

DISASTER IN HISTORY*

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Introduction

History written under the aspect of catastrophe would surely have a distorted appearance: a tale told in terms of floods, plagues, and earthquakes. Historians have instead chosen to ignore disaster except at those points (e.g., the Black Death) where its inclusion is unavoidable. But if for a moment we examine the interplay of disaster and history, their conjunction can be viewed from two perspectives: we might examine the consequences of disasters, as William Langer prodded his fellow historians to do (Langer, 1958). That would involve distinctions between short-term and long-term effects, variations in the capacity for adaptation and rehabilitation, and the degree to which catastrophes retard or accelerate changes already in progress. The other perspective assumes that disaster itself has a history, that the phenomenon of sudden collective unmanageable stress has its own vicissitudes. This second perspective is adopted here. The history of disaster contains two aspects, the objective and the symbolic. Thus to the outside observer the objective characteristics of catastrophe may appear to change over time, revealing shifts in causation or level of damage. The symbolic aspect deals with the manner in which collective stress is perceived and conceptualized by those who have felt it or who may undergo it. As we shall see, disaster studies have neglected the symbolic aspect, concentrating upon descrip-

tions of events rather than upon their perceived significance. The symbolic aspect must be taken into account, for often a “disaster” is any event which individuals so categorize, irrespective of causation or level of damage. Further, we shall find the occasional paradox that the stress events which symbolize disaster at a particular time may be quite different from the stress events which an outside observer notes as most common or most destructive.

THREE DISASTER MODALITIES

In a recent typology of crises, Jean Lipman-Blumen (1975) identifies several dimensions of crisis situations. Six are especially helpful in suggesting variations in the historical patterns of catastrophe: pervasiveness versus boundedness; transitoriness versus chronicity (i.e. short- v. long-term); randomness versus expectability; natural causes versus artificial causes; perceived solvability versus perceived insolvability; and substantive content (whether political, economic, social, etc). Changes along these dimensions have produced a sequence of three disaster modalities between c. 1750 and the present. These modalities I call the *homeostatic*, *metastatic*, and *hyperstatic*. They result from changes in predictability, source of stress, and perceptions of solvability. They can be distinguished from one another by their temporal and spatial boundaries and their sub-

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stantive content. The three modalities may be briefly summarized as follows:

(1) *Homeostatic disaster*: natural catastrophe which reflects the rhythms and limits of nature, and assumes return to equilibrium;

(2) *Metastatic disaster*: artificial catastrophe caused by human behavior and whose unclear spatial and temporal boundaries make return to equilibrium problematic;

(3) *Hyperstatic disaster*: artificial catastrophe intensified to the point of completely obliterating discernible spatial and temporal boundaries, through global extension and system-destroying properties.

The first category includes virtually all natural disasters. The second includes explosions, local economic fluctuations, and most conventional warfare. The third includes world depression, nuclear war, genocide, and large-scale ecological imbalance.

Homeostatic natural disasters were the principal form before c. 1750. One must tread carefully here. Fire was feared and frequent in the wooden buildings of pre-industrial cities. The ferocity of the Thirty Years' War suggests the rising potentiality of humanly caused destruction. However, qualitatively new forms of mass misfortune were introduced after c. 1750: the sudden destruction of pre-industrial status hierarchies, business panics and depressions, mass migration into overcrowded cities, deteriorating conditions of employment, colonial expansion, and modern warfare. Most were connected with that complex of technological and socio-economic innovations usually referred to as the Industrial Revolution.

The same technological developments that created new metastatic forms of disaster also made the older, homeostatic forms appear controllable in principle if not always in fact. The declining significance of natural disaster and the rising importance of artificial disaster continued through the nineteenth and into the twentieth century. About 1930, however, the intensity of metastatic disaster underwent a

quantum leap from which hyperstatic forms began to emerge. Hyperstatic forms exhibited a scale that eclipsed their predecessors: mass terror, genocide, nuclear weapons, world depression, and ecological imbalances. Ironically, science and technology reduced the fear of natural hazards at the same time that national governments mobilized science and technology to make the hyperstatic forms possible.

The caveat must be entered here; no modality ever possessed monopoly status, nor did any mode abruptly appear or disappear at a fixed point in time. Rather, before about 1750, the vast majority of disasters were of the homeostatic type, with a residual number of metastatic forms, primarily associated with extremes in warfare and interethnic hostility. By the second half of the eighteenth century, the perceived salience of homeostatic disasters had begun to fall rapidly. Their place was taken by the metastatic upheavals of the industrial age. This decline in the role of natural catastrophes continued into the twentieth century, but at a decelerating rate as the perceived salience of natural hazards lessened. Natural homeostatic disasters now constitute a residual category, just as metastatic disaster did two and a half centuries earlier.

In the early twentieth century, one detects the first premonitory signs of modern hyperstatic catastrophe: e.g. the uncontrolled slaughter during certain battles in World War I and the contemporaneous genocide of Armenians in the Ottoman Empire. This sliver widened rapidly in the 1930s and succeeding decades, with the Great Depression, the Soviet Purge of 1936–1938, the Nazi genocide program, and the utilization of nuclear weapons. These are the “extreme situations,” the “megadeaths,” that distinguish the imagination of disaster in the mid-twentieth century (Lifton, 1967; Shneidman, 1974, pp. 179–198). Metastatic catastrophe, to be sure, continues to exist in such familiar guises as local economic fluctuations and industrial explosions. But at a

perceptual level they have given way before a concern for the possibility of mass destruction on a total, global level.

Natural disasters may be termed homeostatic, because they exhibit the periodicities of the natural world.

Despite the impression of our senses that the natural environment is always changing, there is nevertheless an underlying pattern of magnitudes and frequencies . . . that can be measured and estimated within a certain margin of error . . . nature remains fairly constant over decades and even centuries . . . The same cannot be said of human activities (Hewitt and Burton, 1971, pp. 76–77).

Homeostatic disasters are part of a fixed repertoire of natural hazards. Human innovation, on the other hand, opens the prospect of constantly changing metastatic and hyperstatic disasters. The fecundity of culture can cause the repertoire of disaster forms to undergo sudden, unforeseeable expansion: hazards not yet conceived may preoccupy the minds of a future generation. When the capacity to create disaster is placed in human hands, one consequence is a significant loss of predictability. Fixed parameters confine natural hazards within fairly inflexible spatial and temporal borders. While a margin of error always remains, the geographical extent and the duration of natural hazards do not allow indefinite expansion. In this sense, too, metastatic and hyperstatic disasters are departures, for they render once inflexible boundaries increasingly elastic.

“DISASTER” AS A MENTAL CONSTRUCT

Modern disaster research has effectively skirted the history of disaster – ironically, since much of the impetus for disaster research came from the experience of World War II and the fear of nuclear attack that overhung the 1950s (Williams, 1954). The desire to grasp the dynamics of catastrophic change led to a search for microcosms where it might be most readily studied. In practice, the need for economical and accessible research sites meant that the disaster research literature has been dispropor-

tionately concerned with the impact of natural disasters upon relatively small, self-contained communities (Barton, 1969, pp. 58–61). The nature of the cases tended to obscure the range of disaster variation, the extent to which “disaster” lies in the eye of the victim, and the awareness of disaster as a cultural artifact. The cases differ marginally from one another, but collectively they partake of the character of small-to-medium size cities of the last quarter century. That is a relatively uniform population, and in its very uniformity it belies the enormous variation that has historically characterized the human encounter with collective stress. It is a research arena dominated by those stress-events sufficiently well bounded for study, i.e. homeostatic disasters, together with a much smaller proportion of metastatic catastrophes.

“Disaster” is a mental construct imposed upon experience. It is not sufficient to know the number of deaths, the value of property destroyed, or the decrease in per capita income. The symbolic component requires knowledge of the sense of vulnerability, the adequacy of available explanation, and the society’s imagery of death and destruction. Why, then, are some collective stress-events perceived as “disasters” while others are received with a stoic sense of the vicissitudes of life? During the long era of homeostatic disaster, the causal factors were unforeseeable, uncontrollable meteorological, biological, and geological forces. In the Western world, the modal forms of disaster have increasingly come to be seen as artificial: total war, colonization, ecological disruption, nuclear attack, and economic collapse now occupy the place in our minds where once storms, plagues, and earthquakes exercised sovereign sway. These artificial disasters have grown increasingly prominent, ironically, at the very point when natural forces were yielding to prediction and understanding. The diminishing perceptual significance of natural hazards receives circumstantial support from a world survey of natural disasters over the period 1947–1967. During that time, the two most technologically ad-

vanced regions – North America and non-Soviet Europe – experienced, respectively, 210 and 85 “disaster impacts.” They resulted in an average loss of life per impact of 37 for North America and 230 for Europe. The two least technologically advanced regions – Africa and non-Soviet Asia – experienced, respectively, 17 and 297 impacts, which resulted in a per impact loss of life of 1,065 for Africa and 1,216 for Asia (Sheehan and Hewitt, 1969). The matter, however, is more complex than these statistics indicate. On the one hand, the capacity for warning, control, rescue, and rehabilitation is great enough to “prevent most severe natural disasters.” On the other hand, far less has been done than might be to buffer against the effects of natural hazards, suggesting both the denial of unpleasant possibilities and the changing symbolic significance of natural upheavals. We feel a sense of power and invulnerability that is, if not illusory, at least disproportionate. For in fact the complexity of modern societies makes them more rather than less vulnerable. Cities, transportation arteries, and factories present more and larger targets: there is more that might be destroyed. At the same time, the interdependence of industrial societies communicates damage far from the area of immediate impact; few areas are so self-sufficient as to be immune from the consequences of distant catastrophe (White and Haas, 1975, pp. 83–84). Together, these opposed characteristics imply the following conclusions: in relative terms, human life is at greater risk in underdeveloped than in developed societies. However, the greater the level of development, the greater the property which is hostage to natural hazards. The increased vulnerability of our physical artifacts has been allowed to occur precisely because natural hazards no longer signify ultimate cosmic destructive forces. As these forces have passed into human hands, natural hazards, no matter what their objective destructive potential, appear more puny.

In yet another ironic way, the very capabilities that insulate from the full force of nature

have also made possible the artificial disasters that bulk so large in the consciousness of the twentieth century. Simultaneous changes in the scope of political, social, and economic organization have magnified the effects of technological innovation. The factors that contribute to the artificial disasters of modern times are so complex and interrelated that they can hardly be dealt with here in anything but a summary fashion. The changing character of warfare alone involves both technological and socio-political aspects: the gunned ship, the citizen army, aerial warfare, the industrial state, and nuclear weapons do hardly more than indicate a few critical turning points. The expanding fiscal, military, and administrative capabilities of Western states have had profound consequences that range from such external effects as colonial expansion to the internal turmoil of systematic political terror. The creation of an urban-industrial order in the nineteenth century had catastrophic effects for traditional society. The interdependence of modern economies has meant that economic dislocations cannot be readily contained; instead, they spread outward through ever-widening networks of mutual dependence.

This litany of destructive potential, far from complete, coexists with the belief that natural forces can be held in check. Where the forces of nature are concerned, disaster defenses have been of two kinds: those that produce a decrease in measureable damage and/or loss of life, and those that, by transforming attitudes, cause us to regard uncontrollable stresses as potentially controllable. To the helpless populace of fourteenth-century Europe, the Black Death “. . . was a man mounted on a great black horse or a giant striding along, his head above the roofs of the houses” (Mullett, 1956, p. 16). Over the intervening centuries, human leverage has increased to the point where ecologists now argue whether in fact human domination over nature has not reached a point of diminishing returns. However that may be, public health and medicine, scientific agriculture, flood

control, and weather and earthquake forecasting provide, in varying degrees, foreknowledge and control. Cases for which neither foreknowledge nor control is currently available or adequate may yet benefit from more efficient mechanisms for evacuation, the redistribution of scarce resources, and the pooling of risks.

Attitudinal changes are equally significant as indices of security. Keith Thomas (1971, pp. 657, 661) argues that the displacement of magic in seventeenth-century England was not related to any objective increase in the degree of security: "The men of the sixteenth century were more or less as vulnerable in the face of epidemics, bad harvest, illness, fire, and all the other environmental hazards as their medieval predecessors. . . . In the later seventeenth century the more general rejection of magic was still unaccompanied by the discovery of new remedies to fill the gap." Instead, the critical factor appears to have been an increasing confidence in the potential of human initiative; if scientific prediction and control did not yet exist, they were at least possible in principle. Thus the absence of effective control is not the only way in which a "disaster" can be de-escalated into a mere "hazard." It can also be accomplished when cultures emphasize a sense of control, depersonalize threats, and can satisfactorily account for those instances when control is impossible. The Lisbon earthquake of 1755 produced a lively debate between those who read the event theologically, as a divine warning, and those who postulated impersonal underground forces which might eventually be fitted into a fully functioning scientific theory (Kendrick, n.d.).

A belief in the possibility of understanding and control thus seems to have preceded operational capability. The Occidental view that humanity should dominate nature has deep Hebraic, Greek, and Christian roots (Spring and Spring, 1974). However, more focused optimism in the face of natural perils appears not to have developed much before the sixteenth or seventeenth century. That it did so is all the

more remarkable in view of the rigors of the time. The plague did not disappear in England until the late seventeenth century. The period also falls within a longer climatic cycle (1550–1850), during which Europe experienced unusually cold winters and frequent cool, wet summers alternating with droughts (Mousnier, 1970, pp. 312–316). A generalized sense of mastery (also expressed in such phenomena as transoceanic exploration) appears to have reduced the sense of impotence in the face of natural perils out of all proportion to the real technological leverage.

In assessing the attitudinal shift, however, we must bear in mind that it did not occur all at once or without leaving residues of older beliefs. Thus the view that earthquakes in particular signified divine wrath maintained itself right through the eighteenth century, reinforced by the two London tremors of 1750 and the catastrophic events in Lisbon five years later (Garrett, 1975, p. 226). But overall, such attitudes represent the survival of an older worldview that eventually succumbed to secularization. As one moves toward the nineteenth century, the actual ability to rein in natural forces increases, validating earlier, pre-industrial optimism.

DISASTER IN THE TWENTIETH CENTURY

If we are more cynical than our ancestors concerning human capacities, it is because the twentieth century has been a severe teacher. The character of disaster has changed, and not simply in the negative sense implied by the domination of nature. The substitution of artificial catastrophes as the modal forms carries a set of special implications. All are connected with a qualitative shift in scale. The movement of history from the pre-industrial past to the industrial (not to say, post-industrial) present is intimately interwoven with the increasing scale of human enterprise. Concerning the pre-industrial age, Peter Laslett (1965, p. 7) writes, "few persons in the old world ever found them-

selves in groups larger than family groups, and there were few families of more than a dozen members . . . Everything physical was on the human scale . . . Everything temporal was tied to the human lifespan . . .” The national state, the corporation, the interlocking international economy, the great urban agglomerations, all testify to the expansion accomplished over the past two hundred years.

Human beings have always possessed some capacity for intentionally or accidentally harming their fellows. This capacity, however, has undergone the same scalar shift as the rest of social life. The leap in human disaster capability has brought to the fore three particular characteristics that mark it out both from the relatively puny human actions of the past and the homeostatic disasters that preoccupied an earlier time: unboundedness, in both space and time; a rising potential of self-fulfilling prophecies; and a return to the traditional view that disasters are intentional actions.

Natural disasters emerge out of the rhythms of the physical world. Certain seasons and certain regions are prone to some kinds of homeostatic catastrophes but not others: tornadoes, hurricanes, and tidal waves may sometimes be individually unpredictable, but they do not appear on an entirely random basis. Such events form a niche in communal memory, which may mark off the years of their occurrence – e.g. the “flood of ’38.” It seems self-evident to say that floods generally occur in flood-plains, but however obvious, the point needs to be made that natural hazards do not skip about the earth’s surface; instead they cluster in particular areas that come to know and fear them. Natural disasters have comparable limits in time. Once begun, they move through a life-cycle and depart: a river crests and recedes, an earthquake rumbles on through its aftershocks. This, too, becomes part of the folk-perception of natural hazards. Each peril has its accustomed duration, from which there is little variation.

The spatial and temporal limits are not

absolute. Some disasters allow greater variation than others, volcanic eruptions, for example. But perhaps the most notable exception is the epidemic, whose boundaries can only be fixed after the fact. While epidemic disease has its own special geographical loci, the fact that it can spread in far-reaching and complex ways is significant, not only for the loss of life involved, but because its potential for expansion is so much a function of human agency. As André Siegfried points out in his elegant little volume, *The Routes of Contagion* (1965), disease moves by the routes and with the speed that human travel has made possible. The Black Death (1348–1349) prefigures nuclear war not only in the massiveness of casualties but in the scope and duration of its occurrence.

The catastrophes of modern times – metastatic and hyperstatic – may ultimately be found to depend on similar limiting principles, but they are not presently evident. For the cardinal feature of artificial catastrophe is its *unboundedness*. Although technical limits may be discernible after the fact, the French writer on the concentration camps, David Rousset, accurately perceived the apparent repeal of limits when he observed, “Normal men do not know that everything is possible” (Arendt, 1958, p. 303). The same repeal of limits has been noted for warfare since World War I (Elliot, 1972) and for political terror since the 1930’s. Concerning the Soviet “Great Purge” of 1936–1938, Walter Connor (1972) speaks of an “elasticity of limits,” which permitted the NKVD to mass-produce victims. That there are eventual limits seems clear – the process does not grind on until the last secret policeman executes the last possible victim. However, the evident elasticity goes so far beyond “normal” conceptions of the possible that it effectively constitutes endless disaster.

The modern state and modern technology therefore permit, as Robert Lifton (1968, p. 32) said of the Chinese Cultural Revolution, “induced catastrophe”. Wherever such events occur, they seem to outrun the capacity of

potential victims to imagine, let alone cope with, what is about to befall them. In that sense, the incomprehension of the holocaust victims simply reflects the degree to which disaster innovation has overtaken mental categories. As far as natural homeostatic disaster is concerned, the categories remain highly conventionalized. Natural perils may be sorted into a relatively small number of pigeonholes with little disagreement. Their very repetitiveness across generations makes them relatively comprehensible. When Typhoon Ophelia struck the island of Ulithi in the southwest Pacific in 1960, the prevailing reactions tended to be cooperation and interdependence rather than helplessness and paralysis, “. . . probably because cultural conditioning by recurrent typhoons appeared to have minimized fear, panic, and despair” (Lessa, 1964). But the innovative capacity of human endeavor makes it possible to invent new forms of catastrophe. This dark side of social invention is sometimes accidental. Thus the integration of local electrical grids reduces the possibility of minor blackouts but creates the opportunity for massive, disabling power failures (Hewitt and Burton, 1971, pp. 76–77). However, other forms of disaster invention are conscious and calculated, such as large-scale political terror.

If unboundedness is one hallmark of man-made disaster, another is the rising potential for self-fulfilling prophecies. Where human beings are at the same time the causes of disaster and its victims, predictions of catastrophe can take on lives of their own; they can produce effects quite independent of their initial validity (e.g. Merton's (1948) commonly cited example of the bank which becomes insolvent because false reports induce a run on deposits). One cause of the self-fulfilling disaster prophecy is the aggregation of protective reactions to produce the very result they were meant to forestall. The independent protectionist policies of separate countries may create an international trade collapse. Secondly, the multiplication of disaster predictions can itself create a heightened awareness of

possible danger. In an atmosphere of war rumors, the listeners to Orson Welles' 1938 *War of the Worlds* broadcast were all too ready to believe the worst (Cantril, 1940, pp. 159–161).

Alternatively, the sheer volume of predictions can induce a fatalistic acceptance, a belief that the inevitability of the threat makes counter-efforts pointless (De Nike, 1972). Victims may be induced to regard human threats with the same inevitability once reserved only for earthquakes and tornadoes. The scope of manmade disaster opens the possibility of a double-bind situation for victims: if they face the full dimensions of a peril, they risk psychic paralysis. On the other hand, failure to confront it can prevent them taking whatever steps might be possible to mitigate the damage. A subtler aspect of the problem is the possibility that perpetrators and victims may fall into a circular relationship in which the victims' increasing passivity serves as a confirming message to perpetrators who have not yet decided to act.

Finally, there is the problem of intentionality. A traditional orientation towards natural disaster was, “It's in the hands of God.” This link between catastrophe and conscious action anthropomorphized otherwise incomprehensible forces and caused the victim to accept blame for his fate. The question, “Why me?” was often answered, “Because I deserve punishment.” Lifton's (1967) work on the Hiroshima survivors and that of Krystal and Niederland (1971) on concentration camp inmates have been responsible for raising the issue of survivor guilt. Thus, the so-called “survivor syndrome,” with its heavy emphasis upon victim guilt, seems very much a product of the twentieth century. Lifton and Olson (1976) found similar reactions among the survivors of a Buffalo Creek, W.Va., flood, although, significantly, the flood was more the result of coal company negligence than of purely natural forces.

The pre-industrial period was prone to regard natural disasters as punishment for sins, the means by which a watchful deity secured the moral governance of the world. In the absence

of compelling naturalistic explanations, it was neither irrational nor implausible to ascribe disasters to supernatural intent. Vestiges of pre-industrial attitudes remain. William James described the San Francisco earthquake as a presence that “stole in behind my back” (Rosenman, 1956). Rural populations – less touched by secular-scientific thought patterns and more vulnerable to nature – may continue to construct elaborate theological explanations. However, even bearing in mind the time-lags and inconsistencies, a changed conception of intentionality runs parallel to the shift from natural to artificial disaster. We have already seen that three significant changes have occurred: (1) natural catastrophes have become subject to scientific explanation and, often, prediction; (2) natural hazards are believed to be controllable and hence may be perceived as less threatening; (3) we are increasingly likely to categorize artificial stresses as “disasters”. These developments have brought corresponding changes in the manner in which we conceive intentional action. Despite vestigial remnants, natural catastrophes can be more convincingly dealt with in secular-scientific than in theological terms. More to the point, we are less prone to categorize a natural hazard as a “disaster”: if not controllable at the moment, it soon will be. For all of these reasons, the personification and intentionality of natural forces has been replaced by a tendency to see them in neutral, non-intentional terms. Since natural hazards do not occur “on purpose,” there is less tendency to blame the victim for his own suffering.

Intentionality has been transferred to the relatively new category of humanly caused disasters. Rue Bucher (1957), discussing a series of airplane crashes in Elizabeth, N.J., in 1951–1952, observes that “the assessment of responsibility was dependent upon some conception of the causation of the disasters, together with the belief that it was possible to do something to prevent their recurrence.” The catastrophes that now preoccupy us flow from human actions, for which we must formulate

conceptions of causation that differ both from the “divine punishment” view of pre-industrial times and from the “neutral forces” perspective from which we evaluate natural hazards. When disasters are artificial, “victimization cannot be random . . .” (Krystal and Niederland, 1971, p. 39). It is possible to make distinctions among stated intention, action taken in ignorance of its consequences, and accident; indeed, the law does so as a matter of course. However, the subtle gradations visible to outsiders are unlikely to be perceived by survivor-victims. They adopt a simpler causal view: if human actions created the crisis, those actions must have been intentional. Melvin Lerner (1970) argues that we all wish to believe that the world is just. His “just world paradigm,” for which a substantial amount of experimental support exists, suggests that “We want to believe we live in a world where people get what they deserve or, rather, deserve what they get.”

The “just world paradigm,” as it applies to artificial disaster, suggests a symbiosis among victims, harmdoers, and bystanders. Each assumes the rationality of human actions and assumes some variety of moral consistency. While it is by no means the only strategy to adopt, many disaster situations resolve themselves into an exercise in blaming the victim, in which, paradoxically, the victim himself may be a major participant. It seems no easier for contemporary victims to regard their harmdoers as evil or inept than it was for pre-industrial victims to view God as malicious or arbitrary. So far as intentionality is concerned, therefore, we have come full circle, back to the view of purposeful disaster characteristic of an earlier time.

ADAPTING TO DISASTER

“Community” is normally thought to be a group whose members share common benefits. In fact, however, by entering a community one becomes fully implicated in the fate of others, as subject to vulnerabilities as to benefits.

Metastatic and hyperstatic disasters have shattered the temporal and spatial boundaries of natural, homeostatic catastrophe. That has been possible because technology and organization can produce stress on an unprecedented scale, and because that stress spreads along unprecedentedly broad lines of mutual dependence. In the past, only epidemic disease prefigured the expanded character of artificial disaster. Global lines of contact now link human beings in widening networks of mutual benefit and jeopardy. In paradoxical ways, economies of scale associated with industrialism have simultaneously diluted and expanded risks. International trade, electric power grids, floating monetary exchange rates, dependence upon fossil fuels, and nuclear deterrence suggest but do not exhaust the ambivalent characteristics of modern life. The same innovations that enrich and protect them also make communities and nations hostage to one another. Risks, like benefits, spread outward through ramifying patterns of human interaction. A bank's collapse, a crop failure, or a guerrilla war cannot be assumed to have only local consequences. Thus community has proven to be a two-edged sword: on the one hand, it relieves local stresses; on the other, it makes us all potential co-victims.

The communication of stress along lines of interdependence has a cognitive dimension. The scope of disaster is measured both by its observable local effects and the framework of knowledge that permits victims to associate their own hardships with distant events. Networks of communication help to define the scope of modern disaster by aggregating local events into large-scale patterns. In the past, when horizons of experience were narrow, all events, including disasters, were local. If one lacks sure knowledge of events fifty miles away, there is no way of knowing whether one shares a disaster with inhabitants of distant villages. Occasional travelers might bring word of far-off misfortunes, but such news was subject to delay, distortion, lack of detail, and the inability to confirm it. Hence, in the pre-industrial past

disaster was perceived as local whether or not damage ranged over a larger area. The segmented character of pre-industrial life — made up of numerous, relatively self-sufficient groups — contributed to the perceptual segmentation of disaster.

As horizons of experience broadened, so too did the awareness of disaster. The “real” limits of disaster damage began to coincide with its cognitive boundaries. The effect of modern communications was to aggregate many separately perceived local disasters into larger, more inclusive sets. A “flood” became the inundation of an entire river basin rather than the submerging of single towns repeated over and over again. A “plague” came to be seen as a continental or trans-continental pattern of morbidity and mortality rather than the affliction of individual, self-contained communities. Consequently, widened patterns of interdependence made disaster “larger,” if only because both victims and onlookers could finally know its broadest extent. Beneath the surface, of course, lies an epistemological question: what do we *know* disaster to be, and through what means of knowing? Access to a wider range of information allows the reconceptualization of catastrophes, through the assembling of information about collective stress into mental packages that reflect a concern for nations and continents instead of villages and regions.

The *quality* of communication is another matter. Disasters produce the paradox that the need for information rises at precisely the moment that normal channels of communication may be destroyed (Larsen, 1954). Since people in crisis abhor an informational vacuum, rumors rush in, facilitated by the breakdown of conventional social barriers (Shibutani, 1966, p. 34). In the absence of clear and unambiguous evidence, victims and prospective victims are likely to view the threat in terms consistent with the prevailing conception of “normal” events. Many listeners to Orson Welles’ *War of the Worlds* broadcast who scoffed at the idea of a Martian attack did believe that the program

reflected an invasion from Germany or Japan (Cantril, 1940, pp. 159–161). This phenomenon, of course, reflects the well-known disposition to interpret ambiguous stimuli in familiar terms (Hudson, 1954).

The interpretive process for artificial disasters appears to operate within a looser set of constraints than it does for natural catastrophes. As the earlier discussion of homeostatic disaster suggested, the more clearly patterned character of natural cataclysms gives them a secure place in communal memory, folklore, and traditional wisdom. Indeed, patterning may reach the point where potential victims become socialized to a specific set of expectations about natural hazards. Moore's (1964, p. 195) concept of the "disaster culture" of hurricane-prone areas is a case in point, for it

... would include those adjustments, actual and potential, social psychological and physical, which are used by residents of such areas in their efforts to cope with disasters which have struck or which tradition indicates may strike in the future. These defenses include such diverse elements as folk tales of riding debris for days and construction of sea-walls. But at the core is an attitude of defiance and of pride in ability to "take it" expressed in vehement refusal to flee before the winds.

The prevalence of "disaster cultures" depends in part on the frequency with which a particular kind of hazard occurs. Thus, we would expect hurricanes and tornadoes to be incorporated within the socialization process more readily than, say, earthquakes. The overriding point, however, is that insofar as natural hazards reflect the patterns and periodicities of nature, they can be taken account of before the fact; and, further, that they may be taken account of through specific forms of adaptation. The result is both a psychic and a material readiness to accept and bounce back from natural stresses (Dynes, 1970, pp. 69, 78).

The paradox of adaptation lies in the fact that the greater the disaster readiness, the less likely that the stress will constitute a perceived disaster. All natural hazards are not disasters, for surely one central element of "disasterness" is the shock of impact. Whatever mitigates that

shock also routinizes stress. Now, of course, we cannot simply divide stress events into watertight compartments, labeled "disaster" and "routine hazards." A routine hazard – for example, a snowstorm in a northern area – can reach an intensity that exceeds the adaptive capabilities of the indigenous disaster culture. A relatively unfamiliar hazard – a tornado in an area that rarely sees one – may be dealt with fairly expeditiously by relief measures designed for other forms of stress. There will always be such cases clustered in the middle range between stresses that are both intense and novel and those that are mild and routine.

But disaster is, as much as anything else, a socially conditioned category. To define it without an awareness of its relativity is to miss an important element; a disaster is more than simply "an event located in time and space in which a community undergoes severe danger and incurs losses so that the social structure is disrupted and the fulfillment of all or some of its essential functions is prevented" (Dynes, 1970, pp. 69, 78). The social context provides characteristic ways of understanding. When collective stress falls well within those ways of understanding, the response is likely to be the patterned behavior associated with a "disaster culture": people go about their business with minimum disruption of routine; each knows the behavior that the community expects. As collective stress moves up to and beyond the margins of conventional understanding, two things happen: the psychological shock of the unfamiliar is added to physical damage; and the victims cannot cope with the stress by fitting into any ready-made roles. The "disaster syndrome" – that dazedness and passivity so often noted in some survivors – bulks larger as the stress moves beyond conventionalized boundaries.

How communities adapt to collective stress forms a particularly critical question where artificial disaster is concerned. The patterned character of most natural disasters limits their shock effect and increases the coping abilities of

the community. This patterning is more likely to be absent where the catastrophe results, accidentally or purposefully, from human action. One reason why coping is more difficult is the unboundedness of artificial disaster. Not only is the element of surprise likely to be much greater, but the disaster much more readily exhausts the community's recuperative abilities. Fred Iklé (1958, pp. 8, 11) points out that "A decline in resources on account of destruction is not necessarily accompanied by an equivalent decline in the number of consumers who can be served by those resources." He goes on to note that as the ratio of consumers to resources increases, the resources that remain — food, lodging, transportation, medicine, and so forth — must be stretched to accommodate the rising demands. The elasticity of resources permits more individuals to be served by fewer facilities; four may live in rooms that once housed only two. Thus far the argument simply reflects the adjustive processes that have always characterized rational attempts to cope with disaster. However, the transition from natural to artificial disasters suggests new limits on the elasticity of resources. The level and scope of destruction may now quickly surpass the ability to make do with less:

Increasing destruction leaves an ever smaller amount of resources to cushion the impact by increasing the consumer-resources ratio. The elasticity of resources is limited. In other words, after physical destruction exceeds a certain percentage of a city's total resources, further increase in destruction will result in a disproportionately greater increase in social effects . . . The phenomena of elasticity and disproportionality apply not only to cities but also to regions or to a country as a whole.

We must be sure not to overdraw the point: there have been natural catastrophes with precisely these effects. Indeed, such effects were not uncommon in a pre-industrial, pre-scientific age, when natural forces were neither controllable nor believed in principle to be controllable. However, we have already seen that beginning in about the late seventeenth century, the orientation towards natural forces became markedly more optimistic and manipulative.

There then ensued a period, lasting up to about the middle of the nineteenth century, in which natural forces grew less threatening without human forces having as yet taken on much greater destructive capacities. The ability to exhaust a society's coping capacity is now in the hands of human rather than natural adversaries. In short, the world has become more threatening, not only because absolute levels of possible destruction have risen, but because the capacity to absorb destruction has not risen with comparable speed.

There is also a perceptual dimension. Except in extremely rare instances, natural catastrophes could be referred back to comparable experiences of past generations. Nature's capacity for surprise is distinctly limited. Not so with man. Innovative capacities continually open up new vistas on the "unthinkable". As "all things become possible," the cultural capacity to adjust to new possibilities falls behind. It is difficult to create a contingency plan for inconceivable contingencies. The application of human ingenuity to the production of disaster thus opens vistas of misfortune faster than our capacity to assimilate them. The litany of contemporary disaster consciousness reflects this headlong growth: nuclear war; overpopulation and food shortages; ecological imbalances, including depletion of the ozone layer and thermal pollution; collapse of the international monetary system; sudden unavailability of fossil fuels; race war on a national or international level; a chain-reaction of technical malfunctions in power networks and communication systems (e.g. Heilbroner, 1975). One need not complete such a doleful catalog in order to recognize a peculiar contemporary receptivity to disaster themes: they threaten to saturate both popular culture and intellectual discourse. Nor, at this point, is it particularly significant which probabilities we assign to specific hazards. Rather, the consequential considerations are these: (1) the attitudinal and scientific-technological developments that deprived natural hazards of their sting have now been widely identified as

the *causal* factors in the new disaster modalities; (2) projected artificial disasters can assume so many possible forms that effective prediction becomes extremely difficult; (3) specific fears have given way to a less focused, more diffuse apprehension: *something* will happen, although no one is sure quite what form it will take; (4) a non-specific and pervasive expectation of artificial, hyperstatic disaster may become a self-fulfilling prophecy.

Is it possible to shape adaptive responses to artificial disasters? Of course. The most obvious cases occur in small, metastatic disasters at the community level, such as mine and industrial explosions. As disaster shifts to hyperstatic, society-wide forms, adaptation becomes more difficult, as Iklé's principle of the limits of resource elasticity sets in. Further, where rates of technological innovation are high — as they have been in recent years and are likely to be for the foreseeable future — each new collective stress is likely to differ from those to which the society has already been subjected. One cannot count upon the accumulation of transferable skills. The shock of unfamiliar stress may blunt the utilization of those skills that remain useful. The association of artificial misfortune with intentional action increases the likelihood of survivor guilt, although the sense of unworthiness and self-punishment may not show itself until months after impact. The matter is further complicated by the relationship between the *scale* of disaster, on the one hand, and, on the other, its *familiarity*. It seems to generally hold for artificial disaster, that those of greatest intensity seem to be both least frequent and least likely resemble one another. The most severe artificial disasters most directly reflect the pace of technological change.

The declining ability to learn from past disasters militates against more rational responses to future catastrophes. The rapidity of social change carries forms of disaster with it and endows the future with an air of both menace and resignation. At times the recognition of disaster uniqueness reaches the level of

an identifiable mood, a predisposition to expect the worst from any quarter and, ultimately, a desire to resolve the ambiguity by having "the other shoe drop." Many writers on the period before World War I have pointed to this premonitory form of disaster readiness. George Steiner (1971, p. 24) describes the period as "the great ennui":

... by ca. 1900 there was a terrible readiness, indeed a thirst for what Yeats was to call the "blood-dimmed tide." ... The arms race and the mounting fever of European nationalism were, I think, only the outward symptoms of this essential malaise. Intellect and feeling were, literally, fascinated by the prospect of a purging fire.

In retrospect, those who partook of this mood hastened the slippage into war. A similar case may be made for the past decade, with its parallel feeling of teetering upon the edge of events that seem to be as consequential as they are unfathomable. As the premonitory mood enters mass media of communication, it is rapidly diffused through virtually the whole of a society, a process Greisman calls (1974) "marketing the millennium."

In short, the contemporary cultural construct of "disaster" departs markedly from the micro-disasters that have been so extensively studied in communities over the last quarter century. While community catastrophe research has had very real benefits in the work of rescue and rehabilitation, it does not — and, indeed, could not be expected to — address the massive cataclysms of the twentieth century (Barton, 1969, pp. 58–61). These society-wide locations are the modal catastrophes of modern times. The empirical grist of disaster research thus turns out to be less bona fide "disasters" than foreseeable and largely controllable hazards. As "disaster" has changed its locus from nature to man and from small-scale to large, the mine explosion, the tornado, the hurricane, no longer fully reflect its properties.

SUMMARY

Western history since c. 1750 has been

characterized by the sequential emergence of three disaster modalities: homeostatic, meta-static, and hyperstatic. This sequence may be characterized as involving shifts from bounded to pervasive catastrophes; from short-term to long-term stresses; from natural to artificial causes; from perceived solvability to insolubility; and from narrow to broad substantive content. Metastatic disaster accompanied the rise of industrialism after about 1750; while artificial in its causation, it was still of limited scope and duration. Beginning about 1930, artificial catastrophe began to assume forms of increasing intensity, scope, and duration. These hyperstatic catastrophes have become modal for the present period, with concomitant strains placed upon society's capacity to adapt to novel collective stresses.

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