

# Disaster Myths and their Relevance for Warning Systems

**Katja Schulze**

Freie Universität Berlin  
katja.schulze@fu-berlin.de

**Daniel Lorenz**

Freie Universität Berlin  
daniel.lorenz@fu-berlin.de

**Bettina Wenzel**

Freie Universität Berlin  
bettina.wenzel@fu-berlin.de

**Martin Voss**

Freie Universität Berlin  
martin.voss@fu-berlin.de

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## INTRODUCTION

Even technically perfect and functioning warning systems are not able to be fully understood by the populace which is intended to be warned (Geenen 2009; Aguirre et al. 1991). Each and every warning system is grounded upon specific assumptions (Clausen und Dombrowsky 1984). Every facet of how warnings are technically, socially, and organizationally shaped, harbors very specific assumptions concerning human behavior during disasters, as well as human behavior concerning warnings. Thus human behavior is not merely a reaction to warnings during and before disasters, rather it encapsulates all the ideas that even have already been built into the warning systems themselves and in their use. Nevertheless, in most cases these assumptions about behavior remain implicit. This becomes problematic because 1) the assumptions about human behavior in disasters are not empirically derived, rather they are often “myths” and assumptions about “myths” and as such 2) are distinctively different in interpretation and from person to person (both among a heterogeneous populace and among professional disaster relief workers). How one understands and comprehends warnings is hence dependent on knowledge which may or may not be shared similarly by those who are affected by disaster (Geenen 2009). This is due to the fact that the “subjective meaning” (Schütz 1932) of warnings is not one to one with the inscribed “objective meaning“ found in the warning systems themselves. As a result, precise and goal-oriented implementations of warning systems, as well as the management of specific safety activities, are limited in their effectivity (Dombrowsky 1985).

## ABSTRACT

Warning systems are technically, socially, and organizationally shaped and rest on specific assumptions concerning human behavior during disasters. The common notions about people’s behavior in disaster situations are often not based on empirical data, but rather on so-called “myths” which overemphasize rare and situation-dependent extreme behaviors such as panic, disaster shock, looting or helplessness. Due to the fact that these expectations are shaped within social environments, different stakeholders such as a heterogeneous population and professionals exhibit different assumptions. These assumptions may not only be misplaced, they additionally interfere with warning systems. The paper compares empirical results of three connected surveys: a comprehensive document analysis on disaster behavior, qualitative interviews with disaster relief workers and a quantitative representative poll. By contrasting the status of research with professional narrations as well as with the people’s expectations, different expectations and their variations are explored.

## DISASTER MYTHS

As American disaster research has exemplarily shown, a multitude of actors (those in the media, in rescue and relief teams, and in the population at large) have many notions and ideas as to how people actually act in disasters: many of which have yet to be empirically covered and investigated (Quarantelli 2008; Wester 2011). The research often speaks of so-called “disaster myths” that are commonly expected, but only appear very rarely and only in the context of a specific prehistory and under special conditions (Mawson 2005; auf der Heide 2004). To this point it has been shown that the expectations of the general populace concerning their own behavior in disasters differ considerably from the expectations of professionally trained actors who are involved in disaster management (Wester 2011), they differ from the expectations of those in the media (Drabek 1986), as well as differing from factually recorded behavior (Wenger et al. 1975). This difference in expectations is of such particular importance because the expectations, no matter how false or inaccurate they may be, form the basis for the action taken on behalf of the various actors. In sociology this is known as the Thomas-Theorem (Thomas und Thomas 1928). The sociologist Alfred Schütz (1932) saw “subjective meaning” as that which binds an actor with his or her own doings, and he contrarily saw “objective meaning” not as being some universally acknowledged meaning. Rather he viewed it as the ascribing of meaning from an observer, who is himself interpreting the actions of another without having knowledge of this other’s “subjective meaning”. From this interpretation, the deciding factor for the behavior of a populace in a disaster is not what is derived from the evaluation of reports, but rather it is the “subjective meaning” which is the crucial factor; and this “subjective meaning” can only be comprehended from the internal perspective of the affected party.

The proceeding working paper will point to the existing myths concerning population behavior in disasters and thereby attempt to include the three aforementioned perspectives: that of science, that of the experts, and that of the general populace.

## METHODOLOGY

In order to adequately inquire after the so-called disaster myths we made use of

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data which was collected within the framework of the research project “ENSURE - ENablement of Urban Citizen SUpport for Crisis REsponse”. The project investigates the feasibility to connect, i.e. with a mobile app, ordinary people from the general population with professional disaster-management authorities so as to aid and support the disaster-relief and preparedness effort. Specifically, the project aims to develop first aid concepts, education curricula, as well as the technical development of an effective alarm solution in the form of a mobile app. This app shall be used to warn people in general, give them advice on disaster related activities and activate registered persons with special skills (i.e. veterinarians, technicians, medics).

The starting point in the project is applied basic research on the subject of the behavior of populaces in disaster situations. As required by the well-established triangulation method, we will contrast the results of, firstly, a comprehensive document analysis based on around 900 documents. In order to ascertain the perspective of professional rescue workers, we additionally carried out eleven semi-structured interviews with experts in the disaster safety profession: both from the German Red Cross and the Berlin Fire Department. Thirdly, we ascertain the point of view of the population through the utilization of a computer aided household survey (CATI) in Berlin. To accomplish this, a questionnaire was developed which would ascertain the speculative expectations of the citizenry regarding their own behavior in the event of two differing disaster scenarios (scenario 1 being a torrential rain storm, scenario 2 being a major fire) and the behavior of others in the event of a disaster. The basis for this empirical study consists of a representative random sample of 1,006 Berlin citizens between the ages of 18 and 92. The average age of the respondents in the random sample is 51 years which was further broken down into 50.7% being male and 49.3% female.

## RESULTS

The most often named or discussed behavioral patterns, both as found in the literature and as mentioned by experts were: panic, disaster shock, looting and helping behavior.

### **Panic**

Panic is spoken of as being an incredibly rare event that requires certain situational conditions (Drabek 1986; Quarantelli 1954; Mawson 2005). According to Drabek (2010), mass panic, which encompasses the entire population, has never occurred. In spite of the apparent minor occurrence of panic, it is commonly expected by the populace, the media, as well as from the various public authorities. As such, panic belongs to the so-called disaster myths. This status is likewise reflected in the results of the expert interviews and population survey. Although the experts qualify panic as a rather rarely occurring behavior, it is nonetheless anticipated and even acts as a main guiding principle for relief staff's actions. The experts reported that panic should unequivocally be avoided at all costs due to its supposed 'infectious' nature, and as a result of the danger as posed in the event of a mass panic. Table 1 presents selected results of the quantitative survey. As shown in the table, 62.3% of the respondents expect that the majority of people would react in a panic-stricken manner in the case of a disaster situation. The myth becomes even more apparent in the data when one looks at the expectations of the respondents concerning their own behavior: depending upon the scenario in question, only 6.1% or 11.0% of respondents would expect a panic-filled reaction from themselves. These differences are indeed significant (see table 1).

### **Disaster Shock**

"Disaster shock" (also known as "freeze" or "disaster syndrome") also represents one of the so-called disaster myths (Barton 1969; Wenger et al. 1975). Only a few people exhibit "disaster shock" (Tyhurst, 1957), whereby this reaction is limited to suddenly occurring and extremely serious disasters (auf der Heide, 2004). Evidence for this myth can also be found among the data as yielded through our survey: respondents likewise overestimate the amount and frequency of "shocked" behavior (see table 1), with 48.5% of the respondents expect this shock effect among the general population. At the same time, the respondents appear to assess their own behavior more realistically: here only 5.0% or 6.9% (once again, depending upon the scenario) of the respondents believe that they themselves would react in this bespoken "shocked" manner. These differences between the assessment of one's own behavior and the behavior of the population at large are of significance (see table 1). On the subject of the "shock frequency" the experts

offered diverging opinions: just as many described shock as being an oft-occurring phenomenon as those who described it as being a rare one.

### **Rational Behavior**

Much like the findings concerning panic and shock, the results regarding "rational behavior" are similarly positioned. This behavior is to be understood as one pole of one behavioral dimension, wherein it is juxtaposed with the rather other irrational behaviors including both panic, and shock.<sup>1</sup> While there is the false impression or overestimation that panic and shock are the expected "irrational" behavioral modes, the actual frequency of "rational" behavior is often underestimated. In the survey, we ascertained that there were similar significant differences between the assessments of one's own behavior and that of the populace at large (see table 1). While 15.7% of those respondents questioned believe that the general population would remain calm and react in a reflective manner, a majority of the respondents (respective 68% or 79.5% in accordance with the scenario) opined that they themselves would react in a rational manner.

### **Looting**

Another common disaster myth is the idea of "looting". This paper does not wish to contest the existence of looting in itself, but rather challenges the assumed quantity of actual cases: "No doubt some looting behavior occurs, but it is minimal at worst and entirely nonexistent, at best" (see Drabek 1986 as well as Mileti et al. 1975). Nevertheless looting is "perhaps the behavior most expected by the public and officials" (Fischer, III 1998). The responses of the interviewed experts reflects this sentiment, where almost every expert described occurrences of looting as either being rather rare, or a completely non-occurring behavior in disaster situations. In spite of these expert opinions, looting behavior is still expected. According to Wenger et al. (1975), 64.7% of respondents found looting to be the biggest problem in disaster situations. Likewise, 42.4% of citizens asked in the Berlin survey believe that apartments and businesses would be looted in the event of a disaster situation (see table 1).

<sup>1</sup> Exploratory factor analyses resulted in the preliminary conclusion that these three items are able to be traced back to one factor (explained variance is respectively > 64%; with eigenvalues respectively being > .740).

	Item	N	applies	largely applies	partially applies	does not rather apply	does not apply at all	p <sup>a</sup> (Sc1/Sc2 vs. Pop)
P A N I C	Sc1	1005	18 (1.8%)	43 (4.3%)	122 (12.1%)	382 (38.0%)	440 (43.8%)	***
	Sc2	1003	30 (3.0%)	81 (8.1%)	163 (16.3%)	392 (39.1%)	337 (33.6%)	***
	Pop	1003	258 (25.7%)	369 (36.8%)	258 (25.7%)	97 (9.7%)	21 (2.1%)	---
S H O C K	Sc1	1002	17 (1.7%)	33 (3.3%)	103 (10.3%)	319 (31.8%)	530 (52.9%)	***
	Sc2	999	18 (1.8%)	51 (5.1%)	145 (14.5%)	392 (39.2%)	393 (39.3%)	***
	Pop	1000	183 (18.3%)	305 (30.5%)	345 (34.5%)	140 (14.0%)	27 (2.7%)	---
R A T I O	Sc1	1004	429 (42.7%)	371 (37.0%)	137 (13.6%)	48 (4.8%)	19 (1.9%)	***
	Sc2	1005	312 (31.0%)	372 (37.0%)	213 (21.2%)	31 (3.1%)	17 (1.7%)	***
	Pop	1002	49 (4.9%)	109 (10.9%)	295 (29.4%)	411 (41.0%)	138 (13.8%)	---
H E L P I N G	Sc1	1001	337 (33.7%)	344 (34.4%)	200 (20.0%)	87 (8.7%)	33 (3.3%)	***
	Sc2	1005	472 (47.0%)	369 (36.7%)	115 (11.4%)	26 (2.6%)	23 (2.3%)	***
	Pop	1004	165 (16.4%)	394 (39.2%)	341 (34.0%)	94 (9.4%)	10 (1.0%)	---

Commentary:  
 Sc1: Estimation of one's own behavior during scenario 1 "Storm and Torrential Rain"  
 Sc2: Estimation of one's own behavior during scenario 2 „Major Fire“  
 Pop: Estimation of the behavior of the population at large  
 \*: Wilcoxon signed-rank test; \*\*\* p < .001

Table 1: Selected results of the population poll

### Passively Waiting for Help

The image of the passive or helpless victim spread for example by media (Tierney, Bevc & Kuligowski, 2006) has also been proven wrong by disaster research (Drury und Cocking 2007; Quarantelli 1960). Authors stress that altruism, above all, is the predominant mode of behavior in disaster situations (Keating 1982; Levin, 1984) and that the majority of the initial relief and rescue was carried out by survivors and not by emergency staff (auf der Heide, 2004; Lechat, 1976). The respondents of our survey are also convinced of this ubiquitous “readiness to help others” so much so, that 55.6% of those surveyed, responded that most people help one another in disaster situations. Even more significant are the results when questioning respondents about their own expected behavior in disaster situations: here 67.7% and 83.6% respectively (see table 1) expected they would help others actively. In a similar fashion, 93.8% of those surveyed responded that they would try and provide good or aid in the form of clothing in the event of a disaster, 89.9% said they would help in the evacuation of complete strangers, and 79.9% even would be willing to offer their physical labor. The expectations of the respondents are not in line with the experts’ viewpoint which shows a more complex and ambiguous picture. On the one hand the experts were surprised by the amount of offered help in recent flood events, on the other hand they complained about missing self-help and precaution activities on side of the population. Passive behavior was often characterized as just watching and explained by being shocked, ignoring dangers or being afraid of doing something wrong.

### CONCLUSION

As this paper demonstrates, there are certain behavioral patterns that are more often expected than they actually occur. Disaster research literature refers to them as disaster myths and they are well known by researchers. Practitioners however do not seem to share these insights. False impressions about the general populace’s behavior during catastrophes are noteworthy because they act as the

main driving factor in the behavior of various actors.<sup>2</sup> Besides technical assumptions, warning systems also harbor specific assumptions concerning human behavior during disasters. As shown in the interviews held, experts in the praxis do not orient themselves based upon objective facts, but rather on subjective expectations and then act upon them as though they were objective realities. This leads to the consequence that even the selection and preparation of warning information has already been influenced by the prevailing disaster myths. Those false impressions about the general populace's behavior are transmitted into how warning information is communicated and disseminated.<sup>3</sup> Over the course of a number of years, this leads to an erosion of trust in the public officials. This could further come to the situation where the population may not believe the published warnings any longer and for example refuse to evacuate. Those that most greatly bear the brunt of this are the aid organizations that depend upon the fact that the populace has been warned, and therefore acts in a corresponding manner. The aforementioned selective transmittance of information leads to an "alphabetization", whereby the general populace is made "illiterate" so to speak and unlearns how one ought to deal with information and hazards. This withholding of information is quite pivotal in the long-term production of risks. It is essential that all actors involved in the warning process are well informed both about the myths and their consequences for warnings systems.

Furthermore, experts and ordinary people differ in their assumptions, just as there is a variety of assumptions among the general public. In following the alternative approach of the Disaster Research Unit (DRU), it becomes clear that warning systems must necessarily move away from the generalizing approach based upon myths, towards a differentiated one. Such systems should take into consideration the different needs regarding communication and information in a heterogeneous population, and thereby influence the design and implementation of warning

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<sup>2</sup> As an example; a fear of looting among the affected populace can lead to a hesitation or refusal to evacuate (Quarantelli, 1988). Likewise it can pilot disaster management services to the inordinately allocation of resources to impede looting behavior.

<sup>3</sup> The most striking example of this is the expectation of panic which subsequently leads to holding back information with the aim "to prevent panic."

systems.

The expectation that people are passive and helpless victims makes it challenging for rescue teams at the scene to perceive both the help that is already being administered, as well as any pre-existing aid potentiality as found among the populace. These factors further obfuscate the ability to include the population in the aid process and force potential helpers into a passive role as an observer. At this point, and as a result of the study's gathered results, a different style of informational politics must be recommended. Those who are among the affected ought to be informed that they are indeed capable of certain tasks, and this ought to be coupled with a general call to action. Warning systems could spread recommendations for actions as well as motivate and instruct people for certain (i.e. helping) activities.

In the continued work of the ENSURE project a mobile app will be developed based upon the results and conclusions of the aforementioned research. This app should be capable of warning people in general and give them advice in light of the myths and heterogeneous nature of the population. Secondly, it should treat the populace as mature actors in the disaster management process and bring them in as helpers. In addition to this, the training curricula of aid organizations concerning trained rescue teams and the general populace should be revised to include, amongst other things, the "objective" behavior of the populace in disaster, as well as the various possibilities of integrating civilian helpers.

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