



*Research article*

## **Volcanic risk and the role of the media. A case study in the Etna area**

**Leonardo Mercatanti\* and Gaetano Sabato**

Department of Cultures and Societies, University of Palermo, Italy

\* **Correspondence:** Email: [leonardo.mercatanti@unipa.it](mailto:leonardo.mercatanti@unipa.it).

**Abstract:** On December 24, 2018, the Etna volcano has recorded a significant eruption. Linked to this phenomenon, after a seismic swarm of 72 shocks, a 4.8-magnitude earthquake struck a large area North of Catania city, on the Eastern coast of Sicily. Six villages reported 28 injured people and damages to the building. According to seismologists the earthquake had an unusual level of magnitude. Yet, despite the real danger of this event, many people who live around the volcano, in one of the most densely populated areas of Sicily, perceived these facts in an ambivalent way. Indeed, their lives continued as before even in awareness of the natural hazard, while several media presented the situation as really dangerous in a worried tone. This paper, part of a wider research still in progress, aims to analyse the perception of the risk towards the biggest and highest volcano of Europe by the inhabitants of some villages that rise around the Etna. Based on a previous research conducted in 2013 in the same area, this study compares the ways in which this recent earthquake was perceived by some residents in the area and the ways in which some online newspaper narrated the event. Therefore, by analysing and comparing the first results that come from interviews realized during a fieldwork and from online newspaper/magazine articles, this study tries to understand, from a geographical and cultural perspective, how the perception of the risk can be narrated attributing different values to hazard. The latter can have pragmatic implications because from this symbolic evaluation may depend the behaviour of an entire community.

**Keywords:** volcanic risk; earthquake; sicily; Etna; geography; disaster media communication; narrative; Fleri earthquake

---

## 1. Introduction

The Sicilian territory, due both to its location within an active fault system and to its diversified geological structure, land formations and hydrogeological conditions has often been devastated by earthquakes, eruptions, landslides and floods. These natural disasters vary in terms of intensity and so do their effects on human lives, environment degradation and disruption of economic activities.

What makes this situation even more complex is the presence of several active and dormant volcanic mountains. In particular, we are referring to Mount Etna, Europe's largest volcano and one of the world's most active ones. Mount Etna, with its 3340 meters above sea level and a diameter of over 40 kilometres, has always been a constantly active volcano. Any Etna-focused assessment or investigation must take into account not only the economic, environmental and social aspects directly connected to the volcano but must also deal with other factors linked to local social organization, tourism and development. For this reason, conducting a study on the relationship between the people and the volcano is a challenging and complex task, due to the multitude of elements to consider. Moreover, this relationship has significantly changed over time and has shifted from a predominant sense of fear to a more aware and conscious cohabitation in recent years.

## 2. Materials and methods

A multidisciplinary approach is necessary to understand the complexity of this topic [1–6]. The present study intends to investigate the dynamics of the perception of volcanic and seismic risk in the Etna area after the severe earthquake of December 26<sup>th</sup> 2018 and the media communication strategy adopted during the event. The first part of this paper is focused on the acquisition of unavailable data through a field research session. In particular, by asking some simple questions to the population hit by the earthquake that occurred on December 26<sup>th</sup> 2018 in Fleri, a tiny village in the municipality of Zafferana Etnea (province of Catania). As more people share their stories, it becomes easier to understand how the seismic or volcanic risk is perceived by the inhabitants of the territory surrounding the Etna Mountain. The second part of this work explores the role of the media and its influence in generating a collective perception of fear [7–11], thus focusing on the communication concerning risk factors confronted to the social perception of this danger. For this purpose, we analyse some newspaper articles and examine the way in which the narration of the earthquake takes place.

## 3. Results and discussion (I)

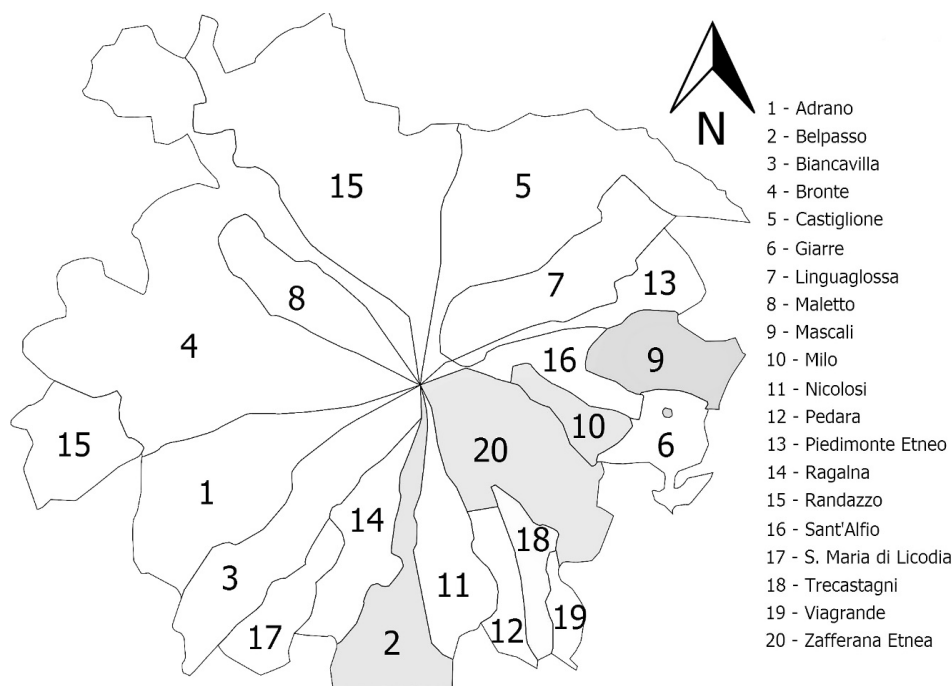
The destruction of entire towns and villages caused by earthquakes and the cancellation of parts of the territory due to volcanic eruptions, with the consequent mutation of the relative landscapes and the destinations of use of the areas involved, certainly produced fear, anxiety and scary memories in the local population. The latter is discussed in some writings published after the eruption of 1669, one of the most destructive eruptions because the lava reached the sea destroying many inhabited areas including Nicolosi and the western part of Catania [12,13]. Historical data regarding eruptions and earthquakes related to Mount Etna, in addition to the constant risk of new disastrous events, are useful to understand the deep relationship between man and volcano. This interrelation has changed and, although this may appear at a first superficial analysis a paradox or incomprehensible, it has

actually grown stronger in time. In recent years, some scientific studies have investigated the issue of risk in relation to human health and the danger deriving from apocalyptic catastrophes. In the first case we refer to the study concerning the presence of high levels of radon gas, recognized as a carcinogen [14] and to the high percentage of some dangerous metals found in Mount Etna's waters, in particular boron and vanadium, that are used as drinking water in many local towns, determining one of the highest rate of thyroid cancer, world-wide [15]. In the second case, a recent study has attracted media attention because apparently the eastern flank of Mt. Etna is slipping towards the sea. In the introductory part of this scientific article, it is written that "Catastrophic collapses of ocean island volcanoes or those built at the shoreline pose the largest threat as the sudden displacement of large amounts of material in water can trigger tsunamis with extreme effects" [16].

It is a generic speech and the article is not focused on the tsunami at all, however, the media seem to build their narrative using some keywords such as "fear" and presenting the natural event as a very scary and serious fact. So, why do groups of people choose to live and organize their activities around one of the most active volcanoes in the world? It is a paradoxical relationship, yet it is strong and durable.

In the Etna area there is a very strong relationship between the volcano, with its dynamics and the effects of its presence, and the people who live and work around it. This relationship is stronger as the population resides at a higher altitude. For instance, in Augusta or in Giardini Naxos, which are located a few tens of kilometres away from Catania, the volcano is mostly perceived as an aesthetic factor, just an element of the landscape.

Geographers affirm that the territory is to be considered a cultural product of individuals who interact with each other, according to their own perceptions and attitudes. They actively forge and shape the territory according to economic, social, material and aesthetic needs. This multi-scale modelling of the territory depends on the social and cultural paradigmas at a given time. The territory has always been the mirror of a society's development capacity, as well as a manifestation or declaration of its ambitions. However, even the opposite statement is true: the territory itself can be considered a cultural producer. This assumption should not be interpreted as a nostalgic reference to old geographical theories, such as environmental determinism, but should lead to a deeper and more modern reflection: the interrelation is more complex and is really one-to-one, especially when referring to an area that presents high risks for the population and that can be modified by human activity only up to a certain point. Over the centuries, the volcano has changed its shape, as can be seen by comparing past engravings made by Grand Tour travellers during the Sixteenth and Seventeenth centuries with the way it looks today. Many inhabited towns situated on the volcano's slopes have been struck several times by catastrophic events that have marked the local history, economy and culture. Hundreds of eruptions have slowly transformed the landscape and consequently threatened local communities. In 1928 the town of Mascali, on the eastern flank of the volcano, was destroyed by an eruption. The massive intensity of that eruption is documented by photographs and videos easily accessible on the web. There are many municipalities located on the sides of the volcano. These urban centres have sprung up near one of the approximately 250 lateral volcano craters (Figure 1).



**Figure 1.** The twenty urban centres located on the flanks of the volcano that belong to the territory of the Mount Etna Regional Park. (Elaboration by Mercatanti).

There are twenty urban centres on the slopes of the volcano (about 240,000 inhabitants). In addition to these towns it is important to also take into consideration other small towns and above all the city of Catania (the second largest city in Sicily after Palermo) which are located at the foot of Mount Etna. The distance between the top of the volcano and the center of the city of Catania is about 30 kilometres. All these urban areas count approximately one million inhabitants. The largest number of residents are concentrated on the eastern, south-eastern, southern and south-western areas of the volcano.

One of the most debated issue both nationally and internationally is the perception of volcanic and seismic risk. In Italy this topic, specifically referring to Mount Etna, has attracted the attention of several scholars and a series of scientific articles have been published on this matter in the last years [17–21]. Some have even researched and studied the responses of individuals to the various eruptions of Mt. Etna since the end of the Eighteenth century. This human capacity today is called “resilience”, the ability of an individual to face and overcome a traumatic event or a problematic situation [22]. In past centuries, eruptions were commonly considered a divine punishment and the State was a minor player in responding to the needs of the population after the destruction, so the role of families and individuals was fundamental for the rebirth of the society. This meant restoring buildings, creating and maintaining terraces or building dry-stone walls using the same lava stone that had previously devastated the surroundings as an important re-construction material. In the recent article “Etna and the Perception of Volcanic Risk”, in order to study the close relationship between local population and the volcano, questionnaires were given to a representative sample of residents of Nicolosi, on the southern slope of the volcano [20]. This research focuses in analysing the response amongst ordinary people and how the cohabitation with the volcano has an effect on their everyday life and on local events [23].

The results of the survey conducted in Nicolosi show to what extent a place located near a potential natural hazard can have a strong impact in moulding people's character personality, culture, skills and way of thinking. It also helps in understanding why a community decides to settle in such a dangerous territory. These areas also provide an optimum case study to further investigate the interrelation between man and local nature. In addition, the volcano, with its rock, has allowed the construction of roads, houses and street furniture. Its ash naturally fertilized thousands of hectares of land. The same volcanic ash, called "azolo", is actually produced and used together with cement in the construction field. The beauty of the volcano and its importance attracts tourists from all over the world. In 2013 the Sicilian volcano was officially included in the UNESCO World Heritage List.

The history of southern Italy is partly explained by the presence of the Vesuvius and the Etna volcanoes that have profoundly influenced the behaviour of the population. As Nelson Moe wrote, "The notion of a volcanic south is a good example of how the image of the Mezzogiorno participates in a broader conceptual horizon of southernness but with certain distinctive features of its own. The force of nature, which is commonplace of Italy as a whole, has a special significance in relation to the Mezzogiorno. As the only live volcanoes on, or in Etna's case near, the continent of Europe, Vesuvius and Etna convey a specifically volcanic inflection to the image of a natural south" [24].

In October 1984, two strong earthquakes struck Zafferana Etnea and the villages of Fleri and Pisano, a few kilometres from Nicolosi, causing serious damage to the building structures, 70% of which were subsequently declared uninhabitable. Despite these serious events, the population has continued to live and build in those places.

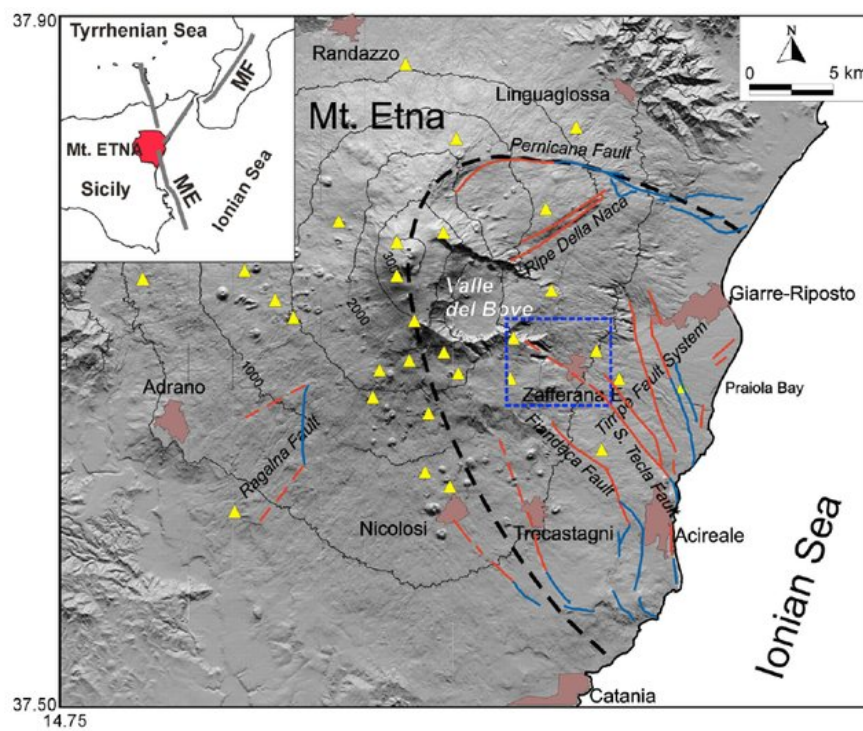
On December 26<sup>th</sup> 2018, Fleri, Pisano (Zafferana Etnea) and Pennisi (Acireale), were severely struck by an earthquake of magnitude 4.8 (with a hypocentre at a depth of 1.2 kilometres). This seismic event, due to the volcanic activity of Mount Etna, was felt throughout the Etna area and up to Catania causing very serious damage to the buildings, some of which were also of historical and artistic interest (Figure 2).

Magmatic earthquakes are caused by the movement of magma within the volcano. In particular, it is significant the presence of an active fault called *Fiandaca fault* just below the inhabited area (Figure 3).

Several hundred people have been evacuated from their homes permanently. In this devastated territory we conducted a field research between the months of February and March 2019. This part of the article informally reports the partial results of a survey that was conducted in the analysis phase of an ongoing research. We have clearly highlighted, through some informal interviews with merchants and residents living in Fleri, how after the seismic event of December 2018 a strong fear concerning natural disasters arouse amongst locals and how the latter has become a dominant distress in today's community. The informal talks have highlighted the will of younger residents to find a new place to live in, while the elderly, whose houses were not irreversibly damaged by the earthquake, seem wanting to continue living in the same area.



**Figure 2.** Church of Santa Maria del Rosario (Fleri) after the earthquake that occurred on December 2018. (Ph. Leonardo Mercatanti).



**Figure 3.** Surface faults map of eastern Mt. Etna [25].

#### 4. Results and Discussion (II)

As stated above, on December 26<sup>th</sup> 2018, an earthquake of magnitude 4.8 on the Richter scale occurred about 16 km North from the city of Catania. Its epicentre was at a depth of 1 Km and located between the villages of Viagrande and Trecastagni. The main shock came at 3,19 a.m., after a seismic swarm of 72 shocks which started two days before, on December 24<sup>th</sup> and coinciding with the eruption of the Etna volcano. The effects of the earthquake involved several villages in the area and caused damages to six of them in particular: Aci Bonaccorsi, Aci Catena, Aci Sant'Antonio, Acireale Santa Venerina and Zafferana Etnea<sup>1</sup>. These towns—where the number of inhabitants, excluding Acireale (about 52,000) is below 30,000—reported seriously injured people (according to some newspapers 28 in total) and severe damages to buildings. Moreover, about 600 evacuated people<sup>2</sup> were forced to leave their own homes.

Several online Italian agency press, newspapers and magazines both regional and national<sup>3</sup>, reported the news thus providing quite an accurate event coverage<sup>4</sup>. As Harrison stated: “However such events and incidents are defined, there is one thing they have in common. They are all news. Terrible events, the fall of the mighty, shock and horror are the essence of hard news. They sell newspapers; they deliver viewers and listeners. Communication at a time of crisis or disaster is a necessity.” [26].

In order to understand the way in which these media narrated the earthquake, in this paragraph we take into account seven articles published by as many online newspapers<sup>5</sup>. Starting from the titles, it is possible to detect how most of them use the word “fear” (in Italian language “paura”) to describe the event. In four cases, the word “fear” is associated to the word “night” (in Italian “notte”):

Etna, terremoto di magnitudo 4.8 a Catania. Paura nella notte: crollano case, 10 feriti, gente in strada (Repubblica.it) [27]

*Etna. Earthquake of magnitude 4.8 in Catania. Frightful Night. Houses collapse. 10 injured and people gathered in streets.*

Etna, terremoto magnitudo 4.8: paura nella notte a Catania, 28 feriti (Corriere.it) [28]

*Etna. Earthquake of magnitude 4.8. Frightful Night in Catania, 28 injured.*

Etna: notte di paura per sisma 4.8, crolli e 10 feriti (Ansa.it) [29]

*Etna, Frightful Night due to seismic shock of magnitude 4.8. Wrecked buildings and injured people.*

Catania, notte di paura: terremoto di magnitudo 4.8, crolli e feriti (Today.it) [30]

*Etna, Frightful Night. Earthquake of magnitude 4.8 in Catania. Wrecked buildings and injured people.*

<sup>1</sup> The resolution of the Italian Council of Ministers 28/12/2018 (Delibera del Consiglio dei Ministri, 28 dicembre 2018) reports that the towns affected by the earthquake are nine. To those already mentioned, the document adds three other towns: Milo, Trecastagni and Viagrande [39].

<sup>2</sup> According to other sources, evacuated people would be about 1096 in total.

<sup>3</sup> Obviously, being online newspapers, they may have a very large audience. But here, we refer above all to the corresponding paper version and to the readers they are ideally addressing.

<sup>4</sup> Disaster media coverage can have a variable width in terms of geographical space and chronological distance from the event, how Houston, Pfefferbaum and Rosenholtz observed [40].

<sup>5</sup> We count as newspaper even the online magazine of the Italian agency press Ansa (Ansa.it).

Etna, terremoto 4.8: paura a Catania, crolli in provincia e 10 feriti. Chiuso tratto A18, aeroporto resta aperto (Ilfattoquotidiano.it) [31]

*Etna, Earthquake of magnitude 4.8. Frightful Night in Catania. Wrecked buildings in the province and 10 injured people. Motorway A18 closed to traffic. Airport stays open.*

Differently, the online newspapers mostly addressed to a local public are more accurate in reporting information about people. Indeed, they provide information concerning a family surviving the quake and give an approximate number of displaced people:

Etna, scossa di terremoto 4.8 in piena notte: danni, crolli e 28 feriti. Una famiglia: “Vivi per miracolo” (Gds.it) [32]

*Etna, Earthquake of magnitude 4.8 in the middle of the night. Destruction, damages and 28 casualties. A family says “It’s a miracle we’re alive”*

Terremoto, crolli e 28 feriti. Ci sono seicento sfollati (Livesicilia.it) [33]

*Earthquake, Wrecked buildings and 28 casualties. There are 600 misplaced people.*

Moreover, five newspapers (“Repubblica.it”, “Corriere.it”, “Ansa.it”, “Today.it”, “Gds.it”) use the word “fear” in the first lines of their articles. Instead, the other two (“Ilfattoquotidiano.it”, “Livesicilia.it”) open their reports mentioning the earthquake “tremor”.

All the articles here considered have a similar structure. According to the journalistic rule of the “five Ws” (“Who”, “What,” “When,” “Where”, “Why”) the newspapers give essential information already in the initial part of the articles. In particular, the geographical data is carefully mentioned: the areas affected by the earthquake are reported and, in some cases, the general narration follows a spatial criterion. Besides, all the articles report a short list of injured people and damages to public and private buildings. In particular, in regard to the latter, the newspapers focus on the damages to historical buildings and collapsed monuments<sup>6</sup>. Secondly, they notice the closure of some sections of the motorways as precautionary measure and, at the time of publication, they underline the full operativeness of Catania’s airport<sup>7</sup>. Then, the articles give news about the organization of rescue operations. Five articles also report the advice given by the seismologists of the INGV (“Istituto Nazionale di Geofisica e Vulcanologia”, the Italian National Institute of Geophysics and Volcanology). Finally, all the articles are supplied with picture galleries and, except for one case (Ansa.it which only displays images), with videos, mostly shot by private citizens.

Beyond the general structure of the articles—except for one (Today.it)—all the others tell the story of a surviving family who escaped the partial collapse of their home in Fleri, a little village some kilometres South from Zafferana Etnea. The articles are organized in small paragraphs and dedicate space to this story choosing significant headlines, such as: «The damages» («I danni»—Repubblica.it); «The injured people: “It’s a miracle we’re alive”» (I feriti: «Siamo vivi per miracolo»). In one case (Gds.it), the event is even quoted in the article’s headline, like reported before. The story of this family is an integral part of the earthquake narration and, except for a newspaper, all the others report it with some emphasis:

<sup>6</sup> The physical damage can become a metaphor for the suffering of a community after a natural disaster. How Leitch and Bohensky observe in their study about Australian newspapers: “In our study the media portrayal of the disaster impacts on community structure and function—across a range of communities and types of disasters – emphasised disruption to the community portrayed as physical and social impacts such as how much damage was done.” [34]. See also [41].

<sup>7</sup> The civil airport of Catania is the most important of (and also the nearest to) the area affected by the earthquake.



“Siamo vivi per miracolo”, ripete una famiglia di 4 persone, madre, padre e due figli minori, dopo che le pareti della loro casa si sono sbriciolate. (Repubblica.it) [27]

“It’s a miracle we’re alive” repeats a family of 4 people, mother, father and two minor children, after the walls of their house collapsed.

“Siamo vivi per miracolo. Eravamo a letto, svegliati di soprassalto mentre le pareti ci crollavano addosso”. E la moglie: “Protetti da un armadio che siamo riusciti a trattenere con le mani scappando prima che s’abbattesse sul materasso”. (Corriere.it) [28]

“It’s a miracle we’re alive. We were in bed, woken with a start while the house walls were falling on us”. And his wife [says]: “We were protected by a closet that we managed to hold back with our hands. We ran away before it fell on the mattress”.

Si sono registrati due feriti, non gravi, con contusioni, escoriazioni e un po’ di sangue e che si considerano dei “miracolati”. “Siamo vivi per miracolo”, ripetono ai cronisti e ai soccorritori. Sono componenti una famiglia di quattro persone—madre, padre e due figli minori—che hanno visto crollare le pareti della loro casa. “Eravamo a letto—ricostruisce il capo famiglia—, ci siamo svegliati di soprassalto e visto le pareti crollarci addosso. Per fortuna i mobili ci hanno protetti dalle macerie: siamo vivi per miracolo”.

(Ansa.it) [29]

There were two injured people, not serious, with bruises and a bit of blood. They consider themselves extremely lucky. “It’s a miracle we’re alive”, they repeat to reporters and rescuers. They are the members of a family of four—mother, father and two minor children—who saw the walls of their house collapse. “We were in bed—the head of the family remembers—we woke with a start and saw the house walls falling on us. Luckily, the furniture protected us from the rubble: it’s a miracle we’re alive”.

The other three newspapers (Ilfattoquotidiano.it; Gds.it; Livesicilia.it) report the narration about the surviving family in a very similar way to the latter here quoted.

The reference to this story gives the narrative of the earthquake greater drama. The personal history of a family becomes evocative of a potentially disastrous event that is the earthquake. Moreover, the destruction of the domestic walls symbolically represents Nature’s violence and its ability to defeat human lives. Six newspapers out of seven dedicate space to reporting this story and this redundancy seems important. Probably, the story exemplifies the true sense of “tragedy” which newspapers seem so interested in describing, with the intent of underlying the fatal implications of the event to their readers. The narrated facts happened to real people. The event took place during Christmas time and last, but not least, at night, thus when everyone was asleep.

The family’s story appears linked to the articles’ headings. Indeed, how previously stated, five articles immediately introduce the word “fear” (“paura”) in their headlines whereas all of them make use of the word in the first few lines. Similarly, the family’s members are scared and forced to flee from the “safety” of their home. Therefore, we can observe that the considered newspapers build a narration of the earthquake event using a psychologically strong image through which they show both the destructive force of nature and humans’ ability to react [34,35].

Moreover, five of the seven articles are accompanied by the video of a family (presumably made by one of its members) that runs away from their partially collapsed house. The readers (the public of the newspapers) are not only provided with a description of the tremendous event but they are also being told a story of human courage and resistance and how these qualities can, in some

cases, save people's lives. Besides, what attests the extraordinary nature of the event is the use of the word "miracle". The survivors are safe, and their safety seems attributed to a supernatural event. Being the subject of a miracle implies the intervention of an extra-human entity. In this way, nature (the volcano/the earthquake) appears dangerous and out of human control, and in fact, the solution seems to depend on a supernatural event (the miracle). On this point, Ride and Bretherton write that people involved in a natural disaster refer to "the surreal language of legends, dreams, movies" in order to communicate the scope of a disaster [35].

In this regard, it is worth noticing that one of the articles refers twice to Mt Etna using the local nickname "The Gentle Giant":

Lo chiamano il "gigante buono", ma stavolta la spallata dell'Etna ha fatto paura.

[...] Alle pendici del gigante forse ancora agitato. (Corriere.it) [28]

The people name it "the gentle giant", but this time the Etna's shove was scary.

[...] On the slopes of the giant, perhaps still agitated.

In these two examples the volcano is personified as if it were a mythical figure. It remains however a "gentle" creature, sometimes even "agitated". The metaphor used in this article seems to respond to the need to interact with a mediated version of nature. In this way, the earthquake could be considered a kind of "interruption" of this peaceful interaction between nature and humans, between the Etna volcano and the local population that lives on its slope.

At this point it is possible to summarize some reflections. The analysis of the articles here considered show the way in which some Italian media (seven newspapers) presented the earthquake occurred during the night of December 26<sup>th</sup> 2018. By using a similar narrative structure, the articles reconstruct the seismic event mixing news and scientific concepts with metaphors and adjectives that generally refer to the semantic sphere of feelings and emotions. The use of this dramatic linguistic register is already present in the headlines as they highlight the idea that the inhabitants' experience was "fearful". Moreover, chronological information and the fact that the earthquake occurred by night, also contribute to increasing the general dramatizing effect. The mere exposure to a natural hazard during a "suspended" moment in time, such as the nocturnal one, further emphasizes this sense of fragility. In addition, evidence was given on how the texts use metaphors to describe the volcano and the earthquake therefore underlying the use of narrative techniques which tend to humanize natural elements providing a mediation between "facts" and "readers".

All the analysed texts give space both to the report of damages suffered by the community and the operations held to help the population hit by the earthquake. However, one of the most important elements of the narrative—useful to understanding what perception of danger caused by the natural disaster is conveyed by the media—is the story of the family forced to leave their collapsed home. The short report of this story described by all newspapers, becomes an element of condensation "to tell" the human and social drama that the earthquake has caused. Indeed, this private story is a kind of synecdoche whose details are used to represent a whole and more general event.

## 5. Conclusions

In this study we show how a natural event, like an earthquake, can be perceived considering two levels, an individual one and a more collective one. Of course, the results here discussed are a part of a work in progress that needs more time to be completed, but it is already possible to observe some evidences.

Firstly, the unstructured talk with the inhabitants of the villages hit by the earthquake with particular reference to the data collected in Fleri, reveal two slightly different attitudes. Amongst the younger people there is a marked tendency, after the earthquake, of wanting to escape from their current town and move to another area (always around the volcano and within the seismic zone where the December 2018 earthquake occurred). The interlocutors explained that they feel afraid, specifying that they would prefer to move along other slopes of Mt. Etna, considered safer. Instead, the older interlocutors appeared quieter and they stated that they wanted to continue living in the same village, once the emergency was over. Secondly, the analysis of some Italian newspapers, reveal a narrative strategy based on a widespread idea of drama. This idea can be traced in the linguistic register, the headings, the way the articles are structured, the pictures picked to create the galleries, and the videos that were chosen. They all seem to share the intent of conveying a strong sense of “fear”. Therefore, it can be affirmed that, for the collective social level that the media represent, much emphasis is placed on the danger of the area hit by the earthquake and, more indirectly, on the dangerousness of the volcano. However, this appears partially in contrast with the perception of the local population whose attitude seems flexible and compromising towards the natural hazard. This last aspect can be explained considering identity dynamics for which a cultural approach is necessary and recommended [34,36,37]. The sense of belonging to the same community, in fact manifests itself essentially via the direct connection to the physical territory, which remains intense even in case of extreme danger. Affective and symbolic reasons increase the gap between the inhabitants’ perception and the media’s narrative. This dynamic may seem paradoxical, but it appears strongly connected with the awareness that a community has of a place. As Miles and Morse state: “The sustainability and desirability of our society depends on better knowledge of the risks associated with where and how we choose to live.” [38].

This different way of filtering this experience on the community’s level further confirms the importance of approaching the matter from multi-layered perspectives in order to investigate the reactions to dangers [11]. On top of this, it also appears fundamental to take into consideration data including both the geographical location and the policies and methods of intervention. In this sense, further developments of this research will consider interviews and structured meetings with the inhabitants of some villages hit by the earthquake and the comparison and analysis of articles spread by local and international media. Thus, a larger body of data to work with, can provide a broader view of the event’s perceptions and narrations and further contribute in gaining a wider understanding of the possible and consequent behaviours adopted during a natural disaster.

### Conflict of interest

All authors declare no conflict of interest.

### References

1. Duncan AM, Chester DK, Guest JE (1981) Mount Etna Volcano: Environmental Impact and Problems of Volcanic Prediction. *Geogr J* 147: 164–178.
2. Cumin G (1938) La pastorizia etnea. *Riv Geogr Ital* 45: 9–21.
3. Rittmann A (1963) Vulkanismus und Tektonik des Aetna. *Geol Rundsch* 53: 788–800.
4. Di Blasi A (1967) *La regione naturale geografica dell’Etna*. Acireale, Accademia Zelantea.

5. Cucuzza Silvestri S (1970) Genesi e morfologia degli apparati eruttivi secondari dell'Etna. Proceedings of the XX Italian Geographical Congress (Rome, 1967), Trieste: Tipografia Moderna: 81–111.
6. Pecora A (1974) *Sicilia*. Turin: Utet.
7. Benthall J (1993) *Disasters, relief and the media*. London-New York: I.B. Tauris.
8. Pidgeon NF, Kasperson RE, Slovic P (2003) *The Social Amplification of Risk*. Cambridge: Cambridge University Press.
9. Kasperson RE, Renn O, Slovic P, et al. (1988) The Social Amplification of Risk: A Conceptual Framework. *Risk Anal* 8: 177–187.
10. Renn O, Burns JW, Kasperson JX, et al. (1992) The Social Amplification of Risk: Theoretical Foundations and Empirical Applications. *J Soc Issues* 48: 137–160.
11. Cowan J, McClure J, Wilson M (2002) What a difference a year makes: How immediate and anniversary media reports influence judgements about earthquakes. *Asian J Soc Psychol* 5: 169–185.
12. Amico V (1975) *Dizionario Topografico della Sicilia*, anastatic reprint of the 1855 edition, Bologna: Arnaldo Forni Editore, 428.
13. Privitera D, Privitera S (2018) Laboratory as experiment in field learning: An application in a touristic city. *J Res Didact Geogr (J-Reading)* 1: 77–88.
14. Pellegriti G, De Vathaire F, Scollo C, et al. (2009) Papillary Thyroid Cancer Incidence in the Volcanic Area of Sicily. *J National Cancer Inst* 101: 1575–1583.
15. Catalano R, Immè G, Mangano G, et al. (2012) Indoor radon survey in Eastern Sicily. *Radiat Meas* 47: 105–110.
16. Urlaub M, Petersen F, Gross F, et al. (2018) Gravitational collapse of Mount Etna's southeastern flank. *Sci Adv* 10: 1–7.
17. Cirelli C, Di Blasi E, Porto CM (2005) L'Etna: un percorso attraverso l'immaginario, la consapevolezza del rischio e la gestione del territorio. In: D'Aponte T (ed.), *Terre di vulcani, Miti, linguaggi, paure, rischi*, Rome: Aracne, 149–208.
18. Porto C (2007) Percezione del rischio sismico e vulcanico nell'area etnea, popolazione urbana e rurale a confronto. In: Battigelli F and others (eds), *Rischio e Territorio nel Mondo Globale*, Trieste: University of Trieste Press, 1–11.
19. Privitera S (2012) L'Etna e la sua attività. In: *Il territorio siciliano. L'Etna*, Catania: Cuecm, 77–110.
20. Mercatanti L (2013) Etna and the Perception of Volcanic Risk. *Geographical Review*, 103: 486–497.
21. Colloca C (2017) L'Etna, il paesaggio e la società locale fra rischi permanenti e territory vulnerate. In Mela A, Mugnano S, Olori D (eds), *Territori vulnerabili. Verso una nuova sociologia dei disastri italiana*. Milan: FrancoAngeli: 126–139.
22. Chester DK, Duncan AM, Sangster H (2012) Human responses to eruptions of Etna (Sicily) during the late-Pre-Industrial Era and their implications for present-day disaster planning. *J Volcanol Geotherm Res* 225: 65–80.
23. Rigg J (2007) *An Everyday Geography of the Global South*. London and New York: Routledge.
24. Moe N (2002) *The View from Vesuvius: Italian Culture and the Southern Question*. Berkeley: University of California Press, 43–44.

25. Alparone S, D'Amico S, Gambino S, et al. (2013) Buried active faults in the Zafferana Etnea territory (south-eastern flank of Mt. Etna): Geometry and kinematics by earthquake relocation and focal mechanisms. *Ann Geophys* 56: 1–9.
26. Harrison S (ed) (1999) *Disasters and The Media. Managing Crisis Communications*. Houndmills, Basingstoke: Macmillan Business.
27. Custodero A, Bruno N (2018) *Etna, terremoto di magnitudo 4.8 a Catania. Paura nella notte: crollano case, 10 feriti, gente in strada*, Repubblica.it. Available from: <https://bit.ly/2En4NWD>.
28. Cavallaro F, De Leo C (2018) *Etna, terremoto magnitudo 4.8: paura nella notte a Catania, 28 feriti*, Corriere.it. Available from: <https://bit.ly/2T79ptW>.
29. Redazione Ansa (2018) *Etna: notte di paura per sisma 4.8, crolli e 10 feriti*, Ansa.it. Available from: <https://bit.ly/2NATWMM>.
30. Redazione Today (2018) *Catania, notte di paura: terremoto di magnitudo 4.8, crolli e feriti*, Today.it. Available from: <https://bit.ly/2XvfP4C>.
31. Redazione Fattoquotidiano (2018) *Etna, terremoto 4.8: paura a Catania, crolli in provincia e 10 feriti. Chiuso tratto A18, aeroporto resta aperto*, Ilfattoquotidiano.it. Available from: <https://bit.ly/2EFjjKx>.
32. Redazione GdS (2018) *Etna, scossa di terremoto 4.8 in piena notte: danni, crolli e 28 feriti. Una famiglia: "Vivi per miracolo"*, Gds.it. Available from: <https://bit.ly/2En8prG>.
33. Di Stefano L, Fuschi R (2018) *Terremoto, crolli e 28 feriti. Ci sono seicento sfollati*, Livesicilia.it. Available from: <https://bit.ly/2UHLHb2>.
34. Leitch A, Bohensky E (2014) Return to 'a new normal': Discourses of resilience to natural disasters in Australian newspapers 2006–2010. *Glob Environ Change* 26: 14–26.
35. Ride A, Bretherton D (2011) *Community Resilience in Natural Disasters*. New York: Palgrave MacMillan.
36. Carvalho A (2000) Discourse Analysis and Media Texts: a Critical Reading of Analytical Tools. International Conference on Logic and Methodology—International Sociology Association, 33. Köln, 1–40.
37. Webb GR, Wachtendorf T, Eyre A (2000) Bringing Culture Back In: Exploring the Cultural Dimensions of Disaster. *Int J Mass Emerg Disasters* 18: 5–19.
38. Miles B, Morse S (2007) The role of news media in natural disaster risk and recovery. *Ecol Econ* 63: 363–373.
39. Delibera del Consiglio dei Ministri (2018) *Gazzetta ufficiale*. Available from: <https://www.gazzettaufficiale.it/eli/id/2019/01/02/18A08467/sg>.
40. Houston JB, Pfefferbaum B, Rosenholtz CE (2012) Disaster News: Framing and Frame Changing in Coverage of Major U.S. Natural Disasters, 2000–2010. *J Mass Commun Q* 89: 606–623.
41. Morehouse BJ, Sonnett J (2010) Narratives of wildfire: coverage in four U.S. newspapers, 1999–2003. *Organ Environ* 23: 379–397.



**AIMS Press**

© 2019 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>)