Suspended territories and windows of opportunity after the 2016 earthquake in Central Italy.

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Abstract: While globalization is promoting strong economic concentrations in a few urban centres, peripheral regions are negatively affected by decreasing population and increasing impoverishment, due to the lack of policies and the failure to develop and maintain rural economies. Although natural disasters accelerate these trends, the shock created by unexpected events may generate a window of opportunity, linked both to risk-reduction processes and to transition paths towards more desirable futures. This review aims to discuss tendencies in post-disaster management in the central Apennines after the 2016 earthquake, since this shrinking rural region is slowly concluding the emergency phase and starting to plan reconstruction in the medium-long term. According to the UNISDR Sendai Framework for Disaster Risk Reduction, the reconstruction phase is a critical opportunity for Building Back Better. In order to achieve this primary objective, this paper suggests new scenarios based on a multi-scalar approach and on rural-urban interactions. This is a new opportunity for the rural areas in question to re-evaluate the role of the landscape and the environment and act accordingly. The creation of clusters of highly efficient multifunctional agricultural and infrastructure projects is seen here as an opportunity to create future ecosystems and new approaches to land and landscape management.

Keywords: Earthquake, Landscape, Valley Section, Urban Bioregion.

Introduction

We live in a world where it is becoming more and more difficult to distinguish between the urban and the non-urban; in the current age of Anthropocene, all the earth is urbanized and the environment is transformed by profound human interactions. A number of scholars have offered new conceptualizations to inform on the role of humans in shaping the environment; among them, Neil Brenner and Christian Schmid have attempted to describe the ubiquity of the "urban condition" and radically to rethink the epistemic enclosure of "the urban" as a category. They put the urban age under discussion and suggest innovative interpretations for "the creation of new scales of urbanization" (Brenner, 2013), proposing a shift from an urbanization made up of agglomerations and settlement types to the planetary urban fabric of operational landscapes. Operational landscapes support human agglomerations by transforming resources and energy and describing the planetary dimension of contemporary metabolic processes (Brenner *et al.*, 2014). This analytical construct helps us to understand the complex spatial relations of cities, political regionalism and the rescaling of state intervention to intermediate levels such as the city-region.

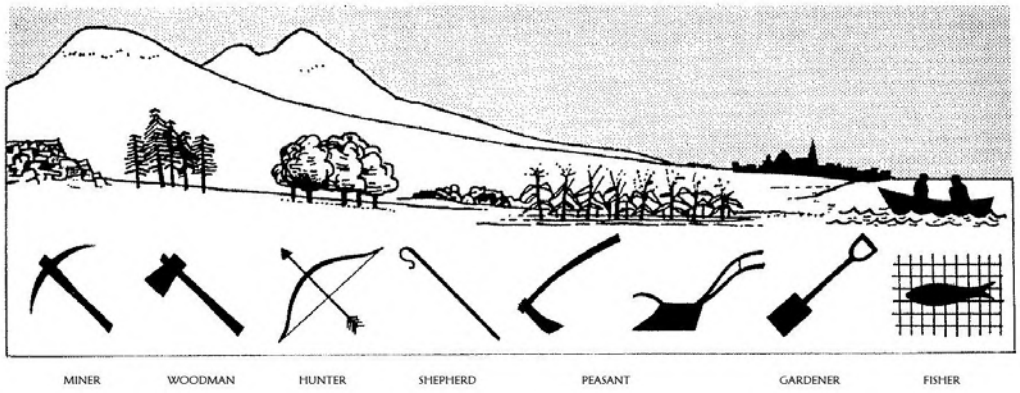

Figure 1. The Valley Section by Patrick Geddes.

Patrick Geddes was the first to stress the dependency of urban areas on the territorial configuration of society within its hinterland. In 1909 he drew The Valley Section (Figure 1), which depicts an ideal regional-urban condition. This is a topographic section, which begins in the mountains and then follows the course of a river down through a plain towards its estuary; where different forms of human occupation were related to specific geographic features.

"The valley section does not comprise a single valley, but a number of valleys. Seen from a bird's-eye perspective, the diagram depicts a fan-shaped region of valleys focusing on the river's estuary. Into this region, Geddes inscribed different meanings. Along the bottom of the diagram, he notes the so-called natural, i.e. best adapted, occupations represented by tools of different trades and crafts. […] Higher up in the mountains one finds isolated huts and small villages, further down these settlements increase gradually in size until they culminate in a metropolis at the coast. This large metropolis is the one settlement which is not matched with one particular natural occupation. Ultimately, the large city was created by the united efforts of all the other natural occupations and smaller settlements. […] Geddes does not refer to the obvious fact that a geographical hinterland might support a coastal metropolis. Instead, he expresses in The Valley Region that Enlightenment theory of social evolution that describes mankind's development through the four stages of hunting, pastoral, and agriculture toward commercial societies. […] It is important to note that the Valley Region was for Geddes not primarily a planning suggestion but first of all a depiction of an ideal type of city which could be found time and again throughout mankind's evolution (Welter, 2001)"

These "occupations" and the use of natural resources through extensive agro-silvo-pastoral activities have been the driving force which has shaped landscape structures, and created functioning "cultural landscapes" (Antrop, 2005). Globalization has expanded the close sectional relationships described by Geddes "as it began to transcend the local (Masoud, 2013). Furthermore, the deep socio-economic changes that arise from industrialization, mechanization of agriculture and intensive farming have generated the abandonment of rural and mountain areas after centuries of human presence (Bracchetti *et al*., 2012). These evolutions have dramatically transformed land use, as highlighted by the EEA report "Landscapes in transition: an account of 25 years of land cover change in Europe"; there are three emerging trends (EEA, 2017):

- expansion of urban areas (roads, rail, industrial parks, housing, commercial zones);
- decrease of agricultural land continues at an average rate of 1,000 km² per year;
- the area of European forests has increased since the 1960s.

Beside this, the Valley section remembers the morphology of Italian territory, where the Apennine Mountains divide the Adriatic coast from the Tyrrhenian: as in the Geddesian section, medium-large cities are mainly

located along coastal areas while networks of minor towns, villages and rural areas are located in hilly or mountainous zones. In recent decades, a combination of globalization, contemporary capitalism and technological change have accentuated the agglomeration and the density of many large metropolitan areas, leading to spatial and economic inequalities. Major urban systems host primary services and are a spatial concentration of innovative activities and knowledge, making them the major driving force of economic growth (Iammarino *et al.*, 2018). Major cities are becoming more important as concentration of economic activity, whereas marginal regions and centres of small and medium-sized manufacturing cities are affected by trends of demographic and economic decline. This current development path, characterized by unequal distribution of resources and opportunities, increases the vulnerability of peripheral regions, and produces differential risks (Collins, 2008). Furthermore diverse studies, in the field of *Disaster Research* and *Environmental Justice*, have observed how "hazard exposure, structural characteristics, and socioeconomic characteristics are significant predictors of structural damage" (Highfield *et al.*, 2014) and how pre-existing vulnerabilities influence the quality of the recovery process (Finch *et al.*, 2010).

This paper focuses specifically on the case of the 2016 earthquake in Central Italy to look at short- and long-term consequences on marginal territories affected by a natural disaster. The main question addressed here is the following: can catastrophes generate a window of opportunity to rethink the future of the territory? This contribution has been divided into three sections. The first offers a background of the pre-existing context; the second deals with the emergency management phases, with reconstruction after the impact of natural hazards and with tendencies in mid-term reconstruction; finally, in the last section a scenario is suggested on the regional scale.

Pre-existing context

Starting from 24 August 2016, several earthquakes struck the Central Appenine region, producing casualties and damage on structures and infrastructures. Those disasters involved a very large territory including several Regions (Abruzzo, Lazio, Marche and Umbria,) and 140 Municipalities; creating a new geography, the so called "Seismic Crater" (Figure 2). The crater area covers nearly 8,000 square kilometres (2.6% of the national territory), of which 2,000 square kilometres are located in protected areas or natural parks. Most of the municipalities in the earthquake area are located in the hilly and mountainous areas of the regions involved (more than 50% located at an altitude of over 900 meters asl). The Municipalities involved in the disaster are composed of small and very small settlements, 130 of which with fewer than 10,000 inhabitants and 56 with fewer than 1000; the total population amounts to almost 600 thousand. 25% of the inhabitants are seniors over 65, while 12% are children under 14, 2 percentage points below the national average. In 107 of the 140 Municipalities the population is decreasing, with rates of decrease up to 30%.

Figure 2. The Seismic Crater (Credits: Protezione Civile)

The economic sector is fragmented and diversified, the productive activities are almost exclusively limited to the sectors of agriculture, zootechnics and tourism, without, however, the presence of strong productive vocations and with a very low entrepreneurial density (the number of local units per sq km is equal to 5.9 against 15.6 at the average national level). There are about 25,000 farms for an average of 4 per 100 inhabitants, compared to a national density of 2.7 per 100 inhabitants. Almost all the farms are family-run (96.5%), often dedicated to small breeding and related activities such as the management of holiday farms, while the cooperatives are few and malfunctioning. Moreover, alongside the registered activities, there are many others that survive in the world of the informal economy, mostly managed by the elderly and voted to the exchange market or self-subsistence. Because of these, agricultural activity must therefore be considered an integral part of the culture and identity of the resident population, since it assumes not only economic but also social importance. While there are many shared aspects that can describe the crater as a whole, it is necessary to consider the areas affected by the earthquake as diversified from a socio-economic point of view. Indeed, it is possible to distinguish between the poorer inland areas most severely affected by depopulation dynamics and others, that before the disaster went through a phase of considerable recovery, placed at the centre of agro-food systems of excellence and dedicated to export (Olori *et al.*, 2017).

However, depopulation and cessation of traditional farming in the central Apennines is causing the disappearance of local cultural landscapes, which are the result of the millenarian integration between land use and natural processes.

Emergency management and reconstruction

The Presidency of the Council of Ministers, in reaction to the seismic events, provided a government structure in which the emergency and reconstruction activities were divided. On one hand, the emergency management phase was assigned to the Italian Civil Protection Department, through the establishment of the operational centre DICOMAC (Direzione di Comando e Controllo); on the other, the recovery and reconstruction management phase was delegated to an Extraordinary Government Commissioner. The Italian Civil Protection Department administrated the aspects connected with immediate support to the population and to the productive activities, in particular the recognition of damage to buildings and infrastructures, the management of

emergency housing solutions, support for zootechnics activities and collection and transport of rubble. A useful tool for supporting decision-making processes, rescue and aid delivery activities was provided by the European Space Agency, through the Copernicus Emergency Management Service activated for Earthquake in Central Italy. Real-time satellite images were used to make immediate broad assessments of damage, to calculate requirements for temporary accommodation, and, in general, to take stock of an evolving situation over large areas (Figure 3).

While the DICOMAC continued to manage the emergency phase, the Extraordinary Government Commissioner started the reconstruction phase. According to the Decree Law 189/2016 the Commissioner had the following tasks: to work in agreement with the Civil Protection, to coordinate the reconstruction and restoration of buildings and infrastructures, to support economic activities, and to monitor and supervise the funds, assisting the local authorities in planning the interventions. The Decree Law 189/2016 described a strongly centralized governance structure, in which the Extraordinary Commissioner acted as the pivot of the system and connected the Presidency of the Council of Ministers, the individual Ministries involved, and the Presidents of the four Regions who assumed the role of Vice Commissioners.

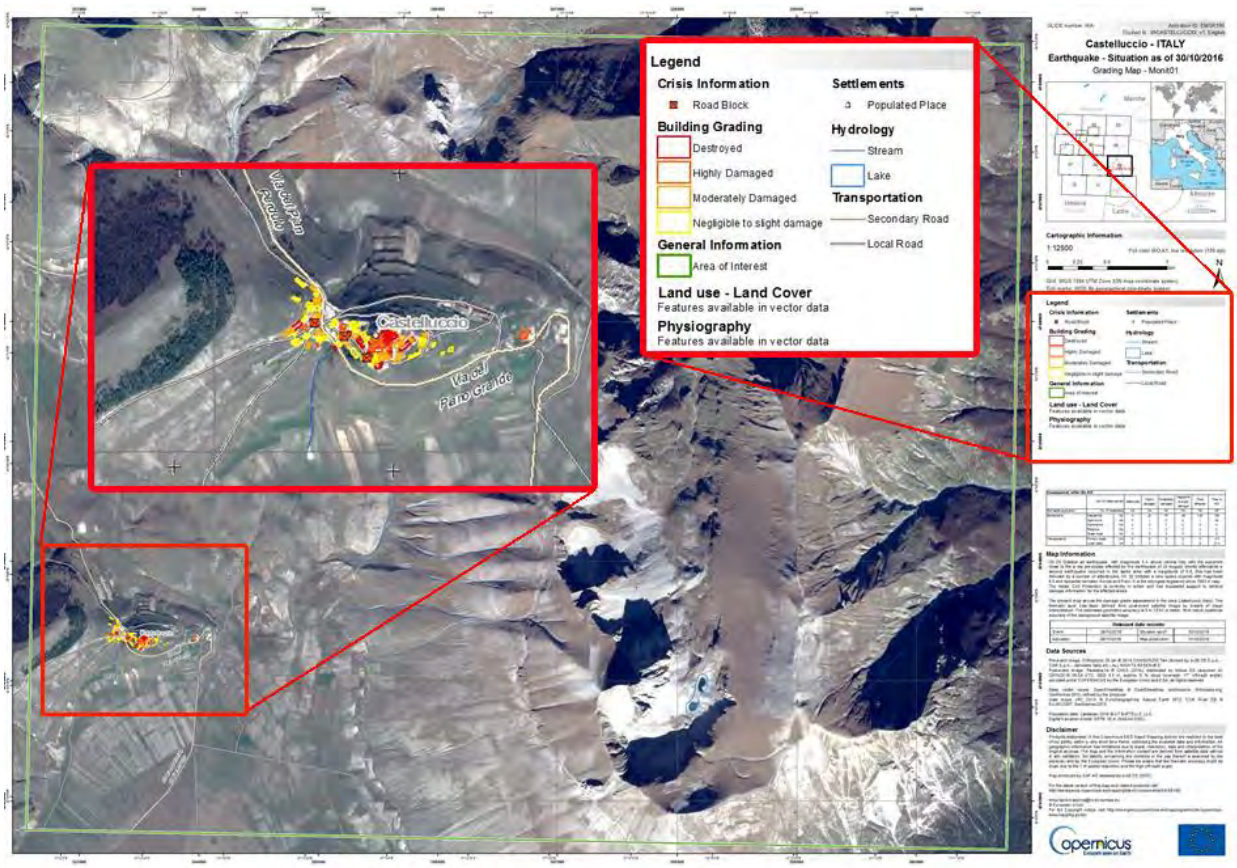

Figure 3. Copernicus EMS Grading Map of Castelluccio di Norcia, Italy (Credits: Copernicus Emergency Management Service).

This structure was organized on several institutional levels, where each institution was accountable for the matters of its competence, and, in some cases, even overlapping in order to define the strategic elements of the reconstruction. Furthermore, the reconstruction plan designed with the D.L. 189 was based on some fundamental elements, which established in particular:

- special reconstruction offices, set up by each Region together with the local administrations, with the task of managing the reconstruction;

- a reconstruction fund, established by the Ministry of the Economy and Finance, whose resources were allocated to the special accounting of the Extraordinary Commissioner;
- a central commissioner structure to assist the activities of the special offices for reconstruction and to implement the decisions of the Extraordinary Commissioner. (Bertelli *et al.*, 2017).

Today, two and a half years after the first earthquake, three different Commissioners have followed one another in close succession and the general situation is incredibly precarious, while reconstruction and recovery proceed at a slow pace. There is still work to be done to clear away all the rubble: in November 2018 only 50% of the public debris produced by the earthquake's destruction had been removed. In March 2019 some prefabricated post-disaster transitional dwellings were still lacking. Another issue concerning these transitional settlements relates to the question of how long people must stay there: experience from past disasters has shown how this temporality will last for at least ten years. Such delays are the result of a whole host of factors: on the one hand the considerable scale of the disaster and the different earthquakes that have taken place over time; on the other significant problems with the Italian Government's strategy for managing the aftermath of the disaster. This is because of a fatalistic attitude to disasters and "a pervasive lack of planning and a corresponding inability to set strategic priorities for resilience" (Alexander, 2013).

Furthermore, as pointed out in the investigation led by the independent research collective Emidio di Treviri, special post-earthquake legislation is characterized by a lack of social participation, indeed the involvement of the earthquake affected populations in crucial choices for their territory is at present completely absent (Barra *et al.* 2017). Furthermore, the current political approach on the national, regional and local scales indicates that no proper longer-term strategy is being developed.

Future scenario

Although the disaster has accelerated pre-existing conditions of marginalisation, post-earthquake reconstruction and related funds offer uncommon resources that may generate a window of opportunity, linked both to risk-reduction processes and to the possibility "to intervene on the wider and longer-term socio-spatial trajectory of a certain territory" (Coppola, 2016). Natural disasters serve as focusing events that generate policy windows (Solecki *et al.*, 1994) "they dramatize interdependencies between different scales, spatialities and temporalities creating a sort of augmented territorial condition" (Coppola, 2016). Evidence from past disasters indicates that policy windows are transitory opportunities: they may close quickly and do not ensure the adoption of transition paths towards more desirable futures. Before this window closes, there is a strong need to design participative settings aimed at involving a variety of local actors to outline transformative patterns of development, cooperation and innovation, in the search for a transition from current states of socio-economic decline to states of affairs considered more socially desirable.

Looking at the seismic crater through the lens of regional approaches offers valuable potentials for imagining new spatial outcomes related to the concept of operational landscapes "for the creation of selective regional closures of the regional economy and productive structure in relation to the global system" (Fanfani, 2018). Moreover "integrated multiscalar design and planning can address the consequences of development at the regional level while creating a context for designing on progressively smaller scales. […] If regional design is the action that brings intelligence from the overall vision to the everyday detail, it also integrates disciplines such as economics, ecology and social policy as well as design and planning (Wall, 2008)." In this perspective, the re-appropriation of the Valley Section becomes relevant, as an exploration tool and as "a fundamental relational diagram between project and geography"; and also as a "design and planning tool, to recalibrate our understanding of regionalism and employ it as a substantial device in developing a contemporary attitude towards urbanism" (Masoud, 2013). The true potential of such investigation relates to the development of a contemporary conception of environmental and systemic thinking, which is leading to the design of alternative

relationships between places, communities and nature. Another important condition to develop new scenarios is the ”new cooperation between urban and rural areas, conceived as basic tool of territorial innovation and local development” (Fanfani, 2018) linked with the dimension of the urban bioregion. This refers to geophysically and ecologically coherent area of territory (Atkinson, 1992) “defined by its natural physical characteristics, not by man-made political boundaries” (Tonn *et al.*, 2006) and characterized by a polycentric settlement model. An urban bioregional approach aims to achieve a balanced co-evolution between human settlements and the surrounding environment (Magnaghi, 2014), through the introduction of place-based development concepts “enabling especially local production/consumer clusters such as regional food-sheds or local food systems, local energy systems, districts of fair economics” (Fanfani, 2018). Moreover, the reconnection of urban and rural ecosystems, reinvented in an age of social innovation and networks, offers space for cooperation between alternative food networks, food businesses, education, research and policy-making. These may contribute to the “design of social infrastructures that enable the emergence of new enterprises, and the deployment of technology” (Thackara, 2019).

Indicators of the pre-earthquake statistics show that the agricultural system of the crater area, which now requires to be strengthened, has a development potential that is still largely unexpressed. These indications suggest a path of qualitative enhancement of local production, the reinforcement of the innovation processes of small companies also through the modernization of production structures and cooperation between producers in a supply chain logic (Arzeni *et al*., 2017). To this end, it is necessary to invest in processes of institutional and social innovation to create alternative systems of food production, based on a framework of small-scale agro-ecological production, that are environmentally sustainable, economically viable, and socially fair. Furthermore, there is need for an urgent change in attitudes in the policy of recovery, in order to reverse the trends outlined herein. A more locally based, socially inclusive public governance is required, capable of dealing with multidisciplinary matters and delivering original and shared visions of development.

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