DISKUSSIONSFORUM

Scientific Advice and the Case of the L'Aquila Earthquake

by Bruna De Marchi, University of Bergen, Norway

This article deals with the much debated “L'Aquila case” concerning the trial of five scientists and two public officials following the earthquake in the Italian region of Abruzzo on April 6, 2009. It summarizes the events preceding the earthquake and then clarifies the reasons for the indictment and the verdict. Finally it discusses the reactions in the media and the scientific community and recommends a public debate on the role of scientific advice beyond the specific case.

1 Introduction

In this article I address a case which generated uproar and even scandal in the scientific community and hit the media headlines for a long time, i.e. the 2009 L'Aquila earthquake and the consequent trial of five scientists and two public officials accused of multiple manslaughter.

I fully agree with Alexander that “it would be unwise to consider the trial of the ‘L'Aquila Seven’ without careful consideration of its social, political and cultural referents and its context within the progress of the earthquake emergency” (Alexander 2014, p. 1161). Here I will not explore in detail the multiple and intricate aspects of this specific case; instead I will take it as an opportunity to discuss the role of scientific advice in socially relevant (in this case risk-related) matters. The understanding of the advisers' professional tasks and moral responsibility – if not their legal liability – is related to the clarification of that role. More specifically, I do not intend to comment on the trial itself, its appropriateness, fairness and (provisional) conclusion, but I will rather focus on the reactions it generated in different arenas, most notably the scientific community. That will provide an opportunity to show how differently

the role of scientific advisers can be conceived in the management and communication of highly complex and uncertain situations.

It is firstly necessary to set the scene in some detail. I will start with an account of the earthquake and the preceding events and continue with a summary of the trial, accounting for both the actual terms in which the accusation and the verdict were formulated and the way in which they were broadly publicized and broadcasted. I will then focus on my main topic of interest as sketched above.

2 The Earthquake and the Preceding Events

On April 6, 2009, a 6.3 moment magnitude (M_w) earthquake devastated the city of L'Aquila, capital of the Italian region of Abruzzo, and some neighbouring municipalities. In total, there were 309 casualties, about 1,600 injured, whilst the numbers of buildings damaged and people evacuated are counted in tens of thousands. Five years after the event the situation remains tragic and L'Aquila is largely a city in ruins.

In the four months preceding the major quake a large number of sporadic low-magnitude tremors (a seismic swarm) had occurred and, understandably, the residents were alarmed and stressed. In such a tense atmosphere, an unofficial warning captured large media attention. On the basis of radon measurements he had performed, Giampaolo Giuliani, a technician formerly working at a laboratory of the National Research Council (CNR), developed the conviction that a major earthquake was soon going to occur in the area and insisted, together with some local authorities, that the population should be alerted. He also had some hypotheses on the where and when of the event, which later proved both wrong (Jordan et al. 2011, p. 323).

Giuliani's conjecture and the further anxiety it created among the population outraged the then head of the national *Dipartimento della Protezione Civile* (DPC – Department of Civil Protection), Guido Bertolaso, who threatened to sue him for diffusing alarming news. Bertolaso also convened a meeting of the *Commissione Grandi Rischi* (CGR – Major Risks Commission), to be held in L'Aquila on March 31, 2009.

The *Commissione Grandi Rischi*, short for *Commissione Nazionale per la Previsione e la Prevenzione dei Grandi Rischi* (National Commission for the Forecast and Prevention of Major Risks) is an advisory body of the DPC, composed of experts in seismic, volcanic, hydrological and other risks. Its activity is consultative, technical, scientific, proactive and includes guidance in the forecast and prevention of various risk situations. Its organisation, functions and composition have been partially modified in October 2011 by a Decree of the Prime Minister (DPC 2014).

In the press release of 30 March 2009 announcing the meeting it was stated that its purpose was to provide the citizens of Abruzzo with all the information on the seismic activity in recent weeks that was available to the scientific community. A somewhat different objective was illustrated by Guido Bertolaso in a disclosed phone call to the Abruzzo Region Councillor for Civil Protection Daniela Stati. On that occasion he defined the meeting as a “media operation” (*operazione mediatica*) which would bring the top experts in the field of seismology to L’Aquila. By giving the floor to them – he said – it will be immediately possible “to silence any imbecile and calm down rumours, preoccupations, etc.” (*in modo da zittire subito qualsiasi imbecille, placare illazioni, preoccupazioni eccetera*). He also anticipated a thesis that, in his view, the scientists would defend, i.e. that a seismic swarm was a positive phenomenon in so that it discharged energy preventing a deadly shock (*cento scosse servono a liberare energia e non ci sarà mai la scossa quella che fa male*) (Tribunale di L’Aquila 2012, pp. 151–152).

In his subsequent testimony in Court Bertolaso, by then no longer the head of the DPC, was asked about the above-mentioned phone call and the purpose of the meeting and reaffirmed the necessity to reassure the population, strained by the alarming information which was circulating but lacked any scientific basis (Tribunale di L’Aquila 2012, pp. 150–157).

The meeting of March 31, 2009 – which was judged unusual in many respects by some of the defendants, both in Court and on other occasions, – was followed by a press conference where no specific measures of protection were suggested to the citizens, while it was reaffirmed that no sci-

entifically sound method existed to predict earthquakes. On this occasion, some of the participants gave interviews. In one of these (broadcasted after the meeting, but apparently recorded earlier) Bernardo De Bernardinis, then deputy director of the DPC technical-operative sector (*Vice Capo settore tecnico-operativo*), stated that the seismic situation in L’Aquila was normal and actually favourable because of the continuous discharge of energy due to the seismic swarm. This is the same thesis which had been illustrated by Bertolaso in the previously mentioned phone call. De Bernardinis also replied positively to the question by a journalist about whether he would recommend people to relax with the help of a glass of local wine, a joke that proved to be a tragic one.

3 The Allegation and the Trial

If the purpose of the meeting, as it appears, was to dispel preoccupation and alarm among the population stressed by months of repeated shocks and to quash rumours and controversies fuelled by Giampaolo Giuliani’s declarations, it can be claimed that this was successfully achieved. Unfortunately, just six days after the meeting, a major earthquake occurred in the area with the previously mentioned devastating consequences.

The indictment of the 7 defendants followed a complaint submitted to the L’Aquila prosecutor’s office by some relatives of the 37 victims killed in the event and by 5 injured people. They claimed that their loved ones had died (in the former case) and that they themselves had been injured (in the latter) because they had trusted the official reassurance provided by the competent authorities and had consequently neglected the usual precautions (mainly leaving their houses) that they were used to take, out of habit and local knowledge passed on from one generation to the next. Indeed, the deadly shock which occurred at 3:32 a.m. had been preceded by a strong fore-shock some three hours earlier. If taken as a warning – it was claimed – this would have induced a potentially life-saving behaviour from the part of those that instead remained at home, believing that the situation was “normal”.

The legal case developed as follows: In June 2010 five scientists and two public officials who

had taken part in the meeting of March 31, 2009 received a notice of investigation. On May 25, 2011 they were indicted by the Court of L'Aquila of multiple manslaughter and injuries in relation to the earthquake, for "failing to provide complete and precise information, which might have saved many people's lives". In particular, the allegation was of not having taken into account and duly communicated all the elements of risk derived, for example, from the state of some vulnerable buildings, including public ones, which could and should have been closely monitored and possibly evacuated. Throughout the whole procedure and in the verdict, the defendants were described as "members of the CGR", although only four of them formally were at the time of the meeting.

The trial began in L'Aquila on September 20, 2011, and thirteen months later, on October 22, 2012, the Court issued its verdict, supported by 944 pages of argument and documentation (Tribunale di L'Aquila 2012). Judge Marco Billi found the 7 defendants guilty in 29 out of the 37 cases of death presented by the plaintiffs and in 4 out of 5 cases of injuries, and acquitted them in 8 and 1 case respectively. The culprits were sentenced to six years in prison and to pay huge compensation to the victims. They were also permanently barred from holding public office.

The motivation of the verdict was that, on the occasion of the CGR meeting preceding the earthquake, the defendants' assessment of the risks connected to the seismic activity under way had been "approximate, generic and ineffective in relation to the activities and duties of forecast and prevention" (*approssimativa, generica ed inefficace in relazione alle attività e ai doveri di previsione e prevenzione*) (Tribunale di L'Aquila 2012, p. 2). Also, that the information they had provided to the authorities, the press and the L'Aquila citizens on the nature, the causes, the dangers and the future developments of the ongoing seismic activity had been "incomplete, inaccurate and contradictory" (*imprecise incomplete e contraddittorie*) (ibid.).

Since all the defendants have appealed against the first instance judgment, its application is suspended, including the ban from public office. The Court of Appelas of L'Aquila started the procedures for the second instance judgment on October 10, 2014.

4 The Reactions and the Omission of Key Issues

Since the notice of investigation was made public (June 2010), a massive campaign in favour of the seven defendants started, which continued throughout the trial and after the verdict. Letters were written, petitions were signed by thousands of scientists, including one presented to the President of Italy, Giorgio Napolitano, by the CEO of the AAAS (American Association for the Advancement of Science). The prevailing – though not unanimous – reading of the trial was that it was an attack on science and the indictment was rephrased as one of not having predicted the earthquake. Thus a generalization and an abstraction were accomplished: at issue was not the indictment (fair or not) of seven specific individuals for their actions (or inactions) in a definite situation, but the discredit of science and its methods due to ignorance, disrespect or other malevolent attitudes. The media, including important scientific journals, largely endorsed those interpretations, although some more precise and detailed accounts were also offered (e.g. Hall 2011).

All internal dissent, which is so common and – I would add – vital in the scientific community, evaporated and most of its members united in a common battle framed in terms of scientific independence and neutrality, based on claims of indisputable objectivity and morality of the scientific endeavour per se. I have no elements to evaluate to what extent the subscribers of the petitions were informed about the situation. In any case, the overall result was that the importance of a (much needed) debate on the role of scientific advice was totally downplayed. Instead, it became some sort of principled defence of the type more commonly seen in the case of a union defending its members. In the meantime, those who dissented often followed the opposite and, in my view, equally ineffective path of interpreting the facts only in terms of personal interest or corruption of those under accusation.

For those found guilty and their lawyers it is all but logical and legitimate to try to justify their actions and obtain a different verdict in the second instance, but the debate outside the courtroom would profit from a broader definition of the

problem and from being conducted in a style and language different from those proper to a trial.

In my view, the key question to be addressed in an enlarged societal forum is: what is scientific policy advice, and how does it differ from other scientific activities? Sir Peter Gluckman provided a very convincing answer to such a query, relevant as it comes from a scientist who, in his capacity of Chief Science Adviser to the Prime Minister of New Zealand, has first-hand experience on the matter. In his words: “Science advice is not generally a matter of dealing with the *easy issues* [my italics] that need technical solutions. Rather it is largely sought in dealing with sensitive matters of high public concern and inevitably associated with uncertainty and considerable scientific and political complexity.” (Gluckman 2014, p. 4) While fully acknowledging that “democratic governments have the right to ignore scientific advice” (2014, p. 5), Gluckman argues that the science advice practitioner must generally act “as an honest broker, of knowledge, not as an advocate” (2014, p. 7).

In other words, scientific advisers are not bound to fully subscribe to the definition of the problem suggested by those who convene them. Besides providing updated and reliable data and information from their own field of expertise, they should be able to acknowledge their intrinsic limitations and possibly provide indications on which other types of knowledge and expertise might be helpful for attaining a broader and more accurate perspective of what the problem at hand is and how it should be managed.

Not surprisingly, such critical and reflexive attitude is not common among experts because, as Fjelland puts it: “It is not part of professional training to learn about the limits of the models and methods of a field.” (Fjelland 2002, p. 165) He adds that the consequent “tunnel vision of experts is at least as great a problem as the ignorance of non-experts” (Fjelland 2002, p. 167).

Definitely the science advice necessary in the days preceding the (unpredictable) L’Aquila earthquake was not about an easy issue requiring technical solutions. The policy problem that had to be addressed was to guarantee, or at least to enhance, the safety of the exposed population, taking into consideration the complexity of the situation,

including the seismic swarm, the state of the built environment, the local culture and traditions, the psychological stress of the population and their understandable impatience for a comforting message. Such complexity and its management cannot possibly be reduced to a problem of controlling rumours interfering with sound scientific information. Though a real problem, and a possible disturbance for “public order”, it is neither the main nor the only one when dealing with “public safety”.

Once more, Gluckman’s experience is inspiring in relation to the management of a crisis which in many respects is similar to that described in this article: the February 22, 2011 Christchurch earthquake, the second of two major earthquakes that hit the area within a six months period. I want to report his narration in some detail, to show that he conceived of his role as one of involving a multiplicity of actors, mediating between them, considering different needs and perspectives, and integrating different knowledges and skills. Among others, he took as his task that of leading the scientists “to understand the need to provide simple and consistent communication” and to accept that “what was needed was communication of what was known and unknown” (Gluckman 2014, pp. 9–10).

In that contingency, also the need to control rumours was present. “More concerning was that the earthquake happened on the day of a full moon and, with that, an astrologer ... got prime time TV coverage predicting an even bigger earthquake a month later when the moon and sun would be in alignment. ... We faced a real challenge of how to calm the public, while acknowledging that earthquakes can happen at any time. With the Science Media Center, I conducted a series of media briefings and this, plus the actions of some civic leaders, led to things settling. But I had my fingers crossed on March 20th – there was no big quake that day!” (Gluckman 2014, p. 10)

5 Conclusion

Gluckman’s final comment is about the role of chance, favourable for both the Christchurch population and himself in March 2011. Admittedly the inhabitants of Abruzzo and the Italian experts were not so lucky two years earlier,

when a major earthquake struck just a week after the CGR meeting. Had it not struck or had it struck much later, the story would have been different. Yet the problems of scientific advice and its connected responsibilities in crisis management remain unsolved, awaiting serious public scrutiny in Italy and possibly elsewhere.

References

- Alexander, D.E.*, 2014: Communicating Earthquake Risk to The Public: The Trial of The “L’Aquila Seven”. In: *Natural Hazards* 72 (2014), pp. 1159–1173; DOI 10.1007/s11069-014-1062-2
- DPC – Dipartimento Protezione Civile*, 2014: Commissione Nazionale dei Grandi Rischi; http://www.protezionecivile.gov.it/jcms/it/commissione_grandi_rischi.wp (download 20.7.14)
- Fjelland, R.*, 2002: Facing The Problem of Uncertainty. In: *Journal of Agricultural and Environmental Ethics* 15 (2002), pp. 155–169
- Gluckman, P.*, 2014: Evidence Based Policy: A Quixotic Challenge? Address Given at the Invitation of the Science Policy Research Unit, University of Sussex, Brighton, UK, January 21, 2014; http://www.pmcas.org.nz/wp-content/uploads/Sussex_Jan-21_2014_Evidence-in-Policy_SPRU.pdf (download 11.8.14)
- Hall, S.S.*, 2011: At Fault? In: *Nature* 477 (1993), pp. 264–269
- Jordan, T.H.; Chen, Y-T.; Gasparini, P. et al.*, 2011: Operational Earthquake Forecasting – State of Knowledge and Guidelines for Utilization. Report by the International Commission on Earthquake Forecasting for Civil Protection. In: *Annals of Geophysics*, 54/4 (2011), pp. 314–391; DOI:10.4401/ag-5350
- Tribunale di L’Aquila, Sezione penale*, 2012: Motivazione Sentenza n. 380 del 22/10/2012, Depositata il 19/01/2013; http://www.magistraturademocratica.it/mdem/qg/doc/Tribunale_di_LAquila_senza_condanna_Grandi_Rischi_terremoto.pdf (download 11.8.14)

Contact

Dr. Bruna di Marchi
SVT - Centre for the Study of the Sciences and the Humanities
University of Bergen
Allegaten, 34, P.O. Box 7805, 5020 Bergen, Norway
Email: bruna.de-marchi@svt.uib.no
Internet: <http://www.uib.no/svt>

« »

Information about ITAS

The Institute for Technology Assessment and Systems Analysis (ITAS) is a research facility of the Karlsruhe Institute of Technology (KIT). It is assessing technological impacts and comprehensive systemic interrelations of societal transformation processes and developments in science, technology, and the environment. The orientation of research and technology policy, the influence on the design of socio-technological systems and the realization of discursive processes on open and controversial questions on technology policy are some of the most important objectives. Parliaments and governments are the main addressees of this policy advice. The results of research and policy advice are publicly available. Regarding the object of research, work in ITAS is problem-oriented, it is organized in the form of projects, and the individual research disciplines are interdisciplinary. ITAS covers the whole spectrum of systems analysis and technology assessment for policy advice and technology design with its scientific, methodological, and procedural competences. Comprehensive analyses of societal problems and technological systems generally require a combination of various analytical processes which have to be coordinated for each individual project. For more information about ITAS see <http://www.its.kit.edu/english/index.php>.