Composure and Panic in Time of Catastrophe: An Empowerment Approach to Disaster Management

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Three widespread stereotypes influence disaster planning: (1) people panic in times of catastrophe, (2) there is a sharp increase in antisocial and criminal behavior, and (3) people within a disaster helplessly await rescue from the outside. In fact, panic is rare. Civility is likely to increase, and area occupants respond to disaster with appropriate self-protective and mutually supportive behaviors. Rather than following the traditional disaster management model, which rests on these mistaken beliefs, we should plan for a Near Earth Object threat on the basis of how people actually act. The proposed model is one of *empowerment* whereby international, national and regional organizations help local communities and citizens develop the skills, attitudes, and resources that they need to protect their own welfare. This requires a climate of flexibility, trust, learning, and mutual adaptation.

I. Introduction

Typically, our thinking about disasters reflects some mixture of evidence and imagination. We are influenced not only by the results of scientific research, but also by personal experience, what our friends say, and media portrayals. Ancients, who lacked scientific insight, attributed disasters to imaginary gods and today a field known as *geomythology* analyzes the role of myth in people's beliefs about volcanoes and Earthquakes.[1] In some Moslem areas, people favor religious interpretations of Earthquakes, and are generally opposed to predicting natural catastrophes, as this violates religious prohibitions against fortune-telling.[2] That religion and myth help shape beliefs about disasters is evident in modern urban societies as well as developing nations.[1] At least some members of the public thought that Hurricane Katrina represented "God wagging his finger" at a sinful New Orleans.[3] While such myths provide an interpretive framework and even offer solace, from the modern Western scientific perspective they are counterproductive because they tend to discourage effective action. Interpreting a rapidly approaching asteroid as "an act of God" in a literal rather than metaphorical sense implies that little can be done to protect people from a disaster.

Even highly educated, scientifically literate people may harbor, if not myths, then at least mistaken beliefs about disaster, and this includes faulty expectations as to how people are likely to respond.[4, 5, 6, 7, 8] Flawed assumptions about how people are likely to react to a Near Earth Object (NEO) threat will lead to faulty planning, warning systems, and rescue operations. An accurate understanding of what people within a threatened or disaster area are likely to do provides a sound basis for NEO disaster management.

II. Disaster Stereotypes

Of the many stereotypical beliefs about human behavior in disaster, three are particularly widespread.[4, 6 ,7, 8] These are: (1) people panic in times of disaster, (2) disaster strips people of their thin veneer of civility and encourages looting and violence, and (3) People within disaster areas are stunned and passively await rescue from the outside. We shall refer to these, respectively, as the panic, looting, and helplessness stereotypes.

A. Panic

Panic refers to irrational, ineffective behavior. People who panic lose their ability to respond rationally and abandon logical planning and problem solving as they fall prey to repetitive, frenzied action. The inevitable frustration of their failed attempts to escape the situation only serves to amplify their agitation, creating a vicious downward spiral.

Mindless, frenzied activity does occur in some disasters, but only under limited conditions. Panic occurs when people perceive a closing window of opportunity to save their lives.[8] Examples of panicked individuals include nightclub or theater patrons who swarm the one unlocked exit when someone yells "fire," and passengers who rush and swamp the last lifeboat before it departs from a sinking ship. But even under these conditions panic is not universal. In many fires people have evacuated in an orderly fashion, assisting others, perhaps even returning to help people who remain inside. A study of more than 2,000 people involved in building fires found that only five percent took actions that increased their risk.[4] Initial reactions were to fight the fire, get out, and warn others. A few other situations where sensibility prevailed over panic include Hurricane Carla that ravaged Galveston in 1961, the Beverly Hills Supper Club in Southgate Kentucky in 1977, the Sioux City air crash of 1989, and the San Francisco Earthquake of 1906.

People may respond with resignation rather than panic if they cannot see a way to save their own lives, or conclude that the only chance of rescue is from the outside. Miners in collapsed tunnels, and submariners in vessels that will not resurface are likely to save air and energy and wait for rescue from outside, but only after they have sought other ways to escape. From the disaster management perspective, getting people to evacuate may be a greater problem than panic.[4, 9]

Because behavior during a disaster is fear-motivated, it is likely to be powerful and persistent. As the World Trade Center towers began to collapse in 2001, it was rational and sensible for bystanders to flee the scene. Serenity and resignation or a dignified retreat would have been a self-imposed death sentence. The fear and stress associated with a disaster situation may mean that people's cognitive skills are not at their best, but this is revealed in diminished problem solving abilities, not total dysfunction. Sometimes,

people are stunned into inaction, but this occurs in unexpected traumatic disasters (such as a gas main explosion) and for most people this effect quickly diminishes.[9]

The U. S. National Science Foundation sponsored a comparative analysis of ten disasters that occurred between 1989 and 1994.[6] These incidents included two earthquakes, two train derailments, a plane crash, two gas explosions, a tornado, a hurricane, and a bomb explosion and fire. Fatalities ranged from three to over two hundred, and injuries (in the case of the Northridge California Earthquake) exceeded 9,000. What amazed the researchers was the scarcity of panic and the large number of people who survived. Thomas Glass writes:

"… the one event that we studied that we figured would have incited panic was the [1993] World Trade Center bombing. Thousands of people stuck in these vertical columns, these stairwells. They were dark and filled with smoke. There was no sound… It took people hours to get out of these buildings because they were stuck in the vertical columns of victims trying to get out. On the basis of observations, sample interviews of 415 people who were in those stairwells, and other data, we found that panic was actually quite rare. In general, people said that there was relatively little panic and that everyone was generally cooperative." [6, p. 71]

Eight years later following the next terrorist attack on the trade center, panic was again rare.[10] People protected themselves from smoke inhalation by dousing handkerchiefs or pieces of clothing with water, coffee, or any other available liquid. They showed great ingenuity extricating themselves from collapsing rooms, fire-filled hallways, and stuck elevators. Penknives, squeegees, and even computers became simple tools of force. Most conspicuously, many thousands of them moved, in an orderly fashion, down dozens of flights of stairs then through a subterranean shopping center that protected them from flames and falling debris, to exit a safe distance away.

Why are we conditioned to expect panic? Media have much more profound effects on us than most people expect, and many fictional movies (and loose translations of historical events) portray shrieking people who completely "lose their heads." [4, 6, 7, 8] Incidents where people *do* panic are widely known, reflecting, in part, media's propensity to dwell on extreme, sensational cases and accept and pass on rumors. For instance, many people associate widespread "panic" with Orson Wells' *Invasion from Mars* broadcast in 1937. Yet, the vast preponderance of the radio audience was not fooled, and many of the people who took the reports at face value reacted in ways that make sense: setting out by car to retrieve a fiancé from behind Martian lines, stuffing rags around windowsills to limit the entry of poison gas, and reporting to armories for duty.[11]

People's judgments are heavily influenced by episodes of incompetence and failure, and isolated incidents of failure tend to obscure more common examples of success. The same sad story may be repeated again and again, and because of variations in the way that it is told, listeners come to think of one episode as many. People confuse efforts to warn other people and to escape from a threatening situation with panic. For example, we may take a man's shouting as evidence that he has "lost his head," not understanding that he is trying to warn other people about impending danger. Judgments of "panic" are too often based on the disaster environment, rather than on the behavior of people within it.

If disaster managers are convinced that the most likely reaction is panic, then they cannot trust people within the disaster area. They may postpone warnings because they are afraid that the announcement itself will lead to psychological breakdown and social disintegration. Yet, downplaying the risks inherent in a potential disaster situation or withholding a warning robs people of the valuable time that they need to take evasive action.[4, 7, 8] Announcing a backstage fire in a theater may trigger an exodus, but greater pandemonium will break out when the first hint for the audience is flames licking at the curtains. Furthermore, if emergency personnel believe that that people within a disaster area are irrational and emotionally overwrought, they may overlook reliable assistance that only people who are "already on the spot" can provide.

B. Looting

A second common stereotype is that disasters strip people of their civility, encouraging sprees of self-indulgent behavior including looting, wanton destruction of property, and violence. Research shows that disasters often lead to heightened interest in other people's welfare and encourage behavior that is considerate, even altruistic. Rather than demolishing individual conscience, disasters may lead to a heightened sense of community, at least for a while.[12] Crime rates dropped following Hurricane Betsy in New Orleans in 1965 and Hurricane Gilbert in 1988; the San Francisco Bay area earthquake in 1989; the bombing of the Murrah Federal Building in 1995, and the terrorist attack on the World Trade Center in 2001.[4]

After the airliners crashed into the World Trade Center, occupants smashed walls and moved debris to extricate one another.[10] Building occupants walked two abreast down the stairway in orderly fashion, shifting from double to single file to make way for injured people and emergency personnel. People waited for less fit co-workers, and some of them carried disabled people down tens of flights of stairs. In the lobby, many workers remained on station to guide others along a safe passage to the outside. First accounts, given by the mayor and other New York officials stressed the heroic activities of police and fireman, only later did the high level of concern that victims had for one another come to light.[10]

New York City underwent blackouts in 1964, 1977, and 2003. In 1964 and 2003, law and order prevailed; however, there was significant looting in 1977. But even discussing the 1977 blackout, historian James Goodman writes: "People displayed tremendous reserves of kindness, generosity, patience, and good humor. On just about every block in a city of thousands of blocks, some man or woman, boy or girl, proved himself or herself to be a hero. Strangers not only talked to strangers, they did what they could do help them through the night."[13] In 1977, looting, largely undertaken by young males, was limited to neighborhoods characterized by high unemployment, racial tensions, and unresolved social problems. Fires set after looting were likely intended to destroy accounting books that recorded personal debts.

Quite possibly a natural disaster becomes a civil disaster when authorities allow conditions to deteriorate or make it worse. This probably occurred during the 1977 New York blackout and certainly occurred when politics and bureaucratic bungling delayed rescue following Hurricane Katrina.

Some – certainly not all – looting is a form of survival behavior that emerges under extreme duress. Citizens who never before broke the law and are unlikely to do so again may burglarize convenience stores for water and food, siphon fuel for their automobiles or even steal vehicles so that they can escape. Vending machines have been ripped open for beverages to quench raging thirst and designer furniture has been used to smash windows to get air. Police have commandeered automobiles and stolen flashlights and other essentials that they needed to enforce the law.

Expectations of looting and violence encourage a highly authoritarian approach to disaster management, and this includes a show force by police and the military. An authoritarian approach may encourage exactly those problem behaviors that it is intended to suppress. Uniforms, badges, weapons and other symbols and implements of authority and power tend to provoke hostility and aggression – this is one of the reasons that many police departments issue baseball caps instead of hats that resemble those of military officers. Provocation is greater if officials are confrontational and keep their weapons at the ready. Official displays of force may alarm civilians within the disaster area who then arm themselves and form vigilante groups, further increasing the likelihood of violence. Another way to enrage the citizenry is through ostentatious efforts to maintain physical distance, for example, by dropping supplies from helicopters rather than distributing them in person. Sure, good police work is necessary, but this should be handled with finesse and leave area residents' dignity in tact.

C. Helplessness

The final stereotype is that people within a disaster area will await rescue from the outside. Certainly, people who are maimed and mangled cannot fend for themselves, and, as already noted, sudden severe disasters may leave people temporarily stunned. But the empirical literature is clear: "most post-disaster search and rescue is carried out not by trained emergency response organizations but by family members, friends, neighbors, coworkers, and even complete strangers that happen to be at or near the scene at the time of the impact." [4, p.350] More injured people arrive at medical field stations and hospitals by foot and private automobile than by ambulance.

The comparative study sponsored by the National Science Foundation found that people within disaster areas assembled into spontaneous rescue groups that had leaders, roles, rules and standards.[6] These groups began search and rescue operations well before outsiders could arrive, and their motivation and effectiveness was increased by the pre-existing social bonds that cement family members, friends, and neighbors. As Thomas Glass writes:

"… in the tremendously violent sewer explosion in Guadalajara, Mexico, leveling 5,000 homes, citizens formed search and rescue teams that performed in amazing ways. They used automobile jacks to lift rubble and garden hoses to force air into voids where people were trapped. The majority of people were rescued by ordinary folks and not by the military, the Red Cross, the Green Cross, and so on…" [6, p.71]

The mistaken belief that area residents are helpless prompts disaster planners and managers to underestimate the importance of local rescue and relief efforts. This

miscalculation leads to delay, duplication of efforts, and mutual interference, and mutual frustration. In the United States in particular, professionals tend to regard volunteers as a nuisance and make poor use of local resources.[6]

II. Towards an Empowerment Model

An evidence-based model of humanity in time of disaster - as rational, civil, and capable - sets the stage for a non-traditional model for disaster management, one based on recognition that *residents of a threatened or afflicted area are a part of the solution, as well as part of the problem*. Under this model the goal is to empower or enable communities and individuals to respond appropriately and reduce the risk of personal and community loss. This empowerment model rests on a collaborative, rather than an authoritarian approach to disaster planning and management. It requires a culture of learning, cooperation, and mutual adjustment.[9] International, national, and regional agencies help local communities and neighborhoods develop the knowledge, skills, and other resources that they need to respond effectively to warnings and disasters.

As proposed here the empowerment models rest on five *core values* that are crucial not because of their moral overtones, but because they are functional. The first is *empathy*, the ability to relate emotionally to people within the disaster area. Empathy discourages the mindless application of rules, for example, refusing to issue rescue equipment on the grounds that it might be damaged, keeping workers and supplies from entering areas that are occupied but "too dangerous," and prohibiting the only physician who is present from administering artificial resuscitation because he is not government certified. Empathy encourages giving rescue flights priority over Air Force One sightseeing, taking the initiative to save lives and property rather than remaining frozen in place awaiting further orders, and ensuring that resources are used properly rather than for political purposes or personal gain.[3]

The second critical value is *trust*, a sense of confidence in partnering organizations and in residents of the disaster area. Of course trust is not always fully warranted, but the "starting position" should be that people are rational, civil, and efficacious, rather than irrational, criminal, and helpless. Some reports are unreliable and some people do misbehave (this includes officials and emergency workers as well as some rank-and-file citizens) but we should not operate under the premise that all reports from within a disaster area originate with wild-eyed crazies or that disasters encourage violence and greed.

In addition to being open to community ideas and suggestions, officials must demonstrate their own trustworthiness to the people they hope to help. Trustworthiness rests on demonstrating concern for the threatened people and speaking with a common voice. For about thirty years beginning in 1940 earthquakes killed thousands of people in the Santa River Valley and the Cordillera Blanca region in Peru; 70,000 perished in a 7.7 (Richter Scale) earthquake in 1970 alone.[14] Intermittent attention, ambiguity, the government's failure to follow through on its own recommendations, squabbling among different factions of scientists, and leadership that continually demanded "more proof" while silencing dissenting scientists undercut trust. Well-intentioned officials were handicapped further by the Peruvian government's long history of ignoring and snubbing people outside of the coastal areas. Mark Carey writes:

"Residents of this region had heard what was 'best' for their livelihoods for centuries; yet they remained in extreme poverty and condemned within Peruvian society simply because of their geographical location, their customs, or the color of their skin. Why all of a sudden in the 1940s or 1970s, even if outburst floods and avalanches had occurred, would local people decide to take Lima experts' advice when it had not apparently ever worked in the past." [14, p. 131]

The third critical value is *sensitivity to differences*, recognition that disaster management requires working with many different political and ethnic groups. Barely suppressed prejudices may simmer near the surface during times of turmoil and social unrest. We have to understand how a NEO threat seems not just to ourselves and to the scientifically literate public, but also to children, oldsters, and people who are overlooked because they are socially marginalized or physically isolated. Good intentions are not enough. "To help the victims of disaster," write Marsella and Christopher, "one must understand who they are and what they need from their own perspective. To do so, it is necessary to understand and respect their culture." [15, p. 521] Successful disaster management, they continue, requires encounters between men and women, northerners and southerners, residents of rural and urban areas, the poor and the rich, and the powerful and the powerless, as well as people from radically different cultures. Cultural sensitivity is particularly important given the high interdependency of nations that is fostered by globalization. Training of disaster workers must include cultural competencies and all messages must be prepared and delivered with linguistic and cultural variability in mind.

The fourth critical value, *openness,* is expressed in the recognition that pre-set plans may fail when they are put into action; that facilities or rescue personnel may not quite by up to the job, and that seemingly innocuous problems may cascade out of control.[16, 17] Openness encourages constant searching for new information (including otherwise useful information that upsets set plans or creates bad publicity) and a continual re-examination of assumptions, strategies, and tactics. It sets the stage for accepting conditions as they are, not as someone wants (or claims) them to be. Finally, openness decreases the likelihood that Western science will be presented as an all-powerful and unquestionable endeavor that should always take precedence over local knowledge and practices. Openness discourages arrogance, a characteristic that is likely to lead to non-Westerners to interpret even the best-intentioned activities as meddling, interfering, gambits to exert political dominance.[15]

Openness is crucial for the final critical value, *flexibility*, or capacity to respond creatively and quickly to changing conditions. Flexible organizations are not hopelessly overburdened with rules and procedures, bureaucrats with meaningless assignments, and blocked communication channels. Rather than resembling an assembly of gears and cogs, they comprise an organic "whole." Flexible organizations can respond to feedback and change directions. Disaster workers that cannot bend pre-set relief agendas frequently find themselves at odds with other relief providers as well as with the putative beneficiaries of their efforts may do more damage than good.[14] Openness and flexibility may be tall orders for organizations that are tempted overstate their genius and success in order to build political support, and this includes police, safety, and relief organizations.

A. Preparation

There is much that international, national and regional agencies can do to prepare local communities for disaster. Organizations at different levels must have shared interests: it would not do for one to be completely preoccupied with terrorism while the other is concerned with surviving natural disasters. The pre-impact stage is important for establishing close collaborative relationships during which each party takes into account the politics and dynamics of their partners.

An effective warning system requires means for predicting both the time and location of the impact, the likely material consequences, and how a mixture of governmental and private organizations are likely to respond.[9] This system must include ways for the rapid delivery of reliable information to people from different cultures and who have different first languages. Information must be expressed in ways that are understandable and meaningful to the targeted individuals (not just governmental agencies and scientists) and recommendations must be presented in such a way that they will follow the recommendations given to them. Additionally, the warning system must be able to handle fast-breaking developments and prevail over conflicting information that people will receive from other sources. People are particularly likely to turn to questionable sources of advice when the official message is ambiguous or presented in a language that is foreign to them.

The pre-impact stage is the time to put good communications procedures and equipment in place; in the case of the 1993 and 2001 World Trade Center policemen and firefighters could not communicate with one another because of incompatible portable radios.[10] The pre-impact stage is also the time to arrange logistics, such as setting up evacuation centers, arranging for reliable transportation, and pre-positioning rescue equipment and emergency supplies. Another crucial task is establishing staging areas for rescue workers who will not be needed immediately but who can provide relief and assistance as the disaster progresses. Everyone who might be involved should understand their roles and tasks *before* disaster strikes.

Rehearsal is crucial, especially in cases such as a NEO impact where we have no past experience to draw upon. Rehearsal helps inure people to difficult situations and makes it more likely that when put to the test they will perform well. Perhaps most importantly, rehearsal offers an unparalleled opportunity to discover a plan's weakness.[6] Rehearsal is a "shake down cruise" for plans, facilities, equipment, and personnel, and throws a spotlight on areas for improvement. Rehearsal works best when it takes place under varying conditions – for example, a stormy day, during the rush hour, at night on the weekend – not just under those conditions that make rehearsal convenient. Here it is important to establish feedback loop involving planning and rehearsal, with successive iterations making it possible to continue improving plans on the basis of accumulating experience. Furthermore, in a changing environment, no plan remains optimal. Rehearsal has to continue to keep a plan "up to date" in light of new developments, such as the advent of different technologies and personnel turnover.

Finally, establish effective working relationships with the media before the incident. Radio and television disseminate news to large numbers of people at the speed of light. People tend to trust their favorite stations and announcers and many will accept media recommendations. Oftentimes, media recommendations are good, as when an announcer

helps people track open evacuation routes or offers last-ditch advice (get in the bathtub, and cover yourself with a mattress). By maintaining emotional control, newscasters and commentators become models that help listeners maintain their "cool," and analyzing transcriptions of broadcasts may help everyone do better next time. Media do have a tendency to sensationalize, and their usefulness may be further hampered if their representatives assume the role of "investigative reporters" who continually challenge official pronouncements and generate publicity for ill-informed dissenters. [9] In the rush to present fast-breaking developments, media may pass on false alarms or request volunteers who are not really needed. The task for NEO disaster managers is providing reporters and commentators with an abundance of high quality, accurate information, and reality-checks to discourage rumors and false reports.

B. Impact

Of course, we hope that if we cannot prevent a NEO impact then at least we can evacuate the target area. After all, we expect advance warning. However, evacuations are never complete, and, if there is an imprecise prediction of the disaster zone, there will be need for rescue. As already pointed out, such search and rescue will be accomplished by people who are already within the disaster area. The most important reason is that they can act with greater dispatch than outside rescuers who arrive hours, perhaps several days after the event and then take additional time to learn how to get around. Compared to outsiders, residents of the disaster area are highly knowledgeable about local geography, customs, and resources. They have no need for translators and interpreters and other people to serve as "brokers" among different cultures.

Emergency managers, police, fire fighters, emergency medical technicians supply skill, knowledge, and determination. Competent professionals serve as models and leaders and are a source of inspiration – many evacuees who were struggling down flights of stairs at the World Trade Center reported a surge of pride and new energy when they passed fire fighters marching upwards to confront the blaze.[10] But, by definition, disasters over tax rescue and recovery professionals who can, after all, deal with only so many victims and in so many locations.

Police cordons that frustrate more homeowners than looters also exclude volunteer physicians, emergency technicians, demolition and construction workers, and other highly motivated and talented people. Volunteers have found ways around this, for example, at the World Trade Center in 2001 a retired marine donned an old uniform and was allowed to search for victims because he presented himself as on active duty, and a discredited medical technician gained access to the area by showing invalid credentials.[10]

Credentialed, organized, trained personnel may self-dispatch to a disaster site. For example, 35 ambulances, 40 fire departments from three states, ten helicopters, 80 local firefighters and 250 Air National Guard troops who were training nearby arrived at the Sioux City Iowa Airport following the crash of United Airlines Flight 232 in 1989.[5] There need to be mechanisms in place to regulate the arrival and deployment of these valuable resources, which may be of particular use in small cities and towns that have relatively little in the way of pre-existing emergency services.

Most volunteers will earn higher marks for their enthusiasm and social conscience than for their credentials and skills in emergency services. After an earthquake in Turkey,

an influx of volunteers caused a thirty-two kilometer traffic jam.[2] Following the Mexico City Earthquake, 1.2 million volunteers participated in search and rescue activities.[5] Untrained volunteers are eager but inefficient: for example, successive groups of volunteers may sift through the same pile of wreckage not realizing that all but the first of these groups is wasting its efforts, and rather than distributing victims to different area hospitals they may take them all to the nearest hospital, which is likely to be overburdened by people with minor injuries who have already arrived by foot. Some unskilled volunteers can be trained in advance, and others can be put to work outside of the immediate disaster area, for example, in relocation camps.

Many disasters trigger generous donations of money, clothing, food, medicine, and blood. Officials need to conduct realistic assessments of needs (rather than placing omnibus calls for help) and consider how this cornucopia of supplies, some of which will be perishable, can be distributed in an effective and timely manner.

C. Recovery

Is it better to provide famine victims with a sack of grain, or a plow and seed to grow their own food? Typically, residents of disaster areas need an immediate safety net *and* the wherewithal to speed their own long-term recovery. Although heroic activities and a heightened sense of community are typical early on, within a few days this gives way to a prolonged period of disillusionment when public interest turns to other news and when high expectations generated by the government and relief organizations simply are not met.[12]

Whether residents relocate or return to the disaster area, they require long-term help. Their needs will be varied, and so must the responses of recovery personnel. One simple step is to minimize political patronage when rebuilding an area: hire local companies and laborers, they need the work. Another step is to bypass "middlemen." In his discussion of Hurricane Katrina, journalist Jed Horne wrote that out of each $171 spent for emergency roof replacement, only two dollars went for the actual work.[3] And whereas law, fairness, and accountability are important, keep in mind that unnecessary bureaucratic procedures lead to unnecessary delays.

Disasters can create stress disorders and, after the emergency peaks, lead to undesirable "spin-offs" such as increased drug use, spousal and child abuse, truancy, and crime. Although it may take time for people to "work through" strong emotions associated with a disaster (and some people never fully recover) most people regain their stride. After the US cruiser *Indianapolis* was torpedoed during World War II, sailors who withstood the explosion were forced to survive in shark-infested waters for many days. Of the sailors who returned, only a few turned to the bottle or suffered mental breakdowns, most were full participants in transforming America of the 1950s into an economic powerhouse.[18] Other victims have recovered good psychological health after airplane crashes, car wrecks, and even confinement in concentration camps.

The destructive power of a disaster can also lead to community renewal. After the earthquake that wrecked Kobe, Japan in 1995, city leaders completed, in less than a decade, a renewal plan that was originally intended to unfold over thirty years.[3] The best time to plant the seeds for recovery are *before* the disaster. Rather than aim relief efforts at restoring the status quo, we should attempt to move the community beyond the

problems that it was experiencing before disaster struck. For example, simply replacing fishing boats following a tsunami could mean that local waters will continue to be over-fished. Attracting new industries to the area will restore employment and give the local fishing grounds a chance to revive.[19]

III. Conclusion

Although many of us are inclined to expect the worst in people, disasters often bring out the best: problem solving, civility, and heroic efforts to protect lives. As Erik Auf der Heide writes, "It is more effective to learn what people tend to do naturally in disasters and plan around that rather than design your plan and expect people to conform to it."[1, pp. 364-365] Our efforts in the area of NEO disaster planning and management should be based on an awareness of demonstrated human strengths as well as better-publicized vulnerabilities. We should approach NEO disaster management as a multifaceted and complex collaborative venture, based on developing strong partnerships among governments, professional disaster planning and management organizations, community agencies, and area residents.

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