Natural Hazards and Disaster Risk Reduction Policies

Loredana Antronico – Fausto Marincioni
Editors

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Cover: A woman shovels mud from her driveway in the aftermath of the October 2010 debris flow that affected the Province of Vibo Valentia (Calabria, southern Italy).

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6. Anthropology of the Vesuvius Emergency Plan: history, perspectives and limits of a dispositive for volcanic risk government

Giovanni Gugg[1]

Abstract

The goal of this chapter is to discuss the case of the Vesuvius Emergency Plan: this is the only risk prevention tool existing for the Neapolitan volcano. In 1995, Italian Civil Protection presented the long-awaited "National Emergency Plan" that organized the area into "zones" of danger (red, yellow and blue). This certification of the territory as "at risk" had a double effect. On one hand, it contributed changing the relationship with the places, as for the red zone that from area of building expansion became a non-building land; on the other hand, it modified the sense attributed to time: the catastrophe is no longer a hypothetical eventuality but, to some extent, has been officially announced. In 2001, the Emergency Plan was updated and the time slot needed to forecast an eruption was reduced from two to one week. Subsequently, in 2013, the red zone perimeter together with the twinning between its 24 municipalities and other regions of Italy were redefined. The main limit of the Plan is that, being only inspired by an emergency logic, it lacks any ecological approach that would guarantee a better risk reduction. Conversely, a planning of the future emergency, as well as the current management of the territory, should be the results of a constant listening process, the meeting points of a complex, heterogeneous and multi-vocal reality; planning, in other words, should be meant as a strategy able to learn from events and no longer as a pre-established program, aimed at anticipating all the moves.

Keywords: Debate, Disaster, Emergency, Preparedness, Risk.

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1. Introduction

In 1632, the year following the strongest and most destructive eruption of the Vesuvius in the last millennium, the viceroy of Naples, Emmanuele Fonseca, on behalf of King Philip IV had an epigraph placed at the Granatello, the port area of the city of Portici. The large plaque, considered "the first document of civil protection in history" (De Pascalis, 2007), recalls the catastrophic effects of the volcano, inviting the population to not rely on the mountain, but to always be ready to flee[2]. In reference to this inscription, the historian of volcanology Antonio Nazzaro coined the expression "Granatello paradox" (Nazzaro, 2001) to describe the attitude of the residents who *know*, yet *do not know* the dangerousness of the territory where they live; who *see* and, at the same time, *do not see* the risk. Nazzaro refers to that "irrational attitude between panic and repression" to assert that "the warning made by the Neapolitan sovereign has never been duly considered" (Nazzaro, 2001, p. 101). This apparently rigid and irrational behaviour of the Vesuvian population is rather multifaceted and more understandable when viewed ethnographically because it refers to a complex relationship that the inhabitants have established with the places where they live (Gugg, 2018). However, with regard to the epigraph, some questions arise, such as: For whom does the term "posterity" refer to in the

[2] The text of the epigraph is in Latin: "Posteri, Posteri! / Vestra res agitvr dies facem praefert diei nvdivs perendino / advortite / Vicies ab satv solis in fabvlatvr historia arsit Vesaevvs immani semper clade haesitantivm ne posthac incertos occvpet moneo vtervm gerit mons hic bitvmine alvmine ferro svlphvre avro argento nitro aqvarvm fontibvs gravem / serivs ocyvs ignescet pelagoq inflvente pariet sed ante partvrit concvtitvr concvtitq solvm fvmigat corsvcat flammigerat / qvatit aerem / horrendvm immvgit boat tonat arcet finibvs accolas emica dvm licet / Iam iam enititvr ervmpit mixtvm igne lacvm evomit praecipiti rvit ille lapsv seramq fvgam praevertit si corripit actvm est periisti / Ann Sal MDCXXXI XVI KAL JAN / Philippo IV rege Emmanvele Fonseca et Zvnica Comite Montis regii pro rege / Repetita svperiorvm temporvm calamitate svbsidiisq calamitatis hvmanivs qvo mvnificentivs formidatvs servavit spretvs oppressit incavtos et avidos qvibvs lar et svppellex vita potior tvm tv si sapis avdi clamantem lapidem sperne larem sperne sarcinvlas mora nvlla fvge / Antonio Svares Messia Marchione Vici Praefecto Viarvm".
The translation to English is as follows: "The light passes from one day to another / and time progresses. / Listen. / Twenty times, it is said, burnt Vesuvius. / Always with great ruin for the uncertain. / to prevent you from being surprised in the future/ I remind you that this mountain contains bitumen and alum / iron, sulphur, gold, silver and nitro / and sources of water. / Sooner or later, when the sea breaks in, it will erupt / But first it inflates/ and then shakes/shakes the ground/ Corrupted vapor ignites/ and shakes the air, / moans horribly/shakes and drives away what is in its vicinity/ Do not linger and run away /know that it is strengthening now, erupting, invading a lake/vomiting fire / it collapses and falls down, and he who flees is fleeing in vain / it kills and buries what it meets on its way".

text? For the population as a whole or for administrators? Who are the carved words for? In short, can the inhabitants be blamed for ignoring for centuries a warning written in Latin? So, today, who should carry about those words more than anyone else?

The way one responds to these questions reveals what kind of interpretation is given to the concept of resilience (a valuable critical reading on this concept is provided by Benadusi, 2014): either as a condition of "nature" or as a "historical" result. If the first option refers to an *a priori*, that is, to the idea of an innate resilience and, therefore, to an essentialization of communities, of their vulnerability and their ability to cope with it; the second option is an *a posteriori* because it focuses on a resilience understood as a process, then as a synergy of several elements that influence each other (Djament-Tran *et al.*, 2012). The difference is not negligible because it involves completely different emergency management methods.

Furthermore, a second theoretical knot at the base of this reflection is to be considered: the emergency action – which is to be caused by a sudden and unpredictable event and which requires an urgent intervention (Calhoun, 2010), in order to guarantee a response in conformity with a common sense of humanity – it overcomes the bases of law, creating a form of arbitrary sovereignty, without any mediation, and creating a "state of exception" (Agamben, 2003). This means that the emergency often has "paternalistic" tones (Castorina, Roccheggiani, 2015, p. 12) which entail the exception to individual liberties and the acceptance of a welfare system managed only by external ones, with the risk that emergency becomes an "anti-political machine" (Ferguson, 1990).

Given these premises, in the following pages, I will analyze the main volcanic risk prevention tools related to Vesuvius area that Italian institutions – scientific, techno-engineering and politico-administrative – have elaborated and promulgated over the last decades: the Emergency Plan, whose first draft was elaborated in 1995 and to which the 2016 Evacuation Plan had to be added.

2. Institutionalization of risk

In Italy, the need for non-improvised emergency plans and adequate response structures emerged between the 1970s and the early 1980s. In fact, for a period of about 13 years, Italy, and in particular the area of Naples has been affected by various natural disasters with tragic consequences for the population. In the spring of 1970, the first bradyseism emergency of

Pozzuoli led the Ministry of the Interior to order the urgent evacuation of Rione Terra (receiving violent protests from the local population); in 1976, the earthquake struck Friuli, causing about 1,000 deaths and 100 thousand displaced persons; on November 23, 1980, the notorious Irpinia earthquake caused 2,700 victims and severe damage over a vast area that also included the city of Naples and its surroundings; on October 7, 1983 a second episode of bradyseism imposed a new evacuation of the city of Pozzuoli. What made these episodes particularly dramatic was the strong impact they had on urban populations residing in densely populated cities. With a series of laws promulgated in 1970 (No. 996, "Standard Rules for Relief and Assistance to populations in case of Disasters"), in 1982 (No. 187, "For the establishment of the Ministry for the Coordination of Civil Protection") and in 1992 (No. 225, "Establishment of the National Civil Protection Service"), the National Civil Protection Organization was set up for predicting and preventing the various risk assumptions, helping disaster victims and for doing any other necessary and non-transferable activities to overcome the emergency (Article 3, Law 225/1992). In particular, the Civil Protection was established as a national coordinating body in the case of Vesuvian eruptions or, more generally, in the case of "natural disasters, or disasters connected with human activity which, given the emergency and considering their intensity and scope, must be faced with extraordinary means and powers to be used during limited and predefined periods of time" (Article 2, Law 225/1992).

In this context, the 1992 law established a "Great Risks Commission[3]" composed of technicians or scientists, and designed to act as a link between Civil Protection and the scientific community and to provide opinions and indications of a technical-scientific nature aimed at "improving the ability to evaluate, predict and prevent the various risks[4]".

At the same time, during the same years, emergency plans for volcanic areas started to be elaborated. In particular, with regard to the geographic area covered by this paper, after the 1983 bradyseism emergency in Pozzuoli, in 1986, the then director of the Vesuvius Observatory, Giuseppe Luongo, underlined the need for an urgent elaboration of an evacuation plan of the Vesuvian area in case of eruption and submitted a report to the

[3] The Commission is divided into five areas of intervention, namely, seismic risk, volcanic risk, meteo-hydrogeological, hydraulic and landslide risk, chemical, nuclear, industrial and transportation risk, and environmental risk and forest fire. Each sector is represented by a referent and is composed of representatives of the centres of competence and other experts. Accessed on May 10, 2018 at: http://www.protezionecivile.gov.it

[4] On the website of the Civil Protection: http://www.protezionecivile.gov.it (accessed on May 9, 2018).

Prefecture of Naples (Ongarello, 2009). Between 1991 and 1993 the guidelines for risk assessment were drawn up in order to start drafting a National Emergency Plan, which was publicly presented on September 25, 1995. The National Emergency Plan for Vesuvius Area (NEPVA) received an initial update in 2001, reducing the amount of time needed to predict the eruption from two to one week while a second adjustment was expected in 2013 when a new red zone boundary was delineated; finally, a third key moment was in 2016 with the presentation of the Evacuation Plan.

The Emergency Plan and the Evacuation one should not be confused: the first one is a document that identifies the areas at risk (*red, yellow* and *blue* areas, based on the emergency and the effects of an eruption) thanks to the eruptive scenario considered more likely by scientists, or by researchers from the Vesuvius Observatory, which is the Neapolitan headquarters of the National Institute of Geophysics and Volcanology; the second one is the organization in stages of the transfer of the population to the regions of Italy twinned with the municipalities of the *red* zone. Municipal Emergency Plans which identify the collection points and the evacuation routes in accordance with to the two previous Plans are more detailed.

The creation of this system involves the establishment of a series of hierarchies and rules which, with the approval and authority of a scientific assumption, induces a real "institutionalization of risk". That is, a set of standardized form of action and behaviour connected to a complex and interdependent set of rules and roles. In case of emergency, after consultation with the "Great Risks Commission" located in Rome, the Government issues the evacuation order and entrusts the Civil Protection with the direction and coordination of operations. During this first emergency phase the local administrators (the mayors, first of all), assisted by rescuers and supported by the police, play the role of supporters of the various activities but remain outside the management of the events. In other words, the organization of the Plan implies that risk management is outsourced; the central political and scientific operative structures are the ones that will have to decide who, how and when to evacuate, leaving the inhabitants out of the decisions.

3. Times and space of the emergency

The set of precepts and behaviour that citizens are required to follow in the event of an alarm depends strictly both on the place where they are located and on the emergency phase since the institutionalization of the risk and the implementation of the Emergency and Evacuation Plans as

"dispositifs of government" (Revet – Langumier, 2013) and "non-human social actors" (Latour, 2005, Benadusi, 2011), produce a regulated space and time whose scope and influence into everyday practice need to be understood now.

In terms of time, the two Plans identify four levels of alert, which correspond to the same number of regulations. The basic level corresponds to the absence of alterations with respect to the reference parameters and the precursor phenomena. During this time, which in fact, corresponds to the quiescent phase of the volcano, the competent authorities and scientific institutions are mainly concerned with the prevention and planning of the future emergency and with the promotion of training and information initiatives on the eruption risk among the population. The presence of significant variations in the physico-chemical parameters of Vesuvius should be reported by the Vesuvius Observatory to the Great Risks Commission and this can induce the latter to declare the beginning of a phase of attention (for example, the Phlegraean Fields have been in this state since 2012). This level corresponds to a low risk of eruption (which does not necessarily degenerate into a phase of greater danger), however, for precautionary purposes, the mayors of the affected municipalities are supported for an eventual beginning of their own logistic organization and for the dissemination of information to the population. The confirmation and reinforcement of anomalies in the control parameters leads to the transition to the early warning phase in which the control of the operations goes at national level; and the state of emergency is officially declared with the appointment of a Delegate Commissioner, the convening of the Civil Protection and on-site placement of law enforcement agencies and rescuers. The procedure provides that a resident with his/her own independent accommodation can move away from the area at highest risk, joining it with his/her own means; the evacuation of hospitals and similar facilities, and measures to protect cultural heritage are carried out. In the event that the precursor phenomena continue to accentuate, this should lead to the *alert phase* during which experts are almost certain that an eruption will occur within a few weeks. This implies the complete evacuation of the population of the area at maximum risk and the establishment on the territory of the Civil Protection operational centres that coordinate the activities at the local level. The scheduled time for the displacement of the population (at least 500,000, divided into 24 municipalities) is 72 hours. They are grouped according to the municipality they belong to and displaced, by means of public or private vehicles, to areas of Campania identified in the basic level as areas not at risk in order to be subsequently transferred to an Italian region twinned according to the Emergency Plan. After ensuring evacuation

in the area at maximum risk, rescuers are directed to areas that may be affected by the fall of ash and lapilli to evacuate them.

Unlike the temporal scan of the emergent emergency, which is currently being deferred and unknown, the regulation of the space produced by the Vesuvian emergency plan already shows its effects on the practices and representations of the inhabitants. On the basis of the historical observations regarding the eruptive behaviour of Vesuvius and considering the relation based on the "product between the probability of occurrence of a particular volcanic phenomenon and the relative damage it is able to cause" (Rapolla *et al.*, 2003, p. 47), scientists have identified different degrees of risk within a large area around the volcano. The Emergency Plan implemented these indications dividing the territory into "hazardous zones", including the *red* zone, the *yellow* zone and the *blue* zone. In the planning of 1995 the area of greatest risk covered 18 municipalities and followed a perimeter coinciding with the municipal boundaries, but this was modified in 2013, when, referring to a volcanological study of Lucia Gurioli *et al.* (2010), a "black line" was drawn, that is, the maximum delimitation within which the most destructive phenomena of a future eruption could fall, which is almost circular and touches 24 municipalities. However, since this perimeter no longer follows the administrative boundaries of the municipal territories concerned, several problematic questions not easy to solved have arisen; the main one being whether the risk prevention constraints (for example: the regulations restricting the right use soil for building construction) apply to the entire municipal area or only to that portion within the "black line" (and, in turn, this means identifying exactly the cadastral parcels that fall into it). Uncertainty deriving from the new *red* zone boundaries has already triggered controversies and appeals to administrative courts, as in the case of the municipality of Boscoreale to which the Campania Regional Administrative Curt granted[5] in 2014 the exit of the *red* zone because its territory was only marginally touched by the "Gurioli line"; this led, since then, to consider problems related to the "new *red* zone" as negotiable and not strictly scientific. Another important novelty of the new *red* zone is that, contrary to the previous one, it now also affects the municipalities of Naples such as the eastern districts of Barra, San Giovanni a Teduccio and Ponticelli.

[5] Editorial, 2014, "Vesuvio, il Tar dà ragione a Boscoreale: si 'stringe' la Zona Rossa 1. Via a costruzioni e restyling", *Il Fatto Vesuviano*, May 12: https://www.ilfattovesuviano.it/2014/05/vesuvio-tar-ragione-boscoreale-si-stringe-zona-rossa-1-via-costruzioni-restyling/ (url accessed on May 20, 2018).

The *red zone* is the closest to the crater, the area that could be invaded by pyroclastic flows, mudslides, lava and other volcanic products. This is the most dangerous area, inhabited by about half a million people, in which the effects foreseen in the other two areas (*yellow* and *blue*) can also occur, and it is the focus of most of the public debates and policy initiatives related to the Vesuvian risk.

The *yellow zone* corresponds to the area where ashes and lapilli could fall; they are dangerous for breathing, for their accumulation on the roofs, and for the collapse of the buildings[6]. This is a large region corresponding to 63 municipalities (in addition to the three Neapolitan neighbourhoods) of the provinces of Naples, Avellino, Benevento and Salerno. In the Plan, it is specified that according to the scenario of 1631, only 10% of the *yellow zone* will be effectively affected by the falling of *particles*, suffering damage, but it is impossible to know in advance exactly where this will happen because it is not possible to predict in which direction the wind will move the eruptive cloud. For this reason, this area is further divided into 16 sectors, identified on the basis of the probability that the wind will blow towards them. From the analysis of the historical data – but the season of the year during which the eruption will occur given the direction of the winds and their intensity[7] will be determinant –, it is more likely that the municipalities at the east of the Vesuvius, towards the internal areas of Campania, will be affected by the phenomenon. Overall, the *yellow zone* is currently inhabited by over one million people.

The *blue zone*, finally, includes 14 municipalities of the basin of Nola, to the north-east of the volcano, on a surface of 100 sq. km. Like the previous one, this area will also be evacuated during an event because of the risk of floods caused by the ash dragged by the rain which always follows an eruption.

Furthermore, the delimitation of the space and the temporal scan foreseen by the previously exposed planning correspond to a strong bureaucratisation of the operations, which is substantiated by the appearance of a large number of subjects framed within a hierarchical logic of division of roles.

From the appointment of the Delegate Commissioner to the Emergency and from the establishment of the Emergency Coordination Centre, the overall organization requires the activation of the Mixed Operations Centres

[6] In fact, one of the main causes of death during the last vesuvian eruptions is precisely the collapse of the roofs because of ash load that fell as a result of the eruption. The limit value of this load is 300 kg / sq. m.

[7] Rolandi, G., 2009, report in the conference *Rischi e Risorse in aree vulcaniche. Vesuvio ed Etna montagne di fuoco*, Naples, April 27, available in streaming on "Radio Radicale": www.radioradicale.it (accessed on May 10, 2018).

in the territory in charge of local coordination of actions, the support of law enforcement agencies and rescuers "who deploy in the territory according to pre-established plans[8]", the installation of various Advanced Medical Posts (PMAs), the intervention of Volcano Expert Team (VET), Foreigners Assistance and Support Team (FAST), Group of Interministerial work for the protection and prevention of Cultural Heritage from natural hazards (GLABEC) and numerous other structures, from the Fire Department to the Red Cross, to individual volunteers. All these structures converge on the Unified Regional Operational Room of the Campania Region (SORU) and, above all, on the DICOMAC, the Command and Control Department.

All this was presented by the Campania Region and the Civil Protection Department on October 12, 2016 when Vincenzo De Luca and Fabrizio Curcio, governor and director, respectively, met the press to illustrate the "Vesuvius Evacuation Plan" (Lucarelli, 2016). Strictly speaking, the evacuation phase should take place in two stages: the first one is spontaneous (during the *pre-alert* level) and the second one is mandatory (during the *alert* level). Expected two decades ago, the document[9] deals with how to evacuate the *red zone* according to a three-stage plan**:** *Removal* (from one's own home to the 'waiting areas', indicated in the Civil Protection Plan of each municipality, and then to the 'meeting areas' outside the area of greatest risk; this operation is done by the Campania Region), *transfer* (from 'meeting areas' to 'first reception points', according to the modalities prepared by the individual host regions); *reception* (from 'first reception points' to 'reception facilities'). A mechanism that induces certain behaviours along specific routes has been set up, as evidenced from the Major Emergency Simulation Exercise[10] (MESIMEX) carried out in October 2006 on a sample of about 2000 inhabitants of the *red zone*. The simulation, proposed in 2004 by the Campania Region for a loan from the European Union is so far the largest and most important among the few exercises carried out, most often by individual municipalities (Somma Vesuviana in 1999, Portici in 2001[11], Pollena Trocchia in 2004 and 2011).

[8] On the website of the Civil Protection: http://www.protezionecivile.gov.it (accessed on May 9, 2018).

[9] The Vesuvius plan: the planning of the removal and transfer of the population of Vesuvian red zone is available on the website of the Campania Region: http://www.regione.campania.it/assets/documents/regioni-ppaa-tavolo-transferimento-12-10-2016-rev-3.pdf (accessed on June 4, 2018).

[10] Exercise "Mesimex" (October 22, 2006), in "Section in Depth", website of the Civil Protection Department: http://www.protezionecivile.gov.it (accessed May 12, 2018).

[11] The municipality of Portici carried out a particularly complex exercise of 4 days, as envisaged by a vademecum published by Savarese and Sallusto (2001).

4. The *red zone* and the incentives for "population uprooting"

Far from being a neutral tool (Crampton – Krygier, 2005), the risk map is a "powerful vector of social, institutional and political norms" (Gralepois 2011, p. 122) and as such, it always oscillates between being the result of negotiation and becoming the scene of a controversy. The *red Vesuvian area*, both for its location which attests the vulnerability of places to non-expert observers, and for the attention it has in the Plan, is in fact, the main subject of public debates and of legislative measures regarding the volcanic risk of the area.

In the basic *alert* level, the urban regulations for the Vesuvian area essentially follow a logic of containing the number of inhabitants. It should be noted, however, that although the *yellow* and *blue* zones are also likely to be affected by the effects of the eruption, there is an explicit prohibition on building only in the *red* zone. With the regional law n. 21 of 2003, in fact, "the increase in building for residential purposes was forbidden" (Article 2) in the municipalities of the *red zone* with the aim of blocking the growth in the number of residents by limiting the number of new habitable buildings. Moreover, it should be noted that more than half of the municipalities in the *red zone* are also municipalities of the Vesuvius National Park. This situation, in addition to reinforcing restriction on construction, has imposed the obligation to move outside the boundaries of the Park activities considered to be of high environmental impact, such as numerous quarries or small fireworks factories.

All these measures have given rise, since their promulgation, to even violent reactions, whose vehemence has not diminished over the years: in 2011 the municipalities of Sant'Anastasia and Somma Vesuviana organized a conference entitled "Proposal for the modification of the perimeter of the *red zone*" which advocated for the introduction of an 'orange' zone with the possibility of construction, which would have alleviated the weight of the limits imposed by law (Roman, 2011). The mayor of Sant'Anastasia, in the spring of 2012, defined the red zone as a "scientifically refutable fraud" and the law no. 21 a "criminal act that destroyed the economy of our territories" (neAnastasis, 2012). The building industry is considered to be the main economic driver of the area, so criticisms of the absolute prohibition to build in the *red zone* have led to the approval of a first amendment to the law no. 21 with the provision no. 1 of January 5, 2011, which grants the possibility of a restructuring. With the law approved in March 2012, the prohibition was limited to new constructions for residential purposes, but further

building areas in the *red zone* have been put forward in the Bill on the landscape, which is still under discussion at the Regional Council of Campania (Geremicca, 2012).

The project called "VesuVia", approved in 2003 by the Campania Region, is even more explicit in its desire to alleviate the demographic pressure in the Vesuvian area. The initial objective was to promote the uprooting of the population living in this area by offering economic incentives (up to 30 thousand euros) for residents so that they could buy their own homes in safer areas and "realise the common and often unrealizable dream of becoming a homeowner"[12]. In doing so, the project hoped to "decongest" the *red zone* over a period of about 20 years by removing at least 100 thousand people. "VesuVia" also aimed at the reconversion of vacant buildings into tourist reception facilities with the aim of creating an "opportunity for recycling and territorial development, or recovery and revalorisation of the extraordinary cultural (Pompeii / Ercolano, Stabia / Oplonti, vesuvian villas, Bourbon sites, historical centres) and natural (Vesuvius National Park, an area entirely bound by the laws on the landscape) heritage of Vesuvius"[13].

Although refinanced twice, even with EU funds, the project has failed and is now abandoned. Three years after the beginning of the program, the decompression impact of the area was just 0.13% of the total population. Only 3,276 applications for funding were submitted, only 236 of which were considered admissible and in good standing from the point of view of the required documentation. These results did not improve significantly even after the publication of a second call.

Possible causes of the failure included the extremely restrictive conditions of participation and limitation of eligibility only to tenants with an income of less than 25 thousand euros per year and residing in the *red zone* for at least 5 years. The provision, moreover, did not provide compensation to the owners for the loss of the tenant, did not have the means to prevent the houses left vacant to be rented again and therefore, to limit the "turn-over" among the tenants. A factor no less important is attributable, finally, to the lack of involvement of the mayors and local communities in the development and promotion of the project. While on the one hand they were sceptical about supporting a program aimed at reducing

[12] *La scelta possibile. Guida alle opportunità del progetto regionale Vesuvia per i cittadini della zona a più alto rischio vulcanico*, by the Urban Planning Department of the Campania Region, Naples, 2003, p. 24.

[13] Explanatory sheet of the "VesuVia" project, published on the website of the Public Administration Forum: http://archive.forumpa.it/forumpa2005/regionando/cdrom/home/progetto/107.html (accessed on May 10, 2018).

the number of inhabitants of their municipality, on the other hand nothing was done by the organization of "VesuVia" to locate the interventions in a rational and targeted manner, concentrating them on very high risk areas and, thus, increasing the credibility and visibility of the project.

5. Criticism of the Emergency Plan

The most recurrent objection to the Vesuvian Emergency Plan regards the underlying scientific assumptions. The Plan is designed to respond to an eruption of strong intensity, similar to that of 1631, however, according to the eruptive history of the Neapolitan volcano, this event is not among the most powerful ones, instead, the famous Pompeii eruption of 79 AD emitted much more energy and was much more destructive, and the most devastating being the eruption known as "of Avellino" about 15,000 years ago. This means, according to Mastrolorenzo and his colleagues, that the possibility of a future plinian eruption, much more violent than that of 1631, remains largely open (Mastrolorenzo *et al.*, 2006), therefore, notes Santoianni, "reducing the whole planning of the emergency to a single arbitrary eruptive hypothesis, cutting out [other scenarios] is a wrong methodology" (Santoianni, 2007, paragraph 61). In particular, in the case of a major eruption, the effects of the explosion would be devastating even in the city of Naples, with the need for an Emergency Plan able to save up to 3 million inhabitants. From a technical point of view, the Plan is therefore considered extremely limited as it does not provide any countermeasure in the eventuality in which the eruption does not correspond to that of the envisaged scenario (Belli - Pica Ciamarra, 2003).

Even if the eruption was actually subplinian, from a practical point of view, a thorny point remains regarding the strategy used for evacuating the *red zone*. For the early warning and early warning phases, the 2016 Plan foresees a spontaneous displacement of the residents (according to the data of the Civil Protection it could involve half of the population, so about 350 thousand people who would use their own means), then an obligatory relocation with means made available by the institutions (it would cover the remaining 350 thousand residents, to be displaced in 72 hours). In both cases, it is an undifferentiated and mass displacement of the inhabitants regardless of what early warning experts call "rationalization of removal" (Santoianni, 2007, paragraph 61), that is, the optimal evacuation should take place in stages, starting from the disabled or hospitalized patients, up to the elderly of the hospices, children with (at least) mothers and, only if necessary, the rest of the population left in place. This choice would allow,

among other things, a greater usability of the escape routes and a better control of the outflow. It should also be noted that, to date, no census has been carried out to know the exact number of people potentially involved, that is, how many people live in the territory within the so-called "Gurioli line", or within the *red zone*.

To make the evacuation operations even more complex, there is a lack of information to the citizens who in many cases know little or nothing about the ratio of the Emergency Plan and the actions envisaged in the Evacuation Plan. The knowledge of the rules of conduct to be kept in case of proclaimed alert remains limited even among the local administrators themselves and, with the appropriate exceptions, among the members of the scientific community. The issue was raised by the volcanologists Solana, Kilburn and Rolandi who published in 2008 the results of a questionnaire administered between 2002 and 2003 to administrators of the municipalities of the *red zone* in order to evaluate how the threat of Vesuvius was "perceived" by local leaders and how much they were "aware" of this risk. The survey showed that they had an inadequate knowledge about how to react in an emergency: "80% of the authorities believe they have at least a sufficient understanding of the volcanic behaviour and 75% believe that they should not have difficulty for understanding scientific ideas and specialist terminologies. [However,] once the questionnaires were completed, an informal conversation with the authorities revealed a much lower level of awareness than the one suggested by the written answers" (Solana *et al.*, 2008, p. 312).

It is the very logic of the Emergency and Evacuation Plans, finally, to be criticized by other experts. According to fluodynamic engineer Flavio Dobran, the current planning, dealing solely with the emergency, aims at a control strategy without taking care of the "design and building" of a "safe and prosperous" environment for Vesuvians (Dobran, 2006, p. 26). The objection is radical: the only escape strategy from the volcano gives nothing more than "the illusion of security through its promoters who simply spread the news that everything is kept 'under control'" (Dobran, 2006, p. 27). The "great challenge", continues Dobran, is therefore that "the people living around the volcano acquire the awareness of the environment in which they live and participate in the solution of this difficult situation" (Dobran, 2006, p. 24).

Thanks to ethnographic observation, the perception of geological risk may depend on various factors, such as its media representation, the perceived solidity of urban buildings, the credibility of institutional commitment (Gugg, 2019). This appears of particular interest, since, contrary to any (pre) judgment on the supposed "immobility" of those who

live around the Mount Vesuvius, locally, the public debate about the risk is constant and without any doubt much more frequent than one can imagine from the outside. There are proposals and discussions (in local conferences and on certain digital channels) that concern both the methods of evacuation of the population, and the places and times of the transfer, as an alternative to evacuation in other Italian regions. In the first case, the former Fire Brigade operator Vincenzo Savarese invites us to consider motorways as a first aid place and not to exclude ships as a means of removal, at least during the early warning phase (Savarese, 2015). In the second case, instead, the former philosophy professor Girolamo Vajatica, whose idea was supported by Neapolitan intellectuals such as Gerardo Marotta and Raffaele La Capria (2007), considers a "slow and regular flow of the Vesuvian population from its living areas towards a safer and relatively close area is possible" (Teodonno, 2010): a real new city to be built in the Caserta between the river Volturno and the Regi Lagni. A similar proposal comes from the Confindustria of Caserta which has imagined to evacuate Vesuvius by sorting the population in several areas of Campania and thus rebalancing the strong demographic disproportion that the region has between Naples and the inner provinces (Teodonno, 2011).

The "Eco-Neapolis" by the architect and urban planner Aldo Loris Rossi is antecedent to these hypotheses (a first version dates back to 1988), but far more complex and, above all, not motivated by reasons exclusively attributable to risk but rather to principles of sustainability and "redistribution of urban weight". Rossi imagines the *ager campanus* as the "green barycentre of the 'Grande Napoli'", a new metropolis that, pursuing "the pacification between the ecosphere and the technosphere", conquers the role of "Bridge between the European megalopolis and the Mediterranean megalopolis" (Rossi, 2014, pp. 260-302).

6. Conclusions

Since 1995, planning the Vesuvian emergency future, certifying the territory as "at risk", has led to a change both in the relationship between the residents with the territory, and in the relationship they have with time. On the one hand, in fact, during that same year the National Park of Vesuvius which has a smaller perimeter than the *red zone* was created, but it constitutes in some way a concentric circle in which the use of space is more regulated compared to the past. On the other hand, the "future catastrophe" changed: it is no longer a hypothetical eventuality but, to some extent, it is officially announced. In other words, the scenarios of the future have

conditioned the present of the last two decades: they produced norms, established rules of conduct, determined relationships; they become a reality (Gugg, 2015). However, during this long period, it has also been found that the only logical emergence was not only a constraint on the possibility of a collective "conversion" (ecological, sustainable, environmentally-friendly, forward-looking) regarding the relationship with the places which constitutes even an obstacle because it seems to have stopped the development of different methods and alternative points of view. If better organizing the eventuality of an escape in case of an alert is unquestionable, what is lacking is the awareness (first at the institutional level) that risk is a historical product. It is only this awareness that would mitigate and reduce the exposure and the vulnerability of the area. As noted by Sandrine Revet and Julien Langumier, this means going beyond the notion of "risk culture", that is, overcoming the need to be constantly prepared for a disaster, according to a true myth, that of security (Revet – Langumier, 2013); therefore, it means grasping the political value of the theme, that is, the need to realize a reconciliation with the ecosystem, a shared planning of the emergency, a participatory management of the territory, a dialogue between the institutions and the population that fosters exchange, experiences, involvement (Gugg, 2017).

In addition to the essentially technical level of evacuation for a future Vesuvian emergency, at least three other plans to be built – as it is said in the context of risk management – in "peacetime" should be considered. In the meantime, a reflection on what Escobar (2005), Sachs (2010) and others have defined as "post-development", a sort of critical tool for rethinking and relocation should be done. This invites to consider development as a historical phenomenon emerging after World War II, as an expression of modernity and capitalism, therefore with its excesses and hazards.

Secondly, we should start a dialogue - daily and continuous - with the population: assuming that it is well-founded and feasible, the Evacuation Plan has some chance of success only if it is known and shared, that is, if it is re-elaborated together with those who are directly involved, the residents; otherwise it will be – as it is currently the case – not only ignored, but rejected.

Finally, it would be appropriate to start a territorial governance that promotes participation and subsidiarity: the associative and voluntary sector in the Neapolitan province is quite varied, widespread and active, and even now, many of them already take care of the territory (Gugg, 2018). This, however, happens outside the institutions, in small communities of purpose that represent enormous resources of active citizenship, whole pieces of society that should be involved and put in a network. If we do not want to

slip into the illusion of making an Evacuation Plan seemingly feasible to save hundreds of thousands of people in a few hours, so if we do not want to rely on some form of "insurance of dangerous mass" (Ciccozzi, 2013) that takes away the awareness (Revet, 2013) and lowers the attention (Baker, 2018), it is time to start considering "common goods" as well as the intangibles, such as collective security, not only for a vision of the future, but for a more urgent need of the present.

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