IMAGES OF ANCIENT CALABRIAN-SICILIAN EARTHQUAKES FROM A STEREOSCOPIC VIEWER OF THE EARLY 20th C.: THE ETHICS OF A NATURAL DISASTERS PHOTO-GALLERY

Photography encouraged

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INTRODUCTION

This research was inspired by an old stereoscopic viewer from the early 1900s, containing 42 glass slides depicting scenes from two ancient and almost forgotten Italian earthquakes. **We refer to the earthquakes that struck Southern Calabria and Eastern Sicily in the years 1894 and 1905, causing extensive destruction and hundreds of deaths, but whose memory was blurred by the subsequent, great earthquake of the Sicilian Strait of December 28, 1908 which caused about 80,000 deaths.**

Postcard of the great Messina-Strait earthquake

The stereoscopic viewer was a wedding gift for two young spouses of the Messina province, who got married in 1904. The apparatus was placed on a small table in the living room in which the married couple entertained friends. In this work, we describe the stereoscopic viewer, the places depicted in the stereoscopic plates, and the seismic phenomena that caused the disasters exhibited. **But above all, we investigate the social and cultural aims that pushed to show the effects of earthquakes through this primitive multimedia mechanism.**

Stereoscopic plate of 1894 Calabrian earthquake

THE VIEWER APPARATUS

The apparatus was a *taxiphote* model, a handcrafted copy of the French Richard stereoscopic viewers, in vogue at the time of the Belle Époque. The instrument consisted of a wooden box equipped with two eyepieces (magnifying lenses) that offered a three-dimensional view of the subjects depicted in the slides: a sort of augmented reality ante litteram.

Advertising of the taxiphotes of the late 1800s

Each slide was composed by two images, side by side, of the same scene, shot with a double lens camera, and representing two perspectives of the same object, with a deviation equal to the perspectives that we naturally receive with the right and the left eye (Ganot, 1887).

Two objectives stereoscopic camera

The sequence of three-dimensional images gave depth of field to scenes of collapses, debris, and victims, arousing feelings of dismay. Nevertheless, the show had the hypnotic charm of the apocalypse and could be replicated at will with a few turns of a dial.

STEREOSCOPY & SEISMOLOGY

The stereoscope was widely used in the field of entertainment, but also for scientific and educational purposes (Brewster 1856, Persico 1932).

In Geophysics and notably in the field of macroseismic studies, **the stereoscope was used for the first time by the English engineer and seismologist Robert Mallet who went to Italy after the disastrous earthquake in Basilicata on December 16, 1857, making hundreds of stereoscopic images of the affected villages**(Mallet 1862). With the help of these reproductions Mallet developed the pioneering studies of observational seismology (Ferrari, 2005). The Italian National Institute of Geophysics and Volcanology (INGV) published in 1987 the four-volume anastatic reprint of Mallet's original work: 'Great Neapolitan Earthquake of 1857. The First Principles of Observational Seismology'. In this work are reproduced over 150 stereoscopic images of the effects of Basilicata earthquake.

Italian cartoon illustrating the expedition of the seismologist R. Mallett in the territories struck by the Basilicata earthquake of 1857 (from: "La visione di Mallet", Storie del Gruppo Lucano di Protezione Civile, 2018, G. Palumbo, G. Giordano and G. Giardina, edited by Lavieri)

SERIAL EARTHQUAKES

Between the last decade of the nineteenth and early twentieth century, Southern Calabria and North-Eastern Sicily were struck by four devastating earthquakes with a maximum magnitude now estimated between about 6 and 7 Richter. The first three, which occurred in the years 1894, 1905 and 1907, caused, respectively, 100, 557 and 167 victims. The fourth most destructive and famous Strait earthquake of December 28, 1908, caused about 80,000 deaths, of which about 65,000 in the urban area of Messina (but the exact figures have never been determined), relegating to the background the others previous earthquakes (Bertolaso 2008, Castanetto and Sebastiano 2007, Guidoboni and Valensise 2013, Rovida et al., 2015). **Most of the 42 stereoscopic plates document the damage caused by Calabrian and Sicilian earthquakes of 1894 and 1905**. Based on the subjects the plates can be divided into three groups:

a) The largest group refers to the earthquake of 16 November 1894 (epicenter Palmi, magnitude 6 Richter, 100 dead), which destroyed dozens of small towns: Bagnara, Seminara, Sinopoli, S. Euphemia, S. Procopio, Palmi (Baratta, 1895). The only Sicilian city present in this group is Messina.

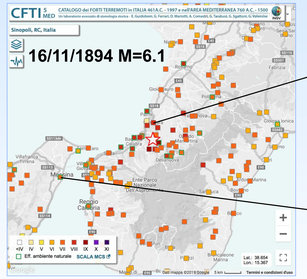
b) Another large group of plates is related to the earthquake of September 8, 1905. Are documented the damage caused to some small towns of Calabria, namely: Parghelia, Stefanoconi, Piscopio and Zammarò (Baratta, 1936).

c) A third group of plates documents natural disasters that have nothing to do with earthquakes. In fact, two plates refer to the great eruption of Etna on 1892 and two others illustrate the destruction caused on February 1906 by a violent storm that hit the village of Galati (south of Messina). In the collection of plates loaded on the visor there are no images related to the earthquake of 1908.

MACROSEISMIC EFFECTS OF 1894 & 1905 CALABRIAN-SICILIAN EARTHQUAKES

(descriptions and maps from CFTI5Med)

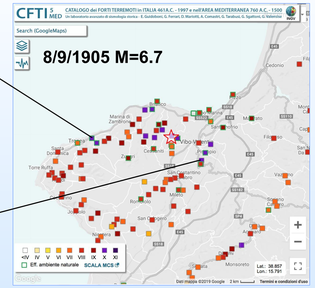
The images of the effects give a more complete view of the earthquake, thus representing a useful complement of the written descriptions.



16 november 1894, M_w 6.1, maximum intensity MCS IX. The earthquake had destructive effects in an area of 80 km^2 and a total of more than 4,000 buildings collapsed.

a: **Seminara**, **MCS VIII**. The earthquake caused serious damage, 31 houses collapsed completely.

b: **Messina**, **MCS VII**. The shock caused damage to buildings, 35% of the houses were badly damaged.



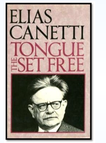
8 September 1905, M_w 6.7, maximum intensity MCS X. The earthquake was felt all over Southern Italy and a total of more than 8,000 buildings collapsed.

c: **Parghelia**, **MCS X**. The earthquake caused the almost complete destruction of the village.

d: **Zammarò**, **MCS X**. All the houses were almost completely destroyed.

THE ETHICS OF DISASTER IMAGES

We exclude that the *taxiphote*, with its photographic equipment, was merely an instrument of entertainment *pour épater les bourgeois*. We rather demonstrate that it carried out an educational task. **The repetition of the sequence of tragic images of earthquakes through the stereoscopic viewer had the purpose of contributing to give awareness of the looming seismic risk and to accept rationally that nightmare**. The Middle European literature of the early twentieth century, through a page of Nobel Prize winner Elias Canetti (1905-1994), offers us the opportunity to prove that the representation of an earthquake in the form of scenic fiction had pedagogical and ethical purposes (Benini,Malombra, 2010).



Cover of the book 'The tongue set free' by E. Canetti

In his autobiographical novel 'The tongue set free' Canetti tells that in 1909, when he was three years old, the game-park Wulsterprater in Vienna already housed a dramatic simulation of the Messina earthquake: "*…Ok, let's go to the Tunnel of Fun….the chief attraction came.There was the town on the blue sea, the many white houses on the slopes of a mountain, everything stood there, solid and peaceful…At this point…there was a dreadful peal of thunder, the day turned dark, the ground rattled, we were shaken…all the houses of Messina were swamped in glaring flames…I staggered away from the Tunnel of Fun. I grabbed the trunk of a tree and tried to calm down. I punched it, feeling its resistance. It couldn't be moved, the tree stood fast, nothing had changed, I was happy.*" (Canetti, 2011).

CONCLUSIONS

The representation of an earthquake in the form of scenic fiction had a pedagogical purpose, demonstrating the social function and the ethical value geoeducation may have. Developing and disseminating knowledge on earthquakes across society is essential to change the way in which people perceive the risk, and to improve the way to prepare to a future seismic event and to react in case of an earthquake occurs.

Recovering and keeping alive the memory of past disasters is the first step to increase citizens' awareness of risks. Greater awareness means greater responsibility and therefore a more active attitude by citizens in the defense against risks, with the long term effect of the increase of the resilience of the human community.

A geoethical approach to reducing the seismic risk needs to rediscover cultural and technical traces in our history to better shape modern and more effective ways to change social risk perception and to improve mitigation action.

Through the QR code here beside, you enter the complete series of stereoscopic photographs of ancient Calabrian-Sicilian 1894 and 1905 earthquakes. (http://www.haisentitoilterremoto.it/14_calabria-1894-1905.html)

DEDICATION & ACKNOWLEDGEMENTS

Dedicated to the memory of the spouses Antonino Muscolino and Amalia Andronico, owners of the stereoscopic viewer described in the text; with heartfelt thanks to their daughter Maria Ada Muscolino Basile who made the apparatus available for this research.

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