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Civil Protection in Italy - Coping with Multiple Disasters

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Abstract: In Italy 2017 was a period of intense natural disasters but also of laboured reforms to the national civil protection system, which was under strain after a series of damaging earthquakes and other extreme events. The 2009 L'Aquila earthquake cast a long shadow in terms of the aftermath of the (ultimately unsuccessful) prosecution of members of the National Major Risks Commission for providing misleading information on seismic risk. The trial involved some serious issues of trust in government and science, but it also stimulated the authorities to look more closely at building public warning systems. Recovery solutions applied to L'Aquila were not followed in the aftermath of the later central Apennine earthquakes, which returned to models that had been current in 1980, particularly those involving growth poles. While emergency response remains Italy's forte, there is little progress in insuring people against natural perils. How to achieve the transition from response to prevention remains a largely unanswered question.

Key words: Civil protection, Earthquakes, Natural disasters, Post-earthquake reconstruction, Counter-disaster legislation

Introduction

On 18 January 2017, at Rigopiano, in an isolated mountain location in the province of Pescara, a seismically-induced snow and ice avalanche overran a hotel. Forty people were waiting for a snowplough to come and open the access road to the hotel so that they could be evacuated. Twenty-nine of them died in the avalanche and 11 were rescued. Between 24 August 2016 and the day of the avalanche, earthquakes caused major damage in a wide variety of localities distributed across the central Apennines. The first seismic disaster killed 299 people and injured 388 in four municipalities of the Tronto Valley, one of which was Amatrice in the Province of Rieti, where the tremors devastated priceless cultural heritage. The later earthquakes caused massive damage in Norcia and other areas north of Amatrice. Moreover, they coincided with a period of exceptional snowfall in which 30,000 residents of the central Apennines were left without electricity for an extended period of time. To cap it all, on 25 January 2017 a helicopter ambulance crashed between L'Aquila and Campofelice, killing six people. This protracted sequence of events was a severe test for the national response capacity. The Rigopiano avalanche, in particular, was first tackled by a search-and-rescue group who had to ski through a blizzard during the night to reach the scene of the tragedy (Chiaia et al. 2017).

For Italy, the year 2017 began with disasters in the limelight—and with a substantial challenge in the field of disaster recovery. Once again, the high vulnerability of the country's building stock to seismic damage was panoramically revealed. Once again, earthquakes not only caused suffering and homelessness, but they gave the populations of the central Apennines no peace and no closure. Initial legislation, such as the Decree-Law 189 of 17 October 2016, which allocated funds to Amatrice and surrounding municipalities, proved insufficient as the disasters continued to occur. Decisive action was needed.

Italian Civil Protection in a State of Flux

During the year, the Italian Government began a process of reforming civil protection. It started with a decree-law (no. 30/2017), which merely obliged the legislators to act before the end of the year. Policy-making would be separated from operations and administration, and there would be a comprehensive overhaul of the emergency response system, which had not been brought up to date since it was formulated in the early 1990s (Alexander 2002). For almost a quarter of a century, public life, administrative practices, disaster scenarios, scientific knowledge and the balance between centrism and devolution had evolved and changed in Italy, but the civil protection system had remained the same, or at best had been updated by partial, piecemeal legislation that lacked enough breadth and integration to preserve the integrity of the system as a whole.

Italian civil protection stands at a crossroads. Disasters are numerous, costly and disruptive, and moreover they are frequently lethal. There is always the chance that a truly major event may occur, such as a very large earthquake or volcanic eruption. Various stresses and strains lambaste the system, including loss of trust, corruption, bureaucratic delays, polarisation and the fiscal strain of paying for disasters. There is a general acceptance that more needs to be accomplished to mitigate the risks of disaster, especially with regard to earthquakes, floods and landslides, but how that should be done remains an open question and a thorny issue. The progress of the reform during the year was slow and the outcome at the end of the year was inconclusive. This is not surprising, given the magnitude of the task: there are, for example, 3,600 civil protection volunteer organisations in Italy. No part of the country is immune from disaster.

One particular element that is the subject of reform is the role of municipalities and their leaders, the *sindaci* (mayors). Disasters caused by natural hazards, in which Italy is particularly rich, are always local affairs, no matter how large they are. The theatre of operations is the local area (Alexander 2016) and, according to the basic civil protection law, no. 225 of 1992, the mayors are the chief decision makers within the confines of their municipalities. In Amatrice, mayor Sergio Pirozzi achieved a significant national profile by firm leadership, but, as in all mountain townships, what the local administration can achieve is severely constrained by the quantity and quality of resources that are, or that become, available in the aftermath of a disaster (Raffiotta 2014). The reforms allow municipalities formally to band together to administer civil protection (something that they had been doing informally for decades). The reforms

establish funding sources for disaster mitigation and prevention, and for emergency response. It is to be hoped that in future disasters direct access to funds will reduce bureaucratic delays.

Whatever the reforms manage to achieve, there is no doubt that the relationship between national and local forces in Italian civil protection is a troubled one. Indeed, in its own right the national scene has been repeatedly rocked by scandals and resignations. A week after the first Amatrice earthquake, on 1 September 2016, Prime Minister Matteo Renzi appointed Vasco Errani, the former President of Emilia-Romagna region, as Special Commissar for Reconstruction. Errani had plenty of relevant experience from his region's role in recovering from the 2012 Emilian earthquakes. His remit expanded rapidly as earthquakes continued to devastate the towns of the central Apennines. A year after starting the job, Errani resigned, citing 'personal reasons' for his decision. Many commentators argued that he had become a scapegoat for the bureaucratic delays that characterised the medium- to long-term emergency responses (Stefanoni 2017). He was replaced by Paola De Micheli, former councillor of the Municipality of Piacenza, who perhaps has a more technical and less political profile.

This paper will now endeavour to explain the antecedents and drivers of the political developments that underpin changes in the Italian civil protection system. Disasters will be considered in terms of the responses they engendered from the political decision makers, and how these have affected the civil protection system, the survivors of disaster and beneficiaries of aid, and the public at large. To understand the current state of play, one needs to go back to the earthquake that struck L'Aquila, in Abruzzo, in April 2009.

The Legacy of L'Aquila

Giampaolo Gioacchino Giuliani (b. 1947), formerly technician in the Gran Sasso physics laboratories, had been monitoring the flux of radon particles (^{222}Rn) in the basement of an elementary school in the centre of L'Aquila. When a sizeable earthquake is pending, accelerated micro-fracturing puts more rock surfaces in contact with air and groundwater, and this increases the release of elements contained in the rocks, including radon, which is stable enough to measure in the fluid flux. There have been many studies of radon emissions in relation to the short-term potential for earthquakes to occur (Voitov 1993), including some in the vicinity of L'Aquila (Pitari et al. 2014). However, although radon emissions are often strongly linked to seismic activity, they are rarely, if ever, accurate predictors of impending earthquakes.

Nevertheless, when Giuliani detected strong increases in radon emissions, he deduced that a major seismic event was likely to occur in the vicinity of Sulmona, about 55 km from L'Aquila. On 29th March 2009, he telephoned the mayor of Sulmona to inform him of an immediate risk of seismic disaster. Unfortunately, the news was leaked to the population and the result was substantial disruption of normal life. Giuliani incurred the rancour of the National Department of Civil Protection (DPC) and, indeed, of the entire Italian establishment. Much was made of the fact that he had no university degree and formal qualifications for work on seismic phenomena. He was prosecuted

for *procurato alarme*, or disturbance of the public peace. The Director of the DPC, Dr Guido Bertolaso, requested punitive damages, but eventually, on 22 December 2009, Giuliani was exonerated by the Sulmona district court. In the meantime, a magnitude 6.3 earthquake had occurred--not quite as Giuliani calculated, but just about enough to vindicate his alarm.

The National Major Risks Commission (Commissione Nazionale per la Previsione e Prevenzione dei Grandi Rischi) is the body that provides scientific advice to the civil protection authorities of Italy. Conceived under Article 9 of Law 225 of 1992, Italy's basic emergency management act, it was designed to have a purely advisory role but in effect it ended up setting policy for the management of crises. At the Commission's meeting of 31st March 2009, a series of rash statements was made about the release of seismic energy in Abruzzo that bore little relationship to the available data (Alexander 2014). Clearly, members of the Commission were enraged at Giuliani's presumption and overreacted to it. The occurrence of a devastating earthquake a week later threw into sharp relief the rashness of the Commission's assurances about seismic safety.

It led, eventually, to the prosecution, in the court of L'Aquila, of seven members of the Major Risks Commission for the manslaughter of 29 of the citizens who died in the earthquake. The seven defendants were initially convicted, but in November 2015, six of them were absolved on appeal and the seventh had his sentence reduced. The then Director of Italian Civil Protection, Dr Guido Bertolaso, was prosecuted as an accessory to the offence but was absolved in September 2016. He had earlier been exonerated of a corruption charge that involved the acquisition of property in central Rome and preferential treatment on civil protection contracts.

The L'Aquila trial was one of the most controversial and misunderstood events in modern science (Alexander 2014, Gabrielli and Di Bucci 2015). At an early stage, the American Association for the Advancement of Science (AAAS) organised a world-wide petition to defend "scientists wrongly accused of failure to predict an impending earthquake" (Pinholster 2017). Although this was a complete misunderstanding of the purpose of the trial, the AAAS refused to back down. During the trial, it published, in *Science* magazine, a vindication written by one of the defendants, Professor Enzo Boschi (Boschi 2013), but it declined to publish a rejoinder by scientists who supported the prosecution. Battle lines were drawn by the proponents and opponents of the trial, and this ushered in a period of confrontation and politicisation of Italian science.

The L'Aquila trial had to be seen in the light of contemporary developments in national politics. At the time of the earthquake and its short-term aftermath, the Prime Minister, Silvio Berlusconi, was under attack by the judiciary for improper business dealings, sexual scandals and conflict of interest between his political and economic interests. He had garnered a reputation for trying to pass *ad personam* and *ad aziendam* laws to protect his personal interests (Travaglio 2010). Attempts had been made to restrict the power of the judiciary (Dallara 2015). The L'Aquila trial can be seen as one of the efforts made by the judiciary to fight back against political influence by defying the Italian political establishment (Billi 2017). Whether or not that is the case, there is no doubt that the L'Aquila earthquake had high political salience--unusually for an event

in the hinterland of national political and economic life. L'Aquila hosted the 35th G8 Summit. It was electorally important in swing voting, and government largesse to the earthquake victims provided valuable political imagery.

The case for the prosecution was prepared meticulously (Billi 2017), including the use of an anthropologist to provide higher level justifications for the action (Ciccozzi 2013). Investigations confirm that there is little doubt that a case for prosecution existed. The Major Risks Commission set the strategy for responding to the seismic crisis in L'Aquila, local civil protection authorities followed the strategy, local people allowed themselves to be guided by it, and some of them died, presumably as a result (Alexander 2014).

However, there were three points of weakness in the case. The first is that the National Risks Commission does not exist to set policy or strategy, merely to advise. In fact, a Prime Ministerial Decree of 2011 hastily clarified this fact (Italian Government 2011). The extent of its responsibility to citizens is thus unclear. It had certainly been negligent, and this was thrown into high relief by the impeccable conduct of later convocations of the same committee, staffed with different people. Where these individuals refused to serve, the government compelled them to do so, but the outcomes were neither controversial nor unsafe. The second weakness lies in the difficulty of proving that categorical statements about low risk led to specific forms of behaviour that in turn led to the death of local citizens who would have survived if they had followed their traditions and instincts rather than official advice. Looking at some specific cases in which citizens took decisions that led to their deaths, it seems that the connection exists, but it is hard to prove (Alexander 2014, p. 1162). Finally, the selection of the defendants could be regarded as rather arbitrary. Some of them did make rash statements, especially Professor Franco Barberi and Ing. Bernardo De Bernadinis. However, in a sense the system, rather than its individual proponents, needed to be contested. In some ways it was more a case of corporate manslaughter than personal negligence. In the end, the outcome of the trial received a mixed reception (Cocco et al. 2015, Ciccozzi 2015). No one expected it to succeed, but perhaps this was not the point. It represented a gesture against the lack of responsibility and immunity from censure of the Italian establishment, as well as a vigorous assertion of independence by the judiciary. Bretton et al. (2015) looked on the positive side and cited the L'Aquila case as an example of how legal proceedings can help clarify the responsibility for public safety born by officials.

What concerns us in an assessment of the current state of Italian politics is the legacy of the L'Aquila trial. This can be divided into two elements. The first concerns the survivors of the earthquake. Major disasters--and the L'Aquila earthquake was certainly one of these--tend to spawn so-called emergent groups as part of a developing 'disaster subculture' (Neal and Phillips 1988, Granot 1996). Several emergent groups were born out of the L'Aquila earthquake. The most visible of these is 3e32 (www.3e32.org), whose name reflects the timing of the earthquake, namely 03:32 in the morning. Other such groups also exist and have survived the test of time. These groups carry with them a prevailing sense that the bereaved have not received justice and that L'Aquila has not had a reasonable response from government. In L'Aquila, emergent groups have not achieved the profile and political weight that they

have in some disasters elsewhere in the world (David 2006). They remain neglected entities whose voices are not listened to in the national arena.

The second element concerns the relationship between science and government in Italy. The earthquake, tsunami and nuclear release of 11 March 2011 in northeast Japan led to a very serious loss of trust between the public, politicians, industrialists and scientists (Prati and Zani 2012). In this the public discerned, not only misinformation, but also collusion between the last three of these constituencies. In Italy, trust in politicians has never been high, but the L'Aquila trial led to a marked polarisation in Italian science. The Government and DPC had their proponents (Marzocchi 2012, Stucchi et al. 2016), and the opposition had theirs (Alexander 2014, Simoncini 2014). Attitudes have hardened and such is the degree of mistrust that one faction has started to describe the other as *i talibani*! This situation bodes ill for the collective effort to understand hazards, vulnerabilities, risks and disaster impacts in Italy.

A more positive consequence of the trial is that the 2017 civil protection reforms place more emphasis on warning the public and ensuring that warnings are probabilistic rather than categorical. A second legacy of the L'Aquila earthquake concerns a major experiment in rehousing the survivors.

The Legacy of Berlusconi's 'New Towns'

Post-disaster shelter and housing have been a concern in Italy since time immemorial. The provision of temporary housing became a systematic process in the aftermath of the Irpinia-Basilicata earthquake of 1980, which left 250,000 people homeless. Although the prefabricated shelters put up in 1981 had a design life of no more than ten years, in the current period in Senerchia (Salerno) they are still in place, in Romagnano al Monte (Salerno) the town hall is still housed in them, and in Bucaletto, Potenza, they are still inhabited (Davis and Alexander 2015).

The L'Aquila earthquake led to a sudden, massive demand for housing as it left 67,500 residents homeless. For 15,500 of these people, the solution was to create 19 enclaves of three-storey blocks in which there were small apartments, the CASE project *Complessi Abitativi Sostenibili e Ecocompatibili* (Calvi and Spaziante 2009). In 2009, elections were pending and Abruzzo was a swing region. Silvio Berlusconi garnered popularity by exercising his power to mandate the creation, in six to nine months, of these so-called 'new towns' and assign them, fully furnished, to homeless *aquilani*. The Italian state even provided each family with an official champagne cooler to celebrate. This fact was much lampooned in Sabina Guzzanti's documentary film *Draquila* (2010), which figures the political Dracula sucking the life blood out of the people of L'Aquila. The cost of the CASE was calculated to be €280,607 per apartment (Calvi and Spazzianti 2009), an astronomical sum. As much of the funding came from EU structural funds, this fact was not lost on the European Court of Auditors (European Court of Auditors 2012).

The 19 CASE complexes lacked basic services and had been built, in part, on conservation land (and in one case on an asbestos dump), in places that were awkward to get to and were served by poor quality infrastructure (Alexander 2013). Although quite well designed, they suffered some serious defects (Ciccozzi 2016). The first was the fruit of corruption in the building trade, which led to the ball-and-cushion seismic isolators that underpin the buildings being liable to failure in about one third of cases (De Stefano 2015). The superstructures were not built to be seismically resistant, as the isolators should have obviated that need. As a result, the CASE buildings are something of a seismic time-bomb if another major earthquake should occur during their lifetimes. Secondly, the complexes were built in great haste and soon started to decay. Six months after their inauguration, their maintenance was handed from the DPC to local municipalities, which lacked the resources and administrative structure to proceed. Although services have improved slightly, some of the complexes have begun to look badly neglected and structural defects have become apparent. When on one of the buildings a balcony spontaneously collapsed, local Internet users concocted a poster for a fictitious cartoon film called "It's raining balconies".

In disaster recovery and the provision of shelter, a delicate balance must be struck between transitional solutions and permanent reconstruction (Davis and Alexander 2015). The CASE complexes, and many of the more traditional solutions used in L'Aquila (MAP - *moduli abitativi provvisori*) have an air of permanence that militates against prompt reconstruction, which has been piecemeal. The good news is that it has not been concentrated exclusively on the one city, L'Aquila, but has occurred in the smaller settlements, the *comuni* and *frazioni* of the Aterno Valley. The not-so-good news is that reconstruction has been exceedingly heterogeneous. In parts of L'Aquila city, it is not clear which zones are interdicted because of construction activities and which are not. Commonly, adjacent lots will comprise reconstructed and reinhabited buildings, reconstructed but empty buildings, buildings covered in scaffolding and either in the midst of reconstruction or untouched, and vacant lots where demolition has removed a damaged structure. The same is true of many of the smaller settlements.

In L'Aquila, a more rational approach would have been to concentrate resources strategically on one neighbourhood at a time, thus restoring functionality to the city in a capillary manner. It is patently obvious that the combination of bureaucratic delays, neglect and political marginalisation has led to a situation that is dysfunctional because it is heterogeneous. It has been suggested that the radical nature of the CASE 'new towns' solution was an attempt to plant the seed of future property speculation (Fonzi 2014), but it is difficult to see how this would work in practice. As the 'new towns' begin to age, perhaps prematurely, it seems highly likely that the experiment will not be repeated in future disasters.

Half the temporary accommodation in the L'Aquila area was composed of *moduli abitativi provvisori* (MAP) units, which trace a direct line back to the 1980 Irpinia-Basilicata earthquake and the first custom-designed, mass-produced post-disaster shelter. Newly rebranded as *soluzione abitativa di emergenza* (SAE) units, they were deployed after the 2016-2017 earthquakes.

From L'Aquila to Emilia, Amatrice, Norcia and Beyond

The contrast between the effects of the earthquakes of 2009 in Abruzzo and those of 2012 in Emilia is striking. Both emergencies involved medium-power seismic events. Both involved widespread damage to churches, monuments, housing, commercial premises and industrial plant. Both aftermaths involved an institutional struggle against the infiltration of building works by organised crime. There, the similarities end. The disaster in Abruzzo led to widespread loss of employment, involving perhaps 16,000 jobs in the first year, although the effects of the earthquake are difficult to separate from those of general economic recession. Jobs allocated to women proved to be particularly vulnerable. Very little was done to stimulate employment. The biggest concern in the area was L'Aquila University, which survived the loss of many buildings, including its central administration complex, by adroit adaptations and a series of temporary measures, including special funding so that tuition fees could be suspended for three years, thus retaining students (Magni et al. 2017).

L'Aquila is an economic backwater, whereas the earthquake area of 2012, at the convergence of Veneto, Lombardy and Emilia, is an economic heartland. It suffered particularly because of lax building codes, but not very much in terms of lost productivity (Barone et al. 2013). In Italy, the seismic classification of municipalities was reorganised in 2003 and new construction codes were introduced in 2008. In the 2012 Emilia earthquakes, many industrial premises collapsed, which reignited the furious debate among seismic engineers about the validity of probabilistic seismic hazard analysis. What this means in practice is that basing local codes on the record of earthquakes runs the risk of underestimating areas in which the known history of earthquakes is not an accurate record of seismicity, because there may occasionally be larger than normal events. Nevertheless, the measures taken to recover housing and productivity have been more extensive, prompt and detailed than thy were in L'Aquila. Business continuity management and use of social media to create dialogue between the population and public authorities also distinguished the response in Emilia (Russo et al. 2016).

The pattern of seismicity is anything but regular, and the 2010s have been a time of particularly intense activity. The structure of active faults in the central Apennines is complex. This means that earthquakes can occur in irregular sequences and stress can be transferred from one fault to another. On 24th August 2016 devastating tremors caused massive destruction in the towns of Amatrice, Accumoli, Pescara del Tronto and Arquata del Tronto. The town hall of Amatrice had been constructed after (and in response to) the 2009 L'Aquila earthquake in a safe but accessible position as a "strategic" building that was proof against seismic shaking. It therefore functioned as a nerve centre for relief activities. On the other hand, next door to it, the Romolo Capranica elementary school partially collapsed, despite having been retrofitted ostensibly to 2012 seismic engineering standards. Six weeks after the earthquake, its remains were demolished with remarkable alacrity before any serious investigation of why it collapsed could take place.

One interesting development here was the return to the idea of 'poles of development', which had largely failed in the aftermath of the 1980 earthquake (Di Costanzo 2016). The construction during 2017 of the *Area Food* at Amatrice, a complex of commercial buildings designed by the architect Stefano Boeri, is an attempt to stimulate the devastated local economy of this corner of the Apennines, which is largely based on stock farming, agricultural produce and hospitality. It shows a concern for the economic consequences of the earthquake that was not present in L'Aquila in 2009-2010.

The Amatrice earthquake and ensuing seismic disasters further north around Norcia also showed a change towards more systematic rescue and protection of damaged or threatened cultural heritage, using methodologies that had been developed gradually during the emergencies of the past (Maio et al. 2018).

In balance, the outcome of these events is a modest amount of technical progress but very little change in the overall approach to managing disasters and disaster risk. This tends to presuppose that present tendencies are sustainable. In the light of the risk of a very large disaster, I doubt whether that is true, but I also see little evidence of an evolving strategy to tackle vulnerability to natural hazards or the risk of a major extreme event. Indeed, in this sector, the future is opaque.

The Future

Recent disasters in Italy have been serious, tragic events, but they have not been large in comparison with what could occur. Hence, the national civil protection system and the country's political and economic systems have not yet been tested by such an event. There is a significant potential for a very large natural hazard impact. The civil protection system coped well in the concurrent events of January 2017, but this is not the same thing as facing, for example, the impact of a magnitude 8 shallow-focus earthquake in a highly populated area.

In the aftermath of the 1908 Strait of Messina earthquake, the Prime Minister of the time, Giovanni Giolitti, excused the fact that the first organised response had come from the Russian and British Navies by arguing that it was beyond the competency of the state to provide major assistance in times of disaster (Dickie 2008). This was liberalism. In the aftermath of the 1980 earthquake, the Italian state immediately mobilised and continued to provide subsidies, with the characteristic bureaucratic delays, for years afterwards. This has been branded 'assistentialism', in ironic reference to existentialism (Guidoboni 2017). But what of neo-liberalism in the 21st century? In truth, the Italian state has always had a two-speed approach to disaster relief. The debts incurred by recovery from the 1968 Val Belice earthquakes in Western Sicily will not be paid off until 2018, 60 years after the event, and the recovery took a full 15 years to grind into gear and get properly started. In fact, the recovery in western Sicily was jump-started by adding funding provisions to legislation intended to provide money for subsequent disasters in more prominent parts of the country.

Recent disasters have not only come up against the double standard of one strategy for the poor regions and another for the wealthy, they have also had to contend with

the problem of fiscal austerity. In 1982, the Government put up the price of motor fuel to pay for the Irpinia-Basilicata earthquake recovery. In 2009, the initial response to the L'Aquila earthquake was lavish--it was election time--but then niggardly (bureaucracy was employed to slow the disbursement of funds). In the 2016-2017 earthquakes, there has been a measured response, although one that has been adequate in the short term. At no point in time has any of the protagonists instigated a serious debate about what 'welfare' should really mean. Hence, no one who lives in conditions of vulnerability to earthquakes, floods, storms, landslides or whatever, can predict how the government will react to the demand for subsidies when the next round of destruction occurs.

Despite the endemic nature of bureaucratic inertia in Italy's institutions, change is nonetheless occurring. The National Fire and Rescue Service, the Corpo Nazionale dei Vigili del Fuoco, remain the lead agency. It has always maintained a certain distance from the rest of the disaster response mechanism, and it seems that the gap is widening. Neither the fiscal climate nor the intellectual one (given the aftermath of the L'Aquila trial) is a fertile ground for innovation. One consequence of this is that very little effort has been made to tackle one of the most fundamental problems of all, namely, how to achieve the transition from response to prevention. With 70 per cent of the population in seismically active areas, and between one sixth and one third of properties deemed to be adequately protected against earthquakes, Italy's disaster potential remains high and largely unreduced (Mela et al. 2017). Perhaps 2018 will show whether the plan to establish twin reserves for emergency response and disaster mitigation has any substance in these times of austerity.

In Italy, there are the beginnings of a gradual realisation that disaster risk reduction requires a transfer of some of the responsibility from the state to the citizen. The Monti government of 2011-2013 had to contend with the Emilia earthquakes, which it managed in the traditional manner by increasing direct taxation and offering local fiscal concessions. However, when he was Prime Minister, Mario Monti started a brief national debate on the possibility of earthquake insurance as a substitute for state subsidies to those who have lost property to seismic damage. Earthquake insurance for homeowners subsequently became available at a rate of about €2.50 per square metre, but rising to €5.00 in areas of high seismic hazard. For most homeowners, these figures are too high and hence only 1 per cent of them have purchased earthquake insurance. It may be that in the event of a seismic disaster the acquisition of insurance will have been a wasted expenditure if the government offers across-the-board subsidies to those who have endured losses. This is the so-called 'charity hazard' (Raschky and Weck-Hannemann 2007).

To be effective, an earthquake insurance scheme would need to be underwritten by the Italian Government and offered nationally. Whichever way it is carried out, natural hazard loss financing in Italy involves an element of cross-subsidy, or 'moral hazard' as it is known in economics and insurance (Baker 1996). In other words, for the greater good of the community and the nation, those who bear small risks must subsidise those who bear larger ones. Very much property in Italy is currently uninsured.

In Italy, fewer than half of natural hazard perils are insurable on the private market, all of them through optional measures, and market penetration is low or negligible in all cases (Insurance Europe 2016). As Gizzi et al. (2016) explained: "In Italy ... the low penetration rate can be explained in various ways. ... inadequate risk awareness, perception that natural hazards are events of low frequency, state relief or ex-post compensation taken for granted by the population, high insurance premiums, inexistence of legislation that would make insurance mandatory, lack of energy from private insurance market to promote the need for insurance in fear unexpected catastrophic losses." In addition, Gizzi et al. (2016) cited high indemnity limits and high deductibles, which mean that private insurance would cover only a portion of losses, and at high cost. These authors suggest that the Italian Government could do more to publicise, homogenise and subsidise insurance offerings. I believe this would require clear rules about the future limits of state subsidy to individual citizens who have suffered losses (the stick) and underwriting a more affordable insurance scheme for natural hazards (the carrot).

Valediction

In 2017 it is not clear what the future role of the state will be in disaster risk reduction, response and recovery. Neoliberalism is in direct conflict with the welfare requirement of disasters. Moreover, Article 2 of the Constitution places a requirement to enact "political, social and economic solidarity" and Article 119 requires that the State support this function with resources, but in times of fiscal austerity to what extent will it continue to do so? The mid- and late-2010s are a period of retrenchment. In March 2017 the Italian Government passed a law, no. 30 of 16-3-2017, obliging itself to reorganise civil protection into a more coherent system within nine months (Italian Government 2017). There is little indication how this will be done or what innovation it will bring. The system is already coherent (OECD 2010) and its main weaknesses are, first, that it depends critically on the quality of leadership at all levels from local to national, secondly that its functionality always depends on the prevailing political climate, and thirdly that its coherence as a system has suffered from the ambiguity of a federalising but not federal nation. Whether these issues will be adequately tackled in the reorganisation is, at the time of writing, a matter of conjecture.

Presently, there is no sense of development of the system. The usual mechanisms are in place: massive response by volunteer organisations, provision of temporary housing units (small wooden huts) to those made homeless by disasters, heavily bureaucratic mechanisms for subsidising reconstruction, and so on. The fundamental problems of disaster relief and reduction are not being tackled in this period of retrenchment.

In part the stasis is a response to continuing austerity, and in part it reflects a general loss of trust in government and its civil protection function (Causo 2013). The mores of the Second Republic are well chronicled in the best-seller by Rizzo and Stella (2007). Guido Bertolaso, one-time Director and figurehead of the National Department of Civil Protection, was continually under investigation or prosecution from 2010 until September 2016, even though he was formally cleared of almost all of the accusations. The L'Aquila trial polarised scientific, academic and public opinion, and penetration by

organised crime of reconstruction works further damaged the reputation of those involved in managing them (paradoxically, as the unmasking of the role of organised crime was actually a positive achievement).

In conclusion, Italy badly needs strong and competent leadership in the field of civil protection. Trust needs to be restored where it has withered away. Vulnerability needs to be reduced much more systematically than has happened so far. Citizens need to be involved in the holistic process of disaster risk reduction, not merely as volunteer emergency responders each time there is a disaster. Scenarios and plans need to be made for a major extreme event. Finally, new solutions need to be developed involving insurance, information technology, economic instruments and broad expertise. Disaster is a window of opportunity for change (Birkmann et al. 2010), but it can just as easily be a source of opportunity for malign forces that would exploit society's weakness in time of stress (Klein 2008) as an opportunity for positive movement towards greater safety and security.

References

Alexander, D.E., The Evolution of Civil Protection in Modern Italy", in J. Dickie, J. Foot and F. Snowden (eds) *Disastro! Disasters in Italy since 1860: Culture, Politics, Society* (New York: Palgrave Press, 2002): 165-185.

Alexander, D.E., "An Evaluation of Medium-Term Recovery Processes After the 6 April 2009 Earthquake in L'Aquila, Central Italy", *Environmental Hazards* 12, no. 1 (2013): 60-73.

Alexander, D.E., "Communicating Earthquake Risk to the Public: the Trial of the 'L'Aquila Seven'", *Natural Hazards* 72, no. 2 (2014): 1159-1173.

Alexander, D.E., *How to Write an Emergency Plan* (Edinburgh and London: Dunedin Academic Press, 2016).

Baker, T., "On the Genealogy of Moral Hazard", *Texas Law Review* 75, no. 2 (1996): 237-292.

Barone, G., F. Benni, C. Brasili and S. Mocetti, "The Short-Term Effects of Emilia's Earthquake on Regional Economic Growth", *Politica Economica* 29. no. 2 (2013): 199-214.

Billi, M., *La causalità psichica nei reati colposi: il caso del processo alla Commissione Grandi Rischi*, (Roma: Aracne, 2017).

Birkmann, J., P. Buckle, J. Jaeger, M. Pelling, N. Setiadi, et al., "Extreme Events and Disasters: a Window of Opportunity for Change? Analysis of Organizational, Institutional and Political Changes, Formal and Informal Responses After Mega-Disasters", *Natural Hazards* 55, no. 3 (2010): 637-655.

Boschi, E., "L'Aquila's Aftershocks Shake Scientists", *Science* 341, no. 6153 (2013): 1451.

Bretton, R.J., J. Gottsmann, W. P. Aspinall and R. Christie, "Implications of Legal Scrutiny Processes (Including the L'Aquila Trial and Other Recent Court Cases) for Future Volcanic Risk Governance", *Journal of Applied Volcanology* 4, no. 18 (2015): 1-24.

Calvi, G.M. and V. Spaziante, "Reconstruction Between Temporary and Definitive: the CASE Project", *Progettazione Sismica* 03 (2009): 221-250.

Caruso, T. "Trust, Clientelism and State Intervention in Disaster Relief Policy: the Case of Southern Italy", *Human Affairs* 23 (2013): 230-245.

Chiaia, B., B. Frigo, I. Chiambretti, S. Marello and M. Maggioni, "La valanga di Rigopiano: l'analisi dinamica", in N. Augenti and L. Jurina (eds), *Ingegneria Forense, crolli, affidabilità strutturale e consolidamento. Vol. 1*. Atti del convegno IF CRASC '17 - 14/16 settembre 2017, Milano (Milano: Dario Flaccovio Editore, 2017): 457-468.

Ciccozzi, A., *Parola di scienza: Il terremoto dell'Aquila e la Commissione Grandi Rischi: un'analisi antropologica*, (Roma: DeriveApprodi, 2013).

Ciccozzi, A., "Commissione Grandi Rischi: contradizioni e illogicità nelle motivazioni della sentenza di appello", *Il Fatto Quotidiano*, 16, 2015 and 20th February 2015.

Ciccozzi, A., "I pericoli della ricostruzione: antropologia dell'abitare e rischio sociosanitario nel dopo-terremoto aquilano", *Epidemiologia e Prevenzione* 40, no. 2, Supplement 1 (2016): 93-97.

Cocco, M., G. Cultrera, A. Amato, T. Braun, A. Cerase et al., "The L'Aquila Trial", in S. Peppoloni and G. Di Capua (eds) *Geoethics: the Role and Responsibility of Geoscientists*, Special Publication no. 419 (London: Geological Society, 2015): 43-55.

Dallara, C., "Powerful Resistance Against a Long-Running Personal Crusade: the Impact of Silvio Berlusconi on the Italian Judicial System", *Modern Italy* 20, no. 1 (2015): 59-76.

David, E., "Emergent Behaviour and Groups in Post-Disaster New Orleans: Notes on Practices of Organized Resistance," in Natural Hazards Center (ed.) *Learning from Catastrophe: Quick Response Research in the Wake of Hurricane Katrina,* (Boulder, Colorado: Institute of Behavioral Science, University of Colorado, 2006): 235-261.

Davis, I. and D. Alexander, *Recovery from Disaster* (Abingdon, UK: Routledge, 2015).

Dickie, J., *Una catastrofe patriottica - 1908: il terremoto di Messina* (trans. F. Galimberti) (Bari: Laterza, 2008).

Di Costanzo, G., "Terra di lavoro, già Campania felix: il terremoto del 1980 e la trasformazione dell'area metropolitana napoletana", in L. d'Alessandro and A. Petrillo (eds) *Passaggio a Sud: Patrimoni, Territori, Economie*. (Sesto San Giovanni: Mimesis Edizioni, 2016): 185-206.

European Court of Auditors, *The European Union Solidarity Fund's Response to the 2009 Abruzzi Earthquake: the Relevance and Cost of Operations*. Special Report no. 24 (Luxembourg: Publications Office of the European Union, 2012).

Fonzi, M., "L'Aquila oggi: più case che persone. Ma aumenta il Fondo Immobiliare." *NewsTown* 31 May 2014. http://news-town.it (accessed 10 November 2017).

Gabrielli, F. and D. Di Bucci, "Comment on 'Communicating earthquake risk to the public: the trial of the 'L'Aquila Seven'; by David E. Alexander", *Natural Hazards* 75, no. 1 (2015): 991-998.

Gizzi, F.T., M. R. Potenza and C. Zotta, "The Insurance Market of Natural Hazards for Residential Properties in Italy", *Open Journal of Earthquake Research* 5 (2016): 1-42.

Granot, H., "Disaster Subcultures", *Disaster Prevention and Management* 5, no. 4 (1996): 36-40.

Guidoboni, E., "Il valore della memoria: terremoti e ricostruzioni in Italia nel lungo periodo", *Quellen und Forschungen aus italienischen Archiven und Bibliotheken* 96, no. 1 (2017).

Insurance Europe, *NatCat Chart: Property Insurance (Italy)*. www.insuranceeurope.eu (2016). (Accessed 7 January 2018).

Italian Government, *DPCM del 7 ottobre 2011. Riorganizzazione della Commissione nazionale per i grandi rischi*. Prime Ministerial Decree, Cabinet Office, Roma, Article 2 (2011).

Italian Government, Legge 16 marzo 2017, n. 30, *Delega al Governo per il riordino delle disposizioni legislative in materia di sistema nazionale della protezione civile*. Gazzetta Ufficiale 66, 20 March 2017.

Klein, N., *The Shock Doctrine: The Rise of Disaster Capitalism*. (Harmondsworth, UK: Penguin, 2008).

Magni, M., R. Fraboni and, F. Marincioni, "Emergency Preparedness and Management at the University of L'Aquila (Central Italy) and the Role of Students' Associations in the April 6th 2009 Earthquake", *PloS Currents* 12 January 2017: 9.

Maio, R., M. T. M. Ferreira and R. Vicente, "A Critical Discussion on the Earthquake Risk Mitigation of Urban Cultural Heritage Assets", *International Journal of Disaster Risk Reduction*, 27 (2018): 239-247.

Marzocchi, W., "Putting Science on Trial", *Physics World* 25, no. 12 (2012): 17-18.

Mela, A., S. Mugnano e D. Olori, *Territori vulnerabili: verso una nuova sociologia dei disastri italiana*. Sociologia Urbana e Rurale (Milano: Franco Angeli, 2017).

Neal, D.M. and B. D. Phillips, "An Examination of Emergent Norms and Emergent Social Structures in Collective Behaviour Situations", *Sociological Focus* 21 (1988): 233-243.

OECD, *Review of the Italian National Civil Protection System* (Paris: Organisation for Economic Cooperation and Development, 2010).

Pinholster, G., "AAAS Protests Charges Against Scientists Who Failed to Predict Earthquake", www.aaas.org/news/, 30 June 2010 (accessed 10 November 2017).

Pitari, G., E. Coppari, N. De Luca and P. Di Carlo, "Observations and Box Model Analysis of Radon-222 in the Atmospheric Surface Layer at L'Aquila, Italy: March 2009 Case Study". *Environmental Earth Sciences* 71, no. 5 (2014): 2353-2359.

Prati. G. and B. Zani, "The Effect of the Fukushima Nuclear Accident on Risk Perception, Antinuclear Behavioural Intentions, Attitude, Trust, Environmental Beliefs and Values", *Environment and Behaviour* 45, no. 6 (2012): 782-798.

Raffiotta, E.C., "Il problematico ruolo del sindaco "garante" della "sicurezza urbana": tra istanze locali e competenze statali", in N. Gallo and T.F. Giupponi (eds) *L'Ordinamento della Sicurezza: Soggetti e Funzioni* (Milano: Franco Angeli, 2014): 62-80.

Raschky, P.A. and H. Weck-Hannemann, "Charity Hazard: a Real Hazard to Natural Disaster Insurance?" *Environmental Hazards* 7, no. 4 (2007): 321-332.

Rizzo, S. and G. A. Stella, *La Casta: così i politici italiani sono diventati intoccabili*. (Milano: Biblioteca Univerzale Rizzoli, 2007).

Russo, M., P. Silvestri, G. Bonifati, E. Gualandri, F. Pagliacci et al., "Innovation and Development After the Earthquake in Emilia", Paper no. 137, Centro di Analisi delle Politiche Pubbliche (Modena: Department of Economics, University of Modena and Reggio Emilia, 2016).

Simoncini, M., "When Science Meets Responsibility: The Major Risk Commission and the L'Aquila Earthquake", *European Journal of Risk Regulation* 3, no. 2 (2014):146-158.

Stefanoni, F., "Terremoto, Errani verso addio a ruolo commissario ricostruzione", *Corriere della Sera*, 19 August 2017.
http://www.corriere.it/politica/17_agosto_19/terremoto-errani-addio-6ac31f02-84f7-11e7-a2db-15c045197363.shtml (accessed 10 January 2018).

Stucchi, M., R. Pinho and M. Cocco, "After the L'Aquila Trial", *Seismological Research Letters* 87, no. 3 (2016): 591-596.

Travaglio, M., *Ad personam*, (Milano: Chiarelettere, 2010).

Voitov, G.I., "Radon Monitoring in Seismically Active Regions", *Journal of Earthquake Prediction Research* 2, no. 2 (1993): 197-206.