3 the majority of the research that has been pursued has been undertaken by earth and physical scientists, which accounts for much of the systematic over-representation leading to the first two characteristics.

Where material is available about the counter-disaster response system, a sizeable proportion of it has been written by senior officials within the agencies themselves and comprises either general descriptions of their organization, or else are official statement of the organizations functions (see Britton, 1989). There are only a handful of studies that relate specifically to the analysis of the disaster organizational network, and within this sub-set the administrative aspects of disaster management has not been an area of principal concern. Nevertheless, some observations can be made about Australian disaster management practices.

Janis and Mann have suggested that two pertinent factors exist to distinguish disaster crisis decision-making from the decisions and actions that characterise everyday life events. These two conditions are that under situations of disaster there is much more at stake and that time is usually at a premium (1977:36-7). Under the first point the entire social system is under threat[17] including, as Janis and Mann point out, the personal survival of the crisis decision-maker (1977:36). Under the second factor, the time available to make crucial decisions under conditions of disaster is often extremely limited. Associated with both these factors is the considerable responsibility levelled at decision-makers within the disaster management agencies. Apart from the pressure-cooker environment of governments, the awesome narrowing of decision-making responsibility probably has no counterpart in civilian life. Organizations with responsibility for the welfare of society under crisis conditions will almost certainly have an increase in demands at a time when the two qualities identified by Janis and Mann are present. Drabek's recent inventory of sociological disaster findings presents a useful general description of organizational response to disaster:

> organizational decision-making in crisis has several distinguishing characteristics. The rate of decision making increases, as does the number of decisions made, particularly at the lower levels of the organizations. There seems to be less consultation among organizational members, and such individual autonomy means that organizational personnel and resources are committed quickly, often outside the organization's previous domain of competence. Organizations usually lose autonomy when coming under the control of new 'coordination' arrangements; within organizations, sectors with high crisis relevance gain decision making autonomy (Quarantelli & Dynes, 1977:24; in Drabek, 1986:162).

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[17] This condition is, of course, another distinguishing factor, although it was not a feature noted by these researchers.

During these extreme social crisis episodes, organizational decisional uncertainty is also at its most extreme, and the propensity for decisional stress is at its highest. It is not unusual, under these circumstances, for the decision-making capability of some organizations to alter substantially and, in some instances to decline. This is especially likely when the crisis episode relates to actual or threatened disaster impact. In terms of preparation and the ability to cope, disasters present formidable difficulties for organizations. A disaster is an external collective stress agent which precipitates a variety of extreme environmental changes, and to which public safety organizations are created to respond. Disasters are, by definition, low-probability, non-routine, yet high-impact events and the organizational work that must be performed in this context is in many instances also of a non-routine nature. The quantity, diversity, and even the quality of resources necessary to mitigate disaster are not usually known until the event has taken place. Under the present state of knowledge disaster management organizations are likely to lack vital information such as the approximate timing of impact; the place, including a specific location that will become the impact site; the anticipated intensity, or magnitude of the event; the scope of impact; and the 'fall-out' or effect of impact. These conditions characterise the uncertainty and the complexity of the situation. From the perspective of the individual organization, they raise the question of whether or not the specific agency will be able to adequately perform its disaster-relevant mission.

Some observers state quite categorically that decision-making within disaster-relevant organizations is not sustained at a satisfactory level. Petak, for instance, asserts that in the context of disaster management within the USA the level of perception and understanding of the significance of hazard risks is comparatively low, resulting in

> "a high degree of suboptimal behavior by policy-makers at the expense of total system optimization" (Petak, 1984:294).

It may be desirable that disaster-relevant organizations respond to hazards in a rational manner, but as Turner (1981) points out, it is a practice that is rarely achieved. After undertaking a series of retrospective studies of large-scale accidents in the United Kingdom, Turner discovered that the process by which crisis-relevant organizations deal with hazards is discontinuous. A crucial factor leading to discontinuity within the decision-making activity, both within specific organizations and in the network as a whole, was the presence of a hierarchy of decision-making groups in which differential degrees of power or influence was exerted.[18] Turner concluded

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[18] Britton (1985) discovered a similar situation existed within the Australian disaster-relevant organizational network.

that organizations try to cope with uncertainty by

> "means of the alternation of an imperfect intelligence gathering process coupled with discontinuous surprises of a more or less catastrophic nature" (Turner, 1981:53).

The reasons why crisis decision-making seems to lurch into and out of appropriateness is due to factors such as the narrowing of the cognitive processes; information distortion; groupthink; rigidities in programming; lack of preparedness for decisions about crisis issues; and inadequate implementation of decisions (Turner, 1981:58).

The independent observations by Petak, Turner, and Britton find further support in a review article by Sorensen and Mileti. In their discussion on uncertainty in decision-making for organizations with a warning task, Sorensen and Mileti concluded that,

> decision-making uncertainties can and have affected all levels of government organizations at virtually every organizational decision point in the decision-making process in warning systems (Sorensen & Mileti, 1987:55).

In this context, Comfort suggests that under conditions of disaster, uncertainty can be reduced through the implementation of a wider information search system together with the generation of feasible action alternatives. This involves elements of innovation within the disaster-relevant decision-making framework:

> In organizations operating under conditions of uncertainty and complexity, the management of information is critical to their capacity to act effectively. ... Under conditions of uncertainty, the types of information search, processing, and dissemination procedures determine both the degree of organizational learning and the degree of organizational control in interdependent action (Comfort, 1988:18)

In the light of what has been stated in this paper thusfar, Comfort's assertion that innovative decision-making is a fundamental prerequisite for the development of appropriate disaster management strategies seems to be a fair comment. To conclude the current discussion, a brief discussion of the evidence pertaining to the level of innovation within the Australian disaster management context.