

## A FALSE ALARM AT POZZUOLI, ITALY

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At the beginning of December, 1971, the French press reported a panic which followed a false alarm at Pozzuoli. It was decided to undertake an inquiry on the behavior which followed this event. Because of the geological character of the region of Naples where Pozzuoli is situated and because of recent seismic events which have shaken the Mediterranean basin, it appears that a review of the observed behavior of ten years ago would still today be of some interest.

### The Situation

Pozzuoli is an agglomeration of 70,000 people situated 12 kilometers from Naples. It is subject to the phenomenon of bradyseism, a term coined by Arturo Issel to designate very slow oscillations of the soil. At Pozzuoli the earth slowly subsided between the second century B.C. and the tenth century A.D. It then rose until the 15th century after which it subsided again until 1970 at which point it started to rise again. The 24th of February, 1970, an announcement of the Ministry of Public Works reported an inversion of the bradyseism characterized by notable uplifting of the earth. Several families were evacuated as a consequence. On the third of March they decided to evacuate the Rione Terra Quarter, a decision which resulted in the spontaneous evacuation of 30 to 40,000 people. A relief plan was developed which envisioned the evacuation of the city in three days but of which the details were not made public. At the same time, 4 sirens were installed. In case of an emergency they would function in an intermittent fashion blaring six times for 20 seconds.

The population of Pozzuoli understood the general situation as well as the event of 1970 and knew that measures had been taken by the responsible authorities.

The population is in large part (69%) composed following the Italian classification of middle class, working class, lower class and housewives. That is to say individuals of a lower socio-cultural level. Furthermore, the population had the "neapolitan temperament" or according to the term of Professor Jacono, the "southern mentality" characterized by feelings of affiliation, of resignation, of futility, and of the incapacity (or the incompetence) of the authorities to handle the situation.

On the fifth of October, 1971, at 9:50 p.m. only one of the four alarm sirens started to blare without interruption for 18 minutes. This inappropriate signal threw into the street a large portion of the population, either to flee by the single evacuation route which was rapidly blocked or to take refuge in an uncovered place such as the beach or the Piazza della Repubblica, or to search for information at the police station. It was a political party which went through the streets with megaphones to calm the population and to urge the authorities to do the same.

### The Study

At the end of October of 1971, Professor Jacono of the University of Naples made available to us three students who were graduates in social psychology who had research experience and who spoke French.

The aim of the research was to study:

- (1) The disaster subculture of the population of Pozzuoli,
- (2) the process of warning,
- (3) the responses to it including eventually the manifestations of panic.

In the course of a conference, these three points were clarified. It was decided that two investigations would be carried out. One by means of a closed questionnaire of a stratified random sample, the other by means of open-ended interviews with a number of persons who knew the population well to clarify the results of the questionnaire survey and complete the information gathered by it.

The concept of a disaster subculture has been defined as follows by Stallings with reference to a society permanently menaced by a certain type of danger:

A complex organization and technology, along with corresponding attitudes and values, is present among the residents and organizations of the city. There is not only an elaborate pattern for sensitizing the community to a particular kind of danger but equally as important, there is widespread knowledge about the appropriate course of action to follow when certain cues are presented. [Stallings, 1967, p. 18]

To what measure are these characteristics to be found in the population of Pozzuoli? This is the first object of the research.

The warning can be envisioned from two points of view:

- (1) As a means of exchanging information relevant to an event presumed to be dangerous,
- (2) As an individual process linking the signs of a danger to behavioral responses.

The first point of view can be dealt with only very partially, but some of the information gathered leads one to believe that there is a very great complexity and a very great variety in its realization.

At the level of the individual process, it is useful to distinguish between:

- (1) The danger signals: non-intentional indices directly linked to the event, intentional signals encoded (in the present case of the sirens), non-coded intentional messages which inform, counsel and reassure.
- (2) The psychological function for the elaboration of the conduct: perception of the signs, interpretation of them, choice--possibly unconscious--of a behavior or a sequence of behaviors.
- (3) The responses to the perception of the warning signals: first those of the emotional order such as fear or vigilance; but above all because they are more observable, the overt responses:
  - efficacious behavior of spreading the alarm, combatting the danger, seeking shelter;
  - instrumental behavior of which the object is the proper functioning of the alarm network;
  - feedback of the messages received (collation), accounts of activities, seeking confirmation or information about the reality of the danger;
  - non-adaptive behavior of inhibition or confusion.

Among the inadapative behavior, special mention must be made of panic, since by definition it was one of the principal objects of the study of the event at Pozzuoli. According to Professor Killian, "One cannot study panic scientifically because this concept is not defined scientifically." According to Professor Quarantelli the word panic has been applied to almost everything. Martha Wolfenstein cites six characteristics of panic mentioned in the literature without being able to say whether they should all be present or if a single one suffices for one to be able to say that there was panic. The six characteristics have been retained in the construction of the questionnaire used at Pozzuoli; to them was added "The feeling of being caught in a trap," and the notion of a "mad" crowd. The six characteristics are:

- intensive subjective terror with or without external justification;
- futile or self-destructive behavior activated by extreme alarm (which we will call confusion)
- contagion of the alarm throughout the group, the signs of fear on the part of others increasing individual apprehensions;
- precipitous flight of a group of persons far from a danger which rightly or wrongly appears impossible to combat;
- situation in a group in which the interest of an individual for his own security excludes concern for others (blind egotism);

- situation in a group where in the effort to flee, the individuals harm one another (aggression).

This last characteristic is related to the notion of augmented danger to the primary danger by panic behavior.

The questionnaire constructed to derive from these concepts was comprised of 25 questions: six questions related to the conditions of the study, eight to the disaster subculture, eight to behavior and three to the aggravation of the danger and to the information.

Each one of these 25 synthetic questions (denoted QS) was complimented by explicative questions (denoted QE) numbering from one to four for each synthetic question. Not all of the questions were asked because they were not adapted to the situation or they were generally badly formulated and badly understood or else because they would have lead to a unanimity of response.

The persons who were interrogated had to respond about what they had seen and not what they themselves had felt or done.

The stratified random sample surveyed by the questionnaire resulted in 141 responses. It consisted of 31% middle-class, students, and authorities (persons considered of higher status), and 69% of persons of more modest circumstances and lower socio-cultural level.

The open-ended interviews were conducted with 24 persons chosen by nature of their role in Pozzuoli society or for their socio-cultural level: 14 of them belonged to the public service or political organizations. These interviews permitted expansion upon, interpretation of or complementation of the statistical results derived from the analysis of the responses to the questionnaire.

## Results

### Preliminary Remarks

- (1) As mentioned earlier, the study investigated what the subjects had witnessed and not their own sentiments or actions;
- (2) Not all the questions were asked;
- (3) There was very little non-response, on the average of 5%; the population of Pozzuoli appeared very concerned, this would seem to clearly indicate the existence of a disaster subculture;
- (4) One component of the disaster subculture--the awareness of a permanent danger--and four kinds of behavior--confusion, contagion, terror and flight--were considered as present by more than 3/4 of the persons surveyed.

Less than 1/4 of the population surveyed noticed the presence of egotism or aggression, of the awareness of

responses, of information after the alert about the situation and the behavior to adopt.

- (5) The semi-directed interviews had as their object a content analysis: 683 items were retained and allocated to 51 categories. Nearly 1/4 of the items (168) are relative to only three categories: flight, communication and complaints, and nearly 1/2 belong to 7 categories, the three preceding ones plus terror, searching for information, confusion and assistance to others.

One finds flight, terror, confusion comprising the principal characteristics of the event both through the survey questionnaire and the interviews.

Three new elements appear in the interview:

- (1) Complaints which were manifested by an aggressiveness principally verbal against the mayor or the police department;
- (2) The search for information necessitated by deficiencies on the part of the public authorities in the matter as much before as during the event; deficiencies perceived by the individuals interrogated;
- (3) Assistance to others--principally to relatives and children; this assistance was manifested principally in the form of calming explanations. It occurs on the average more than one time per interview (1.58).

On the average, an interview contained 28.45 items classifiable into the 51 categories. It can be noted that the interviews with the public authorities were the most prolix (more than 41 items on the average) and those with artisans were the least (20 on the average). Equally one can note that those who cited terror most (women, liberal professionals, and artisans) were also those who mentioned complaints least (which were mentioned principally by the political figures, municipal employees, and public servants).

The results of the questionnaire will be analyzed below.

#### A. The Disaster Subculture

Almost the entire population (96%) is conscious of a danger and feels some general anxiety (70%); but a little less than 1/3 (30%) are used to it. Less than 1/2 (40%) know the danger signs to which fishermen above all are the most attentive. It is essentially a question of what was called above indices (precursors) which are most directly associated with the phenomenon: heating of the water, dead fish, elevation of the level of the sea impeding landing.

As for the signals, the sirens, the population had been informed; it knew the code (six times for 20 seconds) but did not know under which conditions the sirens would be used. Certain individuals were skeptical

in addition with respect to their efficacy, but this opinion appeared to be based upon political attitude. It will be shown below how this knowledge of the code of signals is shown to be fragile.

As for the verbal messages, they were made concrete in 1970 by the invitation to evacuate. The possibility of messages, explanatory and reassuring, before following the alarm signal was totally ignored as much by the public servants as by the population.

Almost no one (12%) knew the behavior to adopt when they heard the siren or when the indices appeared. Certainly 1/3 (33%) of the population thought that there existed an organization to face the danger. Putting the sirens in place was a manifestation of it. "All had been foreseen on paper...the evacuation of all the population had been foreseen, said the mayor; there had been a secret session of the council and a secret plan." This ignorance of the conduct to take is a cause of fear. In the absence of directions one thinks of what one can do and one organizes oneself. Flight appeared in general the only possible response. One can state in effect there was a substitution of an improvised response for an organized response.

The denial of danger appears in several forms: reliance on a higher authority (in the intervention of Providence) to remove the danger, or as in 1970, a belief in a campaign of intimidation to modify the structure of Pozzuoli by removing part of the population in order to develop the city as a touristic site, or habituation to an ancient phenomenon, or finally the fatalism of the neapolitan temperament.

In brief there exists among the people of Pozzuoli a disaster subculture marked by the consciousness of danger, by the absence of information and ambivalence which the subjects clearly indicated. The causes of these characteristics seemed to be the attitude of the public authorities, and the very general phenomenon of the denial of danger reinforced in the present case by the neapolitan character.

## B. Behavior and Consequences of the Event

Following the spontaneous and continuous blaring of the siren for 18 minutes contrary to the code, a considerable crowd movement was created; but it didn't constitute a danger as one would fear from panic since it was possible to mention only one wound to a foot in a fall, several colds (it was quite cold), several heart complaints due to the emotion and several dents to fenders of cars. Two-thirds of the population estimated that the movement of the crowd did not aggravate the danger.

The population estimated that only a very small proportion had been informed of the exact nature of the event (14%) and of the procedure to follow (10%).

- (1) Concerning the alarm, it seems that certain individuals had not heard the siren. They were told by neighbors about it and left their houses. It was then that they heard the signal. As for those that heard the blast of the siren, there were different interpretations:

- (a) Some individuals were before their television sets watching a war film. They confused the real siren with that of the film.
- (b) Others who knew that the siren was supposed to function in a discontinuous fashion did not pay attention to this specification of the code either because they were too surprised or because their attention was focused elsewhere.
- (c) Many people correctly interpreted the signal although after a moment of hesitation.
- (d) Some subjects were so excited that they had the illusion of having felt a seismic shock.
- (e) Finally certain persons made a decision only after the siren signal had been completed by official or semi-official messages.

Those who understood that it was not a question of a true alert did not leave their homes; there were even those who thought it more dangerous to leave: "It is panic which kills people," said one subject who had been interrogated, "that is why I preferred to remain in my house."

- (2) The search for information was the cause for leaving a house for many people; therefore, this was not a flight. They went for information either to the police or firemen. Others sought information on the telephone but the lines were rapidly clogged. The population considered it bad that the police did not immediately explain that it was a question of a mechanical malfunction. It was necessary for the leaders of the political parties to strongly insist with them before they would do it. Prior to this using their influence with the militants, they had them transmit calming messages by megaphone.

Thus one sees appearing successively:

- (a) the beginning of spontaneous intervention before official intervention,
  - (b) the emergence of leaders (in fact, political leaders) and semi-official attempts at organization,
  - (c) intervention of public services and criticism of them for being late.
- (3) As concerns emotional conduct we will resort to the classifications established by Martha Wolfenstein to characterize panic.

Almost all (91%) of the persons interrogated stated manifestations of terror. But this global judgment must be qualified: in effect, if nearly 2/3 (60%) estimate that the whole population was affected, others (16%) estimated that only isolated individuals manifested terror, for others (19%) only an indeterminate fraction was terrorized. This was above all, women, children, the elderly, people of the lowest classes which were affected. The manifestations of this terror were principally dynamic--cries (89%), tears (84%), gestures (50%)--typifying the neapolitan or southern character. By contrast the conduct of inhibition (fainting, dumbfoundedness...) appeared far more rare (14%). As for

pathological conduct (incoherent laughter, hysterical crisis) they were even more seldom noted (11%).

Contrasting with these manifestations the absence of terror that was noted by the interrogated subjects was attributed to the true absence of terror or the spontaneous mastery of it (noted by 69%) or due to the influence of leaders (noted by 30%).

The manifestations of frenzied egotism are rarely cited (15%); it was sometimes a question of abandoning families (9%); the trampling of fallen persons which is one of the great causes of danger in panics was not cited a single time. In contrast, aid to others is cited by more than 1/2 (57%) of the persons interrogated: flight together with families (44%), aid to relatives (10%) or to strangers (3%). Aid to others is cited 38 times in the semi-directed interviews. It appears above all to have consisted of seeking to reassure and to explain that the siren had not functioned in conformance with the code, that there was a malfunction or in making an appeal to reason.

Aggression is denied by the very great majority of the subjects (82%): at the most there are cited (33%) several jostlings that were a little rude, some denting of vehicle fenders. While physical aggressiveness is rarely noted, it is in the verbal form that aggressiveness comes to light in resentment, in imputation to the public service of negligence or tardiness in their intervention. This provided the opportunity to strengthen the opposition to the public authorities.

Confusion is recognized by the very great majority (96%). It is manifested by running in all directions (87%). For a few of the respondents (4%) confusion aggravated the danger, while 12% were not precise about the manifestation of confusion. In addition, there is every reason to believe that this was the cause of forgetting the code for the alert.

Precipitous flight is acknowledged by the majority (83%) of the persons interrogated. The number of persons involved while certainly very great is not exactly known: the estimations vary between 20,000 and 40,000.

It is more important to consider the precautions taken, the feeling of anticipated imminence of danger, and the time necessary to accomplish preventative actions. In this occurrence the sentiment of urgency was foremost. One sought first of all to save one's most precious goods and one's weakest relatives. In certain cases, individuals had been prepared for a long time, "sleeping fully clothed...keeping one's jewels and one's money close at hand in a small purse," said one pharmacist.

One notes also frequently an absence of precautions against risks of injury to health by the great cold on that day: many people left in the scantiest of clothing. However, numerous others carried out something: one cited people carrying furniture but the primary precaution for many was to clothe the children.

The inhabitants of Pozzuoli who had an automobile attempted to leave the city, but the only evacuation route was rapidly clogged. Others



searched in the city for an open place--the beach or the Piazza della Repubblica. Others sought refuge with their relatives. A cafe equally served as a refuge for those who found themselves there and probably others while certain customers left it in order to join their families. Numerous fleers did not have a clear destination and were prey to a great confusion.

Finally some went to search information from the police or the firemen. One can conclude that one must not hold only to the notion of precipitous flight or even centrifugal movement possibly prepared but more generally of natural displacements of people, in different directions and at different speeds.

## Conclusion

From this study one can derive some characteristics of the event and the reactions that it provoked as well as some methodological considerations.

### A) Characteristics of the event:

- (1) At Pozzuoli, there certainly exists a disaster subculture characterized by the belief in a permanent menace more than an exact knowledge of the risks of bradyseism which is easily confused with earthquakes. They believe that there exists an organization for facing the danger but it is unknown and they remain skeptical in regard to its efficacy.
- (2) The action of the public authorities was insufficient. If a disaster subculture exists, it is spontaneous and it is not directed by responsible individuals. This abstention as in many other cases is motivated by the intention to avoid upsetting people. (Declaration of the Secretary of the Mayor). The deficiencies of the authorities lead to rancorous recriminations.
- (3) The essential point is the absence of sufficient reliable information before as well as after the alarm. The information on the code however simple for the siren was revealed to be particularly fragile. It is certain that those who knew the system for the alert and remembered it did not have intense emotional reactions. The ignorance of the lower socio-cultural elements of the population was a cause for confusion and fear.

This example shows once again the imperative necessity for information and training of the public in security matters and that the ostrich policy is more injurious than efficacious.

### B) Methodological Consideration

- (1) The concepts which served as the base for the development of the questionnaire revealed to be practical and except in

particular cases without ambiguity. But they were shown to be insufficient when one analyzed the semi-directed interviews. This was necessary to complete the questionnaire. There would, therefore, be a reasonable framework for further research. The distinction between synthetic questions and optional explanatory questions appears to permit a certain flexibility of use.

Its employment as a rating scale for the conduct of others more than as a scale for self-evaluation is not the happiest solution, but taking into account the resources available--a small number of surveyors, the use of different languages, the time available--it appears difficult to use it otherwise.

Would the behavior of the Pozzuoli population have been the same in the case of a real danger? In other words, does the study provide a valid means of prediction? It is difficult to reply to this question. At the same time, it is difficult to say if a different population would have reacted in the same fashion. The replication of studies of this type made under standardized conditions would permit fruitful comparisons which would provide guidance to actions to inform and train the public by responsible authorities.

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