

## ENACTED SENSEMAKING IN CRISIS SITUATIONS<sup>[1]</sup>

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### ABSTRACT

Sensemaking in crisis conditions is made more difficult because action that is instrumental to understanding the crisis often intensifies the crisis. This dilemma is interpreted from the perspective that people enact the environments which constrain them. It is argued that commitment, capacity, and expectations affect sensemaking during crisis and the severity of the crisis itself. It is proposed that the core concepts of enactment may comprise an ideology that reduces the likelihood of crisis.

### INTRODUCTION

Crises are characterized by low probability/high consequence events that threaten the most fundamental goals of an organization. Because of their low probability, these events defy interpretations and impose severe demands on sensemaking. The less adequate the sensemaking process directed at a crisis, the more likely it is that the crisis will get out of control. That straightforward proposition conceals a difficult dilemma because people think by acting. To sort out a crisis as it unfolds often requires action which simultaneously generates the raw material that is used for sensemaking and affects the unfolding crisis itself. There is a delicate tradeoff between dangerous action which produces understanding and safe inaction which produces confusion. The purpose of this article is to explore the complications of that tension.

Two exhibits highlight the central issue. The first involves explorers, the second involves the last paragraph of Union Carbide's procedure for dealing with gas leaks.

(1) 'An explorer can never know what he is exploring until it has been explored' (Bateson, 1972, p. xvi).

(2) 'The [Bhopal] plant's operating manual for methyl isocyanate offered little guidance in the event of a large leak. After telling the operators to dump the gas into a spare tank if a leak in a storage tank cannot be stopped or isolated, the manual says: "There may be other situations not covered above. The situation will determine the appropriate action. We will learn more and more as we gain actual experience"' (Diamond, 28 January 1985, p. 7).

Bateson's description of exploring illustrates the key point about sensemaking. The explorer cannot know what he is facing until he faces it, and then looks

back over the episode to sort out what happened, a sequence that involves retrospective sensemaking. But the act of exploring itself has an impact on what is being explored, which means that parts of what the explorer discovers retrospectively are consequences of his own making. Furthermore, the exploring itself is guided by preconceptions of some kind, even though they may be generic preconceptions such as 'this will have made sense once I explore it although right now it seems senseless' (Weick, Gilfillan and Keith, 1973).

The explorer who enacts a sensible environment is no different from the operator of a console in a chemical plant control room who confronts a puzzling assortment of dials, lights and sounds and discovers, through action, what the problem is, but in doing so, shapes the problem itself (see McHugh, 1968, for an analogue). Both the explorer and the control room operator understand the problem they face only after they have faced it and only after their actions have become inextricably wound into it.

Imagine that the control room operator faces a gas leak and the admonition from the Union Carbide procedure cited above. Carbide is right when it says experience is the source of learning, but it is wrong when it says, 'The situation will determine the appropriate action'. People often don't know what the 'appropriate action' is until they take some action and see what happens. Thus, actions determine the situation. Furthermore, it is less often true that 'situations' determine appropriate action than that 'preconceptions' determine appropriate action. Finally, the judgement of 'appropriateness' is likely to be a motivated assessment constructed partially to validate earlier reasoning. These corrections show not so much that Carbide's statement is in error, as that Carbide's assessment is incomplete because it misrepresents the contribution of action to human understanding.

Understanding is facilitated by action, but action affects events and can make things worse. Action during crisis is not just an issue of control, it is an epistemological issue. If action is a means to get feedback, learn, and build an understanding of unknown environments, then a reluctance to act could be associated with less understanding and more errors.

In the remainder of this article I will enlarge these introductory ideas in three ways. First, I will describe the concept of enactment that drives this analysis. Second, I will discuss how cognition and understanding are affected by commitment, capacity, and expectations during crises. I conclude with a brief survey of implications for crisis management.

## THE ENACTMENT PERSPECTIVE

### *Assumptions of the Enactment Perspective*

The concept of enactment is a synthesis, tailored for organizational settings, of four lines of scholarship: self-fulfilling prophecies (E. E. Jones, 1986; R. A. Jones, 1977; Snyder, 1984), retrospective sensemaking (Staw, 1980; Weick, 1979), commitment (Salancik, 1977; Staw, 1982), and social information processing (Salancik and Pfeffer, 1978). The term 'enactment' is used to preserve the central point that when people act, they bring events and structures into existence and set them in motion. People who act in organizations often produce structures, constraints, and opportunities that were not there before they took action.

Enactment involves both a process, enactment, and a product, an enacted environment.

*Enactment* is the social process by which a 'material and symbolic record of action' (Smircich and Stubbart, 1985, p. 726) is laid down. The process occurs in two steps. First, portions of the field of experience are bracketed and singled out for closer attention on the basis of preconceptions. Second, people act within the context of these bracketed elements, under the guidance of preconceptions, and often shape these elements in the direction of preconceptions (Powers, 1973). Thus, action tends to confirm preconceptions.

*An enacted environment* is the residuum of changes produced by enactment. The word 'residuum' is preferred to the word 'residue' because residuum emphasizes that what is left after a process cannot be ignored or left out of account because it has potential significance (Webster's Dictionary of Synonyms, 1951, p. 694). The product of enactment is not an accident, an afterthought, or a byproduct. Instead, it is an orderly, material, social construction that is subject to multiple interpretations. Enacted environments contain real objects such as reactors, pipes and valves. The existence of these objects is not questioned, but their significance, meaning, and content is. These objects are inconsequential until they are acted upon and then incorporated retrospectively into events, situations, and explanations.

The external residuum of enacted changes is summarized internally by people in the form of a plausible map by which observed actions produced observed consequences. Since the summary map contains if-then assertions, it is called a cause map (Weick and Bougon, 1986) and is the source of expectations for future action. When we assert that the organization and the environment are in the mind of the actor, this means two things. It means that cause maps affect the construction of new experience through the mechanism of expectations and it means that cause maps affect the interpretation of old experience through the mechanism of labelling.

Thus, an enacted environment has both a public and a private face. Publicly, it is a construction that is usually visible to observers other than the actor. Privately, it is a map of if-then assertions in which actions are related to outcomes. These assertions serve as expectations about what will happen in the future.

At the heart of enactment is the idea that cognition lies in the path of the action. Action precedes cognition and focuses cognition. The sensemaking sequence implied in the phrase, 'How can I know what I think until I see what I say?' involves the action of talking, which lays down traces that are examined, so that cognitions can be inferred. These inferred cognitions then become preconceptions which partially affect the next episode of talk, which means the next set of traces deposited by talk are affected partially by previous labels and partially by current context. These earlier inferences also affect how the next episode of talk is examined and what is seen. This sensemaking sequence has the potential to become closed and detached from the context in which it occurs. However, that potential is seldom realized because preconceptions are usually weak, actions are usually novel, and memories are usually flawed.

#### *Relationship of Enactment Perspective to Crisis Literature*

The enactment perspective is applied to crisis situations in this article in an attempt to address Shrivastava's (1987, p. 118) observation that we do not yet

understand much about how individual actions can cause an industrial crisis. The analysis of enactment suggests that individual actions involved in sense-making can cause a crisis, but also manage it to lower levels of danger. Actions often construct the reasons for their occurrence as they unfold, which means their consequences are difficult to forecast in advance. Our actions are always a little further along than is our understanding of those actions, which means we can intensify crises literally before we know what we are doing. Unwitting escalation of crises is especially likely when technologies are complex, highly interactive, non-routine, and poorly understood. The very action which enables people to gain some understanding of these complex technologies can also cause those technologies to escalate and kill.

To learn more about how sensemaking can be decoupled from escalation, we focus on triggered events: 'a specific event that is identifiable in time and place and traceable to specific man-made causes' (Shrivastava, 1987, p. 8). Triggered events are places where interventions can have an effect, these events involve judgement which can deteriorate when pressure increases (Staw, Sandelands and Dutton, 1981), and these events can escalate into a crisis.

The enactment perspective is about both crisis prevention and crisis management. We share with Ayres and Rohatgi (1987, p. 41) the assumption that 'while the probability of operator error can often be reduced, there is no evidence whatever that it can be eliminated altogether . . . Human errors are fundamentally "caused" by human variability, which cannot be designed away'. This assumption suggests to us that errors are inevitable, so the key issue is how to keep errors from enlarging. Errors are less likely to enlarge if they are understood more fully, more quickly. If we can understand the process of sensemaking during a crisis, then we can help people to prevent larger crises by smarter management of small crises. It is this sense in which enactment blurs the line between crisis prevention and crisis management. By understanding triggering events and the ways in which small sensemaking actions can grow into large senseless disasters, we hope to develop a better understanding of how crises can be isolated and contained.

The enactment approach shares an interest with Billings, Milburn, and Schaalman (1980) in triggering events, and complements their analysis by emphasizing that action is instrumental to crisis perception. The enactment perspective focuses on 'proactive crisis management' in Mitroff, Shrivastava, and Udvardia (1987) and develops specifically the activities of pre-assessment, prevention, preparation, and coping. The threat-rigidity cycle (Staw, Sandelands and Dutton, 1981) is in the background throughout our analysis since we assume that action often manages threat toward lower levels of intensity thereby reducing the tendency toward rigid problem solving.

Crises obviously are overdetermined and human sensemaking may play only a small part in their development. Nevertheless, crises engage human action, human action can amplify small deviations into major crises, and in any search for causes, we invariably can find some human act which may have set the crisis in motion. It is our contention that actions devoted to sensemaking play a central role in the genesis of crises and therefore need to be understood if we are to manage and prevent crises.

## THE ENACTED QUALITY OF CRISES

Shrivastava's (1987) analysis of Bhopal can be read for themes of enactment, as when he observes that 'the initial response to the crisis sets the tone for the rest of the effort' (p. 134). From the standpoint of enactment, initial responses do more than set the tone; they determine the trajectory of the crisis. Since people know what they have done only after they do it, people and their actions rapidly become part of the crisis. That is unavoidable. To become part of the problem means that people enact some of the environment they face. Had they not acted or had they acted differently, they would face a different set of problems, opportunities and constraints.

All crises have an enacted quality once a person takes the first action. Suppose that a gauge shows an unexpected increase in temperature. That is not enactment. Suppose further that in response to the unexpected temperature increase people tap the gauge or call the supervisor or proceed with a tea break or walk out to look at the tank whose temperature is being measured. That still is not enactment, because all that exists so far is a simple stimulus and response. But the response of tapping, calling, drinking, or walking produces a new stimulus that would not have been there had the first been ignored. The 'second stimulus' is now a partial human construction. The assumptions that underlie the choice of that first response contribute to enactment and the second stimulus. As action continues through more cycles, the human responses which stimulate further action become increasingly important components of the crisis. 'When a triggering event occurs, spontaneous reactions by different stakeholders solve some of the immediate problems, but they also create new problems – thus prolonging the crisis and making it worse' (Shrivastava, 1987, p. 24).

Thus, from the perspective of enactment, what is striking is that crises can have small, volitional beginnings in human action. Small events are carried forward, cumulate with other events, and over time systematically construct an environment that is a rare combination of unexpected simultaneous failures.

Shrivastava (1987, p. 42) identified 'the leakage of toxic gas' as the triggering event at Bhopal, but my choice would be the failure to insert a slip blind into a pipe being cleaned, which allowed water to back up and enter the MIC tank and catalyse a complex chemical interaction (Ayres and Rohatgi, 1987, p. 32; Shrivastava, 1987, p. 46). The slip blind oversight occurred in close proximity to the 'leakage of toxic gas'; it was a small deviation that amplified because MIC was stored in 60 ton tanks rather than 55 gallon drums, and it resulted from a proximate combination of preconceptions about a job and its safety, inadequate supervision, and inadequate training.

It is not sufficient to deal with the enacted quality of crises by striving to make the technology operator-proof. All that does is move the dynamics of enactment to an earlier point in time where incomplete designs are enacted into unreliable technology by fallible designers who believe they can bypass the very human variability that has already been exhibited by their design process.

The enacted quality of crises is especially visible when we apply the concepts of commitment, capacity, and expectations to crisis conditions.

*Enactment and Commitment*

The importance of commitment (Salancik, 1977) for enactment is straightforward. Normally, when people act, their reasons for doing things are either self-evident or uninteresting, especially when the actions themselves can be undone, minimized, or disowned. Actions that are neither visible nor permanent can be explained with casual, transient explanations. As those actions become more public and irrevocable, however, they become harder to undo; and when those same actions are also volitional, they become harder to disown. When action is irrevocable, public and volitional, the search for explanations becomes less casual because more is at stake. Explanations that are developed retrospectively to justify committed actions are often stronger than beliefs developed under other, less involving, conditions. A tenacious justification can produce selective attention, confident action, and self-confirmation. Tenacious justifications prefigure both perception and action, which means they are often self-confirming.

Tenacious justifications can be forces for good or evil in crises. They are forces for good because they generate meaning in times of ambiguity, surprise, and confusion (Staw, 1980). Justifications provide sufficient structure for people to get their bearings and then create fuller, more accurate views of what is happening and what their options are.

The dark side of commitment is that it produces blind spots. Once a person becomes committed to an action, and then builds an explanation that justifies that action, the explanation tends to persist and become transformed into an assumption that is taken for granted. Once this transformation has occurred it is unlikely that the assumption will be readily viewed as a potential contributor to a crisis.

For example, the public, irrevocable choice at Bhopal to keep the dangerous process of MIC production secret, was justified in terms of competitive advantage and the prevention of 'unnecessary' alarm. As a result, the commitment to secrecy was one of the last assumptions workers considered as a contributor to the crisis. To minimize alarm, the warning siren at Bhopal was not turned on until gas actually started to leak into the atmosphere, the siren was turned off after 5 minutes, and it was not restarted until gas had been escaping for 90 minutes. The commitment to secrecy induced a blind spot toward a partial solution, necessary alarm.

As another example, the public, irrevocable decision by Bhopal management to announce that all safety violations reported to them in a September 1982 report, had been corrected (Ayres and Rohatgi, 1987, p. 36), was justified by actions which took safety for granted and inadvertently allowed it to deteriorate steadily in several different places. Thus, the eventual public, irrevocable choice to disconnect the refrigeration equipment that kept MIC temperature under control, was justified as a relatively safe means to save electricity, reduce costs, and recover freon which could be used elsewhere in the plant. It was the uncontrolled heating of MIT in Tank 610 that led to rupture of the safety valves and venting of the gas.

When people make a public commitment that an operating gauge is inoperative, the last thing they will consider during a crisis is that the gauge is operating. Had they not made the commitment, the blind spot would not be so persistent. When a person becomes committed to the view that fluctuations in electricity cause 90 per cent of the variances that are seen in gauges, the possibility that a much different percentage is more accurate will not be entertained until the crisis is at an advanced stage.

Given the effects of commitments on attention, practitioners and researchers alike might learn more about crisis potential (Mitroff, Shrivastava and Udvardia, 1987, p. 290) if they see which people are 'on record' as making irreversible assertions about technology, operators, and capabilities. Those assertions, and their associated justifications, will have been shielded from scrutiny more than other assertions in which less is at stake. The practices and assumptions that those justifications shield may be significant contributors to crisis.

#### *Enactment and Capacity*

Action in the form of capacity can affect crisis management through perception, distribution of competence and control within a hierarchy, and number and diversity of actors.

Capacity and response repertoire affect crisis perception, because people see those events they feel they have the capacity to do something about. As capacities change, so too do perceptions and actions. This relationship is one of the crucial leverage points to improve crisis management.

The rationale for these relationships has been described by Jervis (1976, pp. 374-5). '(T)he predisposition to perceive a threat varies with the person's beliefs about his ability to take effective counteraction if he perceives the danger. . . . Whether they are vigilant or defensive depends in large part on whether they think they can act effectively on the undesired information'.

If people think they can do lots of things, then they can afford to pay attention to a wider variety of inputs because, whatever they see, they will have some way to cope with it. The more a person sees of any situation, the higher the probability that the person will see the specific change that needs to be made to dampen the crisis. Accuracy in perception comes from an expanded response capacity. Perrow (1984) argues that operators who have specialized expertise do not see the 'big picture' as crises develop and therefore miss key events. That scenario is consistent with the proposition that capacity affects perception. Specialists can do a few things well, which means that they search the world to see if it needs what they can do. If it doesn't, they do nothing else because they see nothing else.

If people are aware that volitional action may enact conditions that intensify or de-escalate crises, and if they are also aware of their actions and capacities, this heightened awareness could allow them to see more of a developing crisis. Seeing more of the developing crisis, people should then be able to see more places where they could intervene and make an actual difference in what is developing. The joint beliefs, 'I have capacity' and 'capacity makes a difference', should reduce defensive perception and allow people to see more. As they see more, there is a greater probability that they will see some place where their intervention can make a difference.

Capacity can also affect crisis management by the way in which it is distributed in a hierarchy. Perrow (1984, p. 10) notes that 'operators need to be able to take independent and creative action because they are closest to the system, yet centralization, tight coupling, and prescribed steps prevent decentralized action'.

Action of any kind may be prevented or slowed in a centralized system. Hermann (1963) has noted when crises occur, authority becomes contracted in one of three ways: it moves to higher levels of the hierarchy, fewer people

exercise authority, or there is an increase in the number of occasions when authority is exercised even though the number of units exercising it remain constant (p. 70).

The danger in centralization and contraction of authority is that there may be a reduction in the level of competence directed at the problem as well as an overall reduction in the use of action to develop meaning. For example, Bhopal had relatively unsophisticated sensing devices and had to rely on workers to sense problems by means of the 'tear gas effect of the vapor' (Diamond, 28 January, 1985, p. 6). But the presence of that vivid indicator was still not enough because the tearing was given little attention by authorities. Furthermore, if people had moved around at Bhopal, they would have heard gurgling and rumbling in the MIC tank, seen drops of water near the tank, and felt tearing in their eyes.

The person in authority is not necessarily the most competent person to deal with a crisis, so a contraction of authority leads either to less action or more confusion. Career ladders in crisis-prone organizations are crucial antecedents for coping. People who come up through the technical ranks have hands-on experience and the requisite knowledge to sense variations in the technological environment they face. Those who administer without a technical background have less requisite expertise and miss more.

Diamond (30 January, 1985, p. 6), in his account of Bhopal, noted that during the crisis, 'K. V. Shetty, the plant superintendent for the shift, had come racing over from the main gate on a bicycle, workers said. "He came in pretty much in a panic", Mr Day said. "He said, 'what should we do?'" Mr Shetty, who declined to be interviewed, was on the administrative and not the technical side of the factory, the workers said'.

Capacity can also affect crisis potential through staffing decisions that affect the diversity of acts that are available. Enactment is labour-intensive, which means understaffing has serious effects. Even though the Bhopal plant had few automated controls, high manual control over processes, and a potentially large amount of action data from which understanding could be built, these potential assets were neutralized because operating staffs had been cut from 12 to 6 people per shift. Thus, knowledge was reduced, not because of automation, but because of understaffing. If action is the means to understanding, then the number and quality of actors available to do that acting and interpretation become crucial variables.

Turnover is as much a threat to capacity as is understaffing, but for a different reason. Institutional memory is an important component of crisis management. People can see only those categories and assumptions that they store in cause maps built up from previous experience. If those cause maps are varied and rich, people should see more, and good institutional memory would be an asset. However, if cause maps are filled with only a handful of overworked justifications, then perception should be limited and inaccurate, and a good memory would be a liability.

Shrivastava (1987, p. 52) reported that there was no institutional memory at Bhopal because turnover in top management was high and Smith (1984, p. 908) made the same observation about crisis management in the US government. In both cases, there are few beliefs that control seeing. It might seem desirable for a few preconceptions to be carried in institutional memory because then people



will perceive more of what is 'really there'. Perception, however, is never free of preconceptions, and when people perceive without institutional memories, they are likely to be influenced by salient distractions (*e.g.* Kirwan, 1987) or by experience gained in settings that are irrelevant to present problems.

If more people are in constant touch with the system, this will make it easier to detect and correct anomalies and also to implant more reliable environments. These outcomes should be especially likely when the people doing the enactment have diverse experience, novel categories and justifications, and diverse activities at which they are skilled and in terms of which they perceive the world. We are not talking about specialists isolated from one another. Instead, we are talking about heterogeneous teams of diverse people with sufficient mutual respect that they maintain dense interaction with one another. Teams able to meet these demands are scarce, do not come cheap, and may be most likely to form if high levels of professionalism are associated with them.

#### *Enactment and Expectations*

The assumptions that top management make about components within the firm often influence enactment in a manner similar to the mechanism of self-fulfilling prophecy. Many of these assumptions can increase or decrease the likelihood that small errors will escalate into major crises. Thus, assumptions are an important source of crisis prevention.

This mechanism is clearly visible in Bhopal where top management assumed that the Bhopal plant was unimportant and therefore allocated limited resources to maintain it. That assumption of unimportance set in motion a self-confirming vicious circle in which worker indifference and management cost-cutting became mutually reinforcing and resulted in deteriorating conditions that became more dangerous. "The whole industrial culture of Union Carbide at Bhopal went down the drain", said Mr Pareek, the former project engineer. "The plant was losing money, and top management decided that saving money was more important than safety. Maintenance practices became poor, and things generally got sloppy. The plant didn't seem to have a future, and a lot of skilled people became depressed and left as a result" (Diamond, 28 January, 1985, p. 6).

A plant perceived as unimportant proceeds to act out, through turnover, sloppy procedures, inattention to details, and lower standards, the prophecy implied in top management's expectations. A vicious circle is created and conditions become increasingly dangerous. Notice that the most crucial assumption does not involve safety directly. Instead, the crucial assumptions focus on themes of competence, importance, and value. Susceptibility to crisis varies as a function of top management assumptions about which units are important.

When cost cutting is focused on less important units, it is not just decreased maintenance which raises susceptibility to crisis. Instead, it is all of the indirect effects on workers of the perception that their unit doesn't matter. This perception results in increased inattention, indifference, turnover, low cost improvisation, and working-to-rule, all of which remove slack, lower the threshold at which a crisis will escalate, and increase the number of separate places at which a crisis could start. As slack decreases, the technology becomes more interactively complex (Perrow, 1984), which means there are more places where a minor lapse can escalate just when there are more minor lapses occurring.

The point is, this scenario starts with top management perceptions that set in motion enactments that confirm the perceptions. Furthermore, the initial perceptions were concerned with strategy, not safety: Strategy became an inadvertent source of crisis through its effects on realities constructed by disheartened workers. The realities they enacted removed buffers, dampers, and controls between steps in the technology, made it harder for errors to be contained, and easier for errors to get started.

#### IMPLICATIONS FOR CRISIS MANAGEMENT

Crisis management is often portrayed as reactive activity directed at problems that are already escalating. That portrait is too narrow and I have tried to show why.

Perrow (1984) captured the core issue in crisis management, but did so in a way that exhibited rather than remedied the blind spot that concerns us. He observed that 'our ability to organize does not match the inherent hazards of some of our organized activities' (p. 10). The potential blindspot in that otherwise tight description is the reference to 'inherent hazard'.

Hazards are not given nor do they necessarily inhere in organized activity. Instead, they are often constructed and put into place by human actors. Their development is indeterminant rather than fixed, and crisis management can mean quick action that deflects a triggering event as it unfolds rather than delayed action that mops up after the triggering event has run its course. These possibilities are more likely to be seen if we think of large crises as the outcome of smaller scale enactments.

When the enactment perspective is applied to crisis situations, several aspects stand out that are normally overlooked.

To look for enactment themes in crises, for example, is to listen for verbs of enactment, words like manual control, intervene, cope, probe, alter, design, solve, decouple, try, peek and poke (Perrow, 1984, p. 333), talk, disregard, and improvise. These verbs may signify actions that have the potential to construct or limit later stages in an unfolding crisis.

To look for enactment themes in crises is also to assess the forcefulness of actions and the ambiguity of the situation (Perrow, 1984, p. 83) in which those actions occur. As forcefulness and ambiguity increase, enactment is more consequential, and more of the unfolding crisis is under the direct control of human action. Conversely, as action becomes more tentative and situations become more clearly structured, enactment processes will play a smaller role in crisis development and management. Enactment, therefore, will have most effect on those portions of a crisis which are loosely coupled. If pipe cleaning procedures are not standardized, if supervision is intermittent, if job specifications are vague, or if warning devices are activated capriciously, then these loosely coupled activities will be susceptible to alteration through enactment. Human action will produce environments involving pipes, supervision, specifications, and alarms, either in dangerous or safe combinations, because these are the most influencible elements. Loose coupling does not guarantee safety. Instead, it guarantees susceptibility to human action, and those actions can either reduce or increase hazards.

Enactment affects crisis management through several means such as the psychology of control, effects of action on stress levels, speed of interactions, and ideology.

An enactment perspective suggests that crisis events are more controllable than was first thought. That suggestion, by itself, can be self-affirming because as perceptions of control increase, stress decreases, and as stress decreases, perceptual narrowing also decreases which means people see more when they inspect any display (George, 1986). As people see more, they are more likely to notice things they can do something about, which confirms the perception of control and also reduces crisis intensity to lower levels by virtue of early intervention in its development.

Enactment can also reduce the perceptual narrowing produced by stress in another way. When people take some action, they often transform a more complex task into a simpler task. This occurs because action clarifies what the problem may be, specific action renders many cues and options irrelevant, and action consolidates an otherwise unorganized set of environmental elements. All of these simplifications gain significance in the context of stress because there is good evidence that stress has less adverse effects on performance of simple tasks than on performance of complex tasks (Eysenck, 1982). Since stress is an accompaniment of all crises, and since many crises escalate because of the secondary effects of crisis-induced stress, the beneficial effect of action in the form of task simplification is important.

Not only does action simplify tasks, it also often slows down the effects of one variable on another. Perrow (1984) has shown tight coupling, in the presence of interactive complexity, leads to rapid escalation of crisis events. Action such as rearrangements of traffic patterns by air traffic controllers (Weick, 1987) often dampens the tight coupling between variables and reduces both the speed and magnitude with which connected variables affect one another. Especially if a controller becomes a step in a process (Perrow, 1984, p. 331), the actions of that controller can slow the speed with which the process unfolds and can also slow the speed with which unanticipated interactions occur.

Perhaps the most important implication of enactment is that it might serve as the basis for an ideology of crisis prevention and management. By ideology, we mean a 'relatively coherent set of beliefs that bind people together and explain their worlds in terms of cause-and-effect relations' (Beyer, 1981, p. 166). Enactment leverages human involvement in systems and, as a coherent set of beliefs about the form and outcomes of such involvement, could elicit self-control and voluntary co-operation similar to that elicited by more formal structures designed to do the same thing (Meyer, 1982, p. 55).

An ideology built around the preceding ideas would mean that people have a fuller idea of how individuals generate their own environments including crisis environments, have an appreciation that the strength of commitments is a manipulable variable that has tangible environment effects, see the importance of expertise in action and the value of multiple small actions, understand how structures can accelerate or decelerate responsive action, and see more potential cause of crises and more places where interventions are possible, while maintaining an awareness of the necessity to balance dangerous action with safe inaction in the interest of diagnosis.

If these beliefs were adopted as a component of crisis management, people could think about crises in ways that highlight their own actions and decisions as determinants of the conditions they want to prevent.

The activity of crisis management, viewed through the lens of enactment, involves such things as managing crises to lower levels of intensity, increasing skill levels and heightening the awareness of existing skill levels in the interest of expanded perception, appreciation of the ways in which small interventions can amplify, and being exquisitely aware of commitments that may bias diagnoses.

Perrow (1984) has, I think, correctly identified a new cause of human-made catastrophes, 'interactive complexity in the presence of tight coupling, producing a system accident' (p. 11). Recent benchmark catastrophes such as Chernobyl, Bhopal, and Challenger all fit this recipe. The way to counteract catastrophes, therefore, is to reduce tight coupling and interactive complexity. To do this, it seems important not to blame technology, but rather to look for and exaggerate all possible human contributions to crises in the hope that we can spot some previously unnoticed contributions where we can exert leverage. Therefore, even if the relative importance of enactment is exaggerated and borders on hyperbole, the important outcome of such exaggeration could be discovery of unexpected places to gain control over crises. The enactment perspective urges people to include their own actions more prominently in the mental experiments they run to discover potential crises of which they may be the chief agents.

#### NOTE

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#### REFERENCES

- AYRES, R. U. and ROHATGI, P. K. (1987). 'Bhopal: lessons for technological decision-makers'. *Technology in Society*, 9, 19-45.
- BATESON, G. (1972). *Steps to an Ecology of Mind*. New York: Ballantine.
- BEYER, J. M. (1981). 'Ideologies, values, and decision-making in organizations'. In Nystrom, P. C. and Starbuck, W. H. (Eds.), *Handbook of Organizational Design. Vol 2*, 166-202. New York: Oxford University Press.
- BILLINGS, R. S., MILBURN, T. W. and SCHAALMAN, M. L. (1980). 'A model of crisis perception: a theoretical analysis'. *Administrative Science Quarterly*, 25, 300-16.
- DIAMOND, S. (1985). 'The Bhopal disaster: how it happened'. *New York Times*, 28 January, 1, 6, 7.
- DIAMOND, S. (1985). 'The disaster in Bhopal: workers recall horror'. *New York Times*, 30 January, 1, 6.
- EYSENCK, M. S. (1982). *Attention and Arousal*. New York: Springer-Verlag.
- GEORGE, A. L. (1986). 'The impact of crisis-induced stress on decision-making'. In Solomon, F. and Marston, R. Q. (Eds.), *The Medical Implications of Nuclear War*. Washington, DC: National Academy of Sciences Press.

- HERMANN, C. F. (1963). 'Some consequences of crisis which limit the viability of organizations'. *Administrative Science Quarterly*, **8**, 61-82.
- JERVIS, R. (1976). *Perception and Misperception in International Politics*. Princeton, NJ: Princeton University Press.
- JONES, E. E. (1986). 'Interpreting interpersonal behavior: The effects of expectancies'. *Science*, **234**, 41-6.
- JONES, R. A. (1977). *Self-Fulfilling Prophecies*. Hillside, NJ: Erlbaum.
- KIRWAN, B. (1987). 'Human reliability analysis of an offshore emergency blowdown system'. *Applied Ergonomics*, **18**, 23-33.
- McHUGH, P. (1968). *Defining the Situation*. Indianapolis: Bobbs-Merrill.
- MEYER, A. D. (1982). 'How ideologies supplant formal structures and shape responses to environment'. *Journal of Management Studies*, **19**, 45-61.
- MITROFF, I. I., SHRIVASTAVA, P. and UDWADIA, F. (1987). 'Effective crisis management'. *Executive*, **1**, 283-92.
- PERROW, C. (1984) *Normal Accidents*. New York: Basic Books.
- POWERS, W. T. (1973). *Behavior: The Control of Perception*. Chicago: Aldine.
- SALANCIK, G. R. (1977). 'Commitment and the control of organizational behavior and belief'. In Staw, B. M. and Salancik, G. R. (Eds.), *New Directions in Organizational Behavior*, 1-54. Chicago: St. Clair.
- SALANCIK, G. R. and PFEFFER, J. (1978). 'A social information processing approach to job attitude and task design'. *Administrative Science Quarterly*, **23**, 224-53.
- SHRIVASTAVA, P. (1987). *Bhopal: Anatomy of a Crisis*. Cambridge, MA: Ballinger.
- SMIRCICH, L. and STUBBART, C. (1985). 'Strategic management in an enacted world'. *Academy of Management Review*, **10**, 724-36.
- SMITH, R. J. (1984). 'Crisis management under strain'. *Science*, **225**, 907-9.
- SNYDER, M. (1984). 'When belief creates reality'. In Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology*. Vol. 18, 247-305. New York: Academic Press.
- STAW, B. M. (1980). 'Rationality and justification in organizational life'. In Cummings, L. and Staw, B. (Eds.), *Research in Organizational Behavior: Vol. 2*, 45-80. Greenwich, CT: JAI Press.
- STAW, B. M. (1982). 'Counterforces to change'. In Goodman, P. S. and Associates (Eds.), *Change in Organizations: New Perspectives on Theory, Research, and Practice*, 87-121. San Francisco: Jossey-Bass.
- STAW, B. M., SANDELANDS, L. E. and DUTTON, J. E. (1981). 'Threat-rigidity effects in organizational behavior: a multi-level analysis'. *Administrative Science Quarterly*, **26**, 501-24.
- WEBSTER'S DICTIONARY OF SYNONYMS. First Ed. (1951). Springfield, MA: Merriam.
- WEICK, K. E. (1979). *The Social Psychology of Organizing*, 2nd ed. Reading, MA: Addison-Wesley.
- WEICK, K. E. (1987). 'Organizational culture as a source of high reliability'. *California Management Review*, **29**, 2, 112-27.
- WEICK, K. E. and BOUGON, M. G. (1986). 'Organizations as cause maps'. In Sims, H. P. Jr. and Gioia, D. A. (Eds.), *Social Cognition in Organizations*, 102-35. San Francisco: Jossey-Bass.
- WEICK, K. E., GILFILLAN, D. P. and KEITH, T. (1973). 'The effect of composer credibility on orchestra performance'. *Sociometry*, **36**, 435-62.

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