

DISASTER SUBCULTURES IN EARTHQUAKE COUNTRY:
BETWEEN EARTHQUAKES IN SOUTHERN CALIFORNIA

Ralph H. Turner

From his investigations of hurricanes along the United States coast on the Gulf of Mexico, Harry Moore [1964] concluded that a region subjected frequently to the same disaster agent develops a disaster culture, which "serves to define situations and thereby to determine to a large degree the sorts of actions persons and institutions and communities will take when they find themselves in the stressful situation" (pp. 212-213). The disaster culture includes "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" (p. 195). Paradoxically, the disaster subculture (or more correctly, subculture themes) served both to define an appropriate emotional response to hurricanes, consisting of an often self-destructive pride in one's ability to face the danger, and rational elements that facilitated survival. Similarly, anthropologists (e.g., Cove [1978]) have pointed out that cultural myths are often the repository for disaster survival lore. In a comprehensive and systematic elaboration of the disaster subculture concept, Wenger and Weller [1973] and Wenger [1978] stress both organizational and subjective subculture components, and both adaptive and maladaptive aspects.

In the course of investigating community response to earthquake threat, following announcement by the U.S. Geological Survey of a vast uplift along the San Andreas fault that might be the precursor to a great earthquake in the Los Angeles region, we asked whether there was evidence of earthquake disaster themes in the regional subculture of southern California. Our data include a series of sample surveys of adults in Los Angeles from early 1977 to early 1979, a detailed record of newspaper and other media coverage, and reports on selected organizational and grass roots responses [Turner et al., 1979].

Wenger and Weller [1973] and Wenger [1978] have suggested three conditions that are crucial for development of disaster subcultural themes. Southern California earthquakes fit one of these conditions in producing "salient consequential damage," that cuts "across class and status lines in the community." While earthquake impact is repetitive, which is another of the proposed crucial considerations, disastrous quakes are relatively infrequent. And the seasonal periodicity that facilitates development of tornado, hurricane, and flood subculture

themes is altogether lacking. But more frequent small tremors serve as reminders. And a combination of historical circumstances has conspired to give California a distinctive identity as "earthquake country."

The third condition, that "subcultures appear more likely to develop if the focal agent allows for some period of forewarning" [Wenger, 1978, p. 41], is definitely not met, except in preparations for aftershocks. For two reasons, the absence of forewarning may not have impeded subcultural development. First, survival knowledge for use during and immediately after a quake is widely diffused. Ninety seven percent of our respondents know they should not get near a window during a quake, 90 percent that they should avoid elevators in tall buildings, 88 percent that an inside doorway or hall is a relatively safe place, 84 percent that it is usually best to stay where you are until the shaking stops, 81 percent that it is relatively safe beneath a sturdy table, 75 percent that one should not telephone police or fire departments for instructions in the quake aftermath, and 66 percent that it is not wise to hurry outdoors. Many southern Californians have learned a repertoire of adaptations to be put into effect at the onset of the quake.

Second, belief in earthquake signs by which the individual can tell for himself that an earthquake is coming is prevalent, and was already well documented at the time of the 1933 Long Beach earthquake [McWilliams, 1933]. Seventy-two percent of our respondents would take seriously an earthquake forecast based on an epidemic of unusual animal behavior, 49 percent would take seriously their own strong premonition or a forecast issued by an amateur student of earthquakes, and 26 percent the observation of supposed "earthquake weather." Thus folklore may incorporate belief in a period of forewarning when objective evidence provides no such assurance.

Further consideration led to the hypothesis that subcultural themes should be most sharply developed in clusters of neighborhoods where a recognizedly hazardous condition increases the risk from an earthquake or where the destructive impact of an earthquake has been acutely experienced in recent years. The main purpose of the paper is to examine this hypothesis, using the interviews taken in Los Angeles County during January, February, and March, 1977.

Vulnerability Zones

In order to test the hypothesis that distinctive subcultural themes will develop in zones where inhabitants are especially vulnerable in case of an earthquake, we identified census tracts containing the largest proportions of buildings constructed before building codes were revised to incorporate seismic safety requirements in 1934 (n = 542), tracts falling within the potential inundation zones below dams as officially mapped for the California Office of Emergency Services (n = 125), and tracts subjected to both kinds of risk (n = 199). Respondents in each of these three vulnerability zones were compared with respondents from a control sample of respondents living in less vulnerable parts of Los Angeles county (n = 503). Whenever a vulnerability zone differed significantly from the control zone with respect to age, occupational socioeconomic status, educational attainment, household income, or ethnic

composition, these variables were controlled by the use of analysis of covariance or other appropriate statistical procedure. Comparisons were made on over 60 variables, including personal characteristics, attitudes and beliefs about earthquakes and earthquake survival, patterns of

Table 1

Significant Differences Between Three Special Samples and Control Sample, with Effects of Age, Social Stratum, and Ethnicity Removed

Variable compared	Old buildings	Combined hazard	San Fernando impact
Significant orientations			
Favorability toward science	--	.05	--
Accuracy of scientific prediction in future	--	.05	--
Earthquake invulnerability	(-).01	--	--
Communication			
Number of media sources	--	--	.05
Topic discussed:			
Quakes around world	--	.001	--
Old unsafe buildings	--	.05	--
Moving out	--	.01	--
Earthquake hazard awareness			
Awareness of groups at risk	--	.01	--
Self in group at risk	--	.001	.05
Know whether fault nearby?	--	.01	--
Is fault nearby?	.001	--	--
Hazard reducing action			
Measures taken and planned	.05	--	.01
Taken for future earthquakes	.01	--	.01
Government expenditure for hazard reduction (inclusive)	--	.01	.01
Expenditure for prediction and warning systems	--	.01	.01
Number of suggestions for government action	--	.01	.01
Type of suggestions for government action:			
Structural safety	(-).01	(-).01	--
Emergency preparedness	.01	.01	.01
Scientific research	(-).01	--	--
Evaluation of government preparedness	.01	--	--

communication concerning earthquakes and earthquake threat, awareness of earthquake hazards facing southern California at the time of the investigation, and participation in and support for earthquake hazard

reducing action. Differences that were statistically significant are summarized in Table 1, and a complete listing of comparisons made can be found elsewhere [Turner, et al., 1980, pp. 14-15].

Residents of the inundation zone differed significantly from the control area population on only three variables. In the absence of a clear pattern, these small differences must be attributed to chance.

While residents of the old buildings zone differ from the control sample on relatively few variables, the number of highly significant differences warrants their being taken seriously. Residents are less likely to claim personal invulnerability to earthquakes. They are no more likely to mention "residents of old buildings" when asked to name groups of people in special danger, but they are more likely to include themselves in this group when they mention it. (This difference may be a function of the large Black population in the zone.) More of them think there is an earthquake fault near where they live. Although they are personally no better prepared for an earthquake by our inventory of sixteen measures, they more often attribute such precautions as having a first aid kit to concern over the earthquake danger and more often say they still plan to take further earthquake measures. They have no more suggestions for government earthquake preparedness actions, but they are more likely to suggest emergency preparedness and less likely to suggest such hazard mitigating approaches as improving the structural safety of buildings and conducting more scientific research. And they express a more positive evaluation of government efforts to prepare for a damaging earthquake.

Unlike residents of the inundation zone, these people do show awareness of their own vulnerable situation. Although this awareness has apparently not made them more attentive to news of future earthquakes, and has not moved them to concrete acts of personal and household preparedness, it may have contributed to a greater sense that one ought to be preparing. It is plausible to interpret their disproportionate attribution of actions to the earthquake prospect, and the insistence that they still plan to take additional steps to the operation of some neighborhood social norm of earthquake preparedness. It is surprising that people living in and among the County's most earthquake-vulnerable buildings are no more supportive of government expenditure to strengthen unsafe buildings and even less likely to suggest that government attempt to improve building safety. Possibly living in and among old buildings of doubtful seismic safety gives residents a sense that obstacles to correcting these conditions are insurmountable or that demolishing many of these buildings constitutes an unacceptable threat to community life. Hence they think more of what to do after the inevitable happens than of how to minimize its impact.

Residents in the combined hazard zone differ from the control sample in more respects than residents in the old buildings zone do. Like inundation zone residents, they exhibit no distinctive awareness of the risk of dam failure. Like old building zone inhabitants, they more often count themselves as being among those especially at risk because of living in old buildings. But irrespective of their individual sense of vulnerability, the distinctive plight of old building residents is more salient for them. Like old-building zone residents, they incline toward

emergency preparedness rather than enhancing the structural safety of buildings when suggesting government action.

Combined hazard zone residents differ from the control sample in several additional respects. They are especially favorable toward science, have greater faith in the eventual scientific prediction of earthquakes, but also in unusual animal behavior as an earthquake sign, and they register greater support for government spending to improve earthquake prediction and warning systems. They have engaged in more discussion of earthquakes around the world, of the problem of old buildings, and of the possibility of "moving out," and they are aware of a wider range of groups subject to special risk in an earthquake. There are no differences in personal preparedness, or in ascription or intention as there was for the sample from the old buildings zone. But they do have more suggestions for government action and express more support for government expenditure to support earthquake hazard reduction.

These differences between the latter zones are better explained on the basis of the sociologically and historically distinctive natural areas represented. Combined-hazards zone tracts are concentrated on the accessible lower slopes of the several ranges of hills that divide the County, which attracted a high-status population during earlier generations but are by-passed for newer and higher locations today. The distinguished past of these neighborhoods probably contributes to a more sophisticated awareness and more "community," as indicated by the prevalence of discussion, in spite of comparable educational and economic levels and risk from old buildings.

San Fernando Earthquake Damage Zone

Except for a small corner of the old-buildings zone affected by the 1933 earthquake, our vulnerability zones have not suffered severe earthquake damage within the lifetime of even the oldest residents. Vulnerability is thus hypothetical rather than based on collectively remembered experience. Our San Fernando Earthquake zone, consisting of tracts where the greatest damage occurred in the 1971 earthquake and where the entire population was evacuated for several days until danger that the Van Norman Dam would collapse had been alleviated, provides a contrast. Although the earthquake was strongly felt and minor damage occurred throughout the County, severe damage, loss of life, and evacuation affected only a restricted area.

The sample from this zone is not significantly different from the control sample on any of the control variables except ethnicity. Since it is overwhelmingly White Anglo, we controlled ethnicity by comparing only the 182 White Anglos (out of 200) in the San Fernando earthquake zone with the 348 (out of 503) in the control sample. The number of significant differences is small. Residents in the zone report more intense experience with earthquakes and more have personally experienced earthquake damage or injury, or have friends or relatives who have. There is a weak tendency for zone residents to glean earthquake information from a wider range of media sources, suggesting sensitization to the topic, but it is not converted into the more active discussion of

earthquake topics. Residents are slightly more disposed to include themselves in groups disproportionately at risk from earthquakes. Like residents in the old-building zone, they are no better prepared for an earthquake as individuals and households, but they more frequently say that they still plan to take steps they have not yet completed and they are more likely to attribute whatever preparedness they have achieved to the prospect of an earthquake. Like residents in the combined-hazard zone, they have more ideas for government action and more strongly support government expenditure for earthquake prediction and the development of better warning systems. And like residents in both vulnerability zones, they are more likely to suggest emergency preparedness in making suggestions for government action.

With the San Fernando earthquake zone sample we can answer a further question that helps to deal more precisely with the concept of earthquake subculture. Do San Fernando residents hold distinctive attitudes because as individuals they remember the personal trauma of the 1971 earthquake? Or has the earthquake memory been kept alive through institutionalization and as neighborhood lore, affecting newcomers to the zone equally with those who experienced the trauma personally? This is an application of the more general question of whether a category of persons share attitudes because they are all affected similarly by a common life situation, or because the attitudes are transmitted as part of a subculture [Turner, 1958]. If only the residents who lived in the earthquake damage and evacuation zones in 1971 hold the distinctive attitudes, we should hardly be justified in speaking of a subculture or subcultural themes. On the other hand, attitudes generated by the earthquake experience in individuals may have been diffused and communicated to newcomers to the zone, and kept vital by emergent symbols and discussion.

As a preliminary step, we divided the San Fernando Earthquake zone sample into three categories: those who had lived in the same neighborhood at the time of the earthquake and who named the San Fernando quake when asked for the most recent damaging earthquake they had experienced; those who had lived in the neighborhood less than six years and did not mention experiencing the San Fernando earthquake; and an ambiguous category of people who had lived in the neighborhood less than six years but mentioned experiencing the earthquake. The observed patterns of differences and similarities suggested that both life-situation and subculture processes were at work, producing different reactions.

A more definitive test required that we combine the intrazonal and extrazonal comparisons in a single analysis. In order to avoid excessively small numbers of cases in the cells of the table, we created a simplified fourfold table that could be subjected to a two-way analysis of variance. On one dimension we separated residents in the two zones. On the other dimension we separated respondents who had experienced property damage or injury in an earthquake personally or through close friends or relatives from respondents who reported no such experience. Analysis and interpretation were simplified by the finding that there were no interaction effects. Findings are summarized in Table 2.

The fact that the independent measure of intensity of earthquake experience distinguishes between persons with personal experience of earthquake trauma and those who have not had such experience, while failing to distinguish between residents and nonresidents provides validation for the method of analytic separation we are making. The suburban nature of the San Fernando zone is emphasized by the difference in organizational ties.

Table 2

Effects of Location and Personal Experience of Earthquake Damage: Two-way Analysis of Variance

Variable compared	Significance of F-ratio		
	San Fernando versus control zone	Personal experience with earthquake damage	Two-way interaction
Groups, organizations nearby	.001	NS	NS
Earthquake experience index	NS	.001	NS
Number of media sources	NS	.002	NS
Awareness of Uplift	NS	.031	NS
Self in group at risk	.044	NS	NS
Know whether fault nearby?	NS	NS	NS
Measures taken and planned	.002	NS	NS
Taken for future earthquake	.011	.002	NS
Government expenditure for hazard reduction (inclusive)	NS	NS	NS
Expenditure for prediction and warning systems	.003	NS	NS
Number of suggestions for government action	NS	.014	NS

Gleaning information about earthquake matters from a wider range of media sources, being more aware of the uplift (Palmdale Bulge) and its potential significance, and being able to offer more suggestions for government action all follow the pattern that suggests the effect of having personally experienced earthquake trauma rather than the effects of subculture. Although three variables supply a scant basis for generalizing, they do suggest a common manifestation of sensitization to the earthquake hazard or special interest in the topic.

Another three variables fit the subculture-effects pattern. Stating the intention to make additional earthquake preparations, supporting government expenditure for prediction research and improving warning systems, and perceiving oneself as belonging to a group especially at risk distinguish San Fernando earthquake zone residents irrespective of whether they have personally experienced earthquake loss. These items convey a more normative orientation, that the government should act and that individuals ought to be prepared, while being in a special risk group provides some of the justification for the normative element.

One item, the tendency to ascribe personal preparedness measures already taken to a concern over future earthquakes, shows significant effects of both personal experience and subculture. On a strictly post hoc basis this response seems plausibly to combine the element of sensitization to earthquake concerns with the normative element of an obligation to prepare for an earthquake.

For most items, the two analyses produced the same outcomes. Two items dropped out in this more definitive analysis and one was diagnosed differently.

We do not find evidence in these data of a comprehensive or potent disaster subculture localized in the zones of the 1971 earthquake damage and evacuation. We are left with very few differences between the people in these zones and elsewhere. Nevertheless, some plausible evidence for a modest but noticeable subculture effect has been adduced. The absence of heightened levels of interpersonal discussion seems to rule out the most effective mechanism for establishment and maintenance of disaster subculture themes. But the fact that the items providing ultimate support for the subculture hypothesis seem to incorporate a normative orientation toward earthquake preparedness lends plausibility to the conclusion that truly subcultural elements have been uncovered.

Conclusions

In reviewing these findings, we must first emphasize that an impressive array of important variables show no differences between the special zones and the control sample. There are no differences in awareness of the threatening uplift (Palmdale Bulge), number of predictive announcements remembered or taken seriously, extent of fear and concern about earthquakes, sense of increased concern during the preceding year, or level of personal and household earthquake preparedness. If these attitudes, cognitions, and actions are affected by subcultural themes, they are not localized according to zones of differential vulnerability and traumatic earthquake experience.

There is little consistency in the findings for the three zones of old buildings, combined hazard, and San Fernando earthquake. Only a disproportionate tendency to suggest improving search and rescue and other post-disaster response capabilities characterizes all three zones. While it is eminently plausible that a heightened sense of personal vulnerability could lead to greater concern with what happens when an earthquake strikes, a single variable is a slender reed on which to support a broad generalization.

Besides the evidence of distinctively shared attitudes and responses, we need a credible account of how the attitudes and responses are diffused through the population, if we are to accept the conclusion that there are localized subcultural variations according to disaster vulnerability and experience. Three kinds of evidence are available in this connection. First, certain characteristics can be plausibly interpreted as indicators of normative pressure. The sense that one ought to be doing more than one is, and the practice of ascribing commonplace prudence to the earthquake threat are both plausible symptoms of weak but nevertheless real social pressures, such as would be expected if subcultural process were at work. Second, interpersonal discussion among family, friends, neighbors, and co-workers should be a crucial medium for subcultural diffusion. But only the combined hazard population differs in this respect. Nevertheless, each of the three populations satisfies one of these first two criteria.

The third kind of evidence concerns the possible use of the mass media as an agent of subcultural diffusion. Content analysis of the widely read Valley News revealed disproportionate emphasis on the need to prepare for a future quake and on organizational and governmental preparedness, but not on personal preparedness. Thus the community newspaper may have contributed to the slight evidence of earthquake subcultural themes in the San Fernando earthquake zone.

There is another formulation that might fit our data more adequately than the formulation concerning zonal subcultures. A culture may be thought of as a mix of exemplary patterns and prescriptions, resources, and a map. Customs, values, mores and similar elements are familiar examples of exemplary patterns and prescriptions. Resources are the tools, including strategies and techniques, that are available for coping with a wide range of situations. As a map, the culture identifies figure and ground in the world of experience and identifies the special significance of objects, places, and experiences. The important feature of a map is that it alerts the reader to respond differently under different circumstances.

The concept of culture as a map is important because it allows us to explore the possibility that the different responses we find in different zones are the manifestations of a common culture whose carriers are responding to the various ways in which the zones are identified on the master map. We may have been on a false course in thinking of distinctive zonal subculture. The all-encompassing map would enable us to deal with the anomaly that residents in two zones seem to be under normative pressure to prepare their households for an earthquake, but report only average levels of discussion of earthquake topics with their family, friends, and co-workers. The social pressure might arise from the fact that something about their local situation is singled out on the map supplied by the larger regional subculture. It would also enable us to deal with the fact that feeling oneself to be a member of an especially vulnerable group does not imply any disproportionate awareness of especially vulnerable groups--even of the group in which significant numbers include themselves.

From this point of view there may be an earthquake awareness theme in the regional subculture of southern California. This subculture is

not restricted to any zone within southern California, but is shared throughout the County and environs. Awareness of the vulnerability of old buildings is prevalent throughout the County, without being much more prevalent in neighborhoods where such buildings are clustered than in the County at large. The memory of the San Fernando earthquake is similarly stamped in the cultural tradition of the County and is not restricted to the damage zone. Old brick buildings and the San Fernando damage zone are starred on the cultural map, so people who frequent the appropriate areas feel that they are in special danger and feel that they ought to be doing something to protect themselves from the earthquake threat.

This conception provides a more plausible explanation for some of our findings than the concept of zonal subcultures or subcultural themes. Combined with the idea of natural area subcultures and ethnic or racial subcultures through which the earthquake threat is given distinctive slants, it may explain most of our findings. However, insofar as there are institutional mechanisms such as the San Fernando Valley News that foster an earthquake awareness that is rooted in the unique and recent earthquake history of the area, the idea of a distinctive earthquake theme contributing a subcultural distinctiveness to the San Fernando earthquake impact zone may continue to enlarge our understanding.

REFERENCES

Cove, John J. "Survival or Extinction: Reflections on the Problem of Famine in Tsimshian and Kaguru Mythology," in Extinction and Survival in Human Populations, Charles D. McLaughlin and Ivan A. Brady, eds. New York; Columbia University Press, 1978.

McWilliams, Carey. "The Folklore of Earthquakes," American Mercury, Vol. 29 (June 1933), pp. 199-201.

Moore, Harry E. ...And the Winds Blew. Austin, Texas: Hogg Foundation for Mental Health, University of Texas, 1964.

Turner, Ralph H. "Life Situation and Subculture: A Comparison of Merited Prestige Judgements by Three Occupational Classes in Britain," British Journal of Sociology, Vol. 9 (December 1958), pp. 299-320.

Turner, Ralph H., Joanne M. Nigg, Denise Heller Paz, and Barbara Shaw Young. Community Response to Earthquake Threat in Southern California. Part Seven: Vulnerability Zones and Earthquake Subculture. Los Angeles: Institute for Social Science Research, University of California, 1980.

Turner, Ralph H., Joanne M. Nigg, Denise Heller Paz and Barbara Shaw Young. Earthquake Threat: The Human Response in Southern California. Los Angeles: Institute for Social Science Research, University of California, 1979.

Wenger, Dennis E. "Community Response to Disaster: Functional and Structural Alterations," in Disasters: Theory and Research, Enrico L. Quarantelli, ed. London and Beverly Hills, California: Sage Publications, 1978.

Wenger, Dennis E. and Jack M. Weller. Disaster Subcultures: The Cultural Residue of Community Disasters. Disaster Research Center Preliminary Paper No. 9. Columbus, Ohio: Disaster Research Center, Ohio State University, 1973.