SCIENTIFIC INFORMATION: PROBLEMS AND RESPONSIBILITIES

Giuseppe Di Capua & Silvia Peppoloni – INGV – Rome Italy

In industrialized countries the scientific information is a central element in the cultural formation of the civil community, but very often the media, to which it is delegated, are not adequately prepared on the issues to be addressed.

On April 6, 2009 the Central Italy was struck by a strong earthquake (Mw=6.3. www.ingv.it), which caused about 300 victims and seriously injured the city of L'Aquila and many neighbouring villages. Damages to the monumental heritage was considerable: numerous churches and historic buildings were ruined in a very serious way and in many cases there have been collapses, with the consequent irreversible loss of a historical and artistic heritage of priceless value (GEER Report, 2009).

From a scientific point of view, the seismic risk of this area is well known: in the past the city of L'Aquila and its territory have been also affected by numerous strong earthquakes (Figure 1). Moreover, the valuable historical centres are characterised by a high vulnerability: they consist in buildings agglomerations, hundreds of years old, often realised in poor quality masonry.

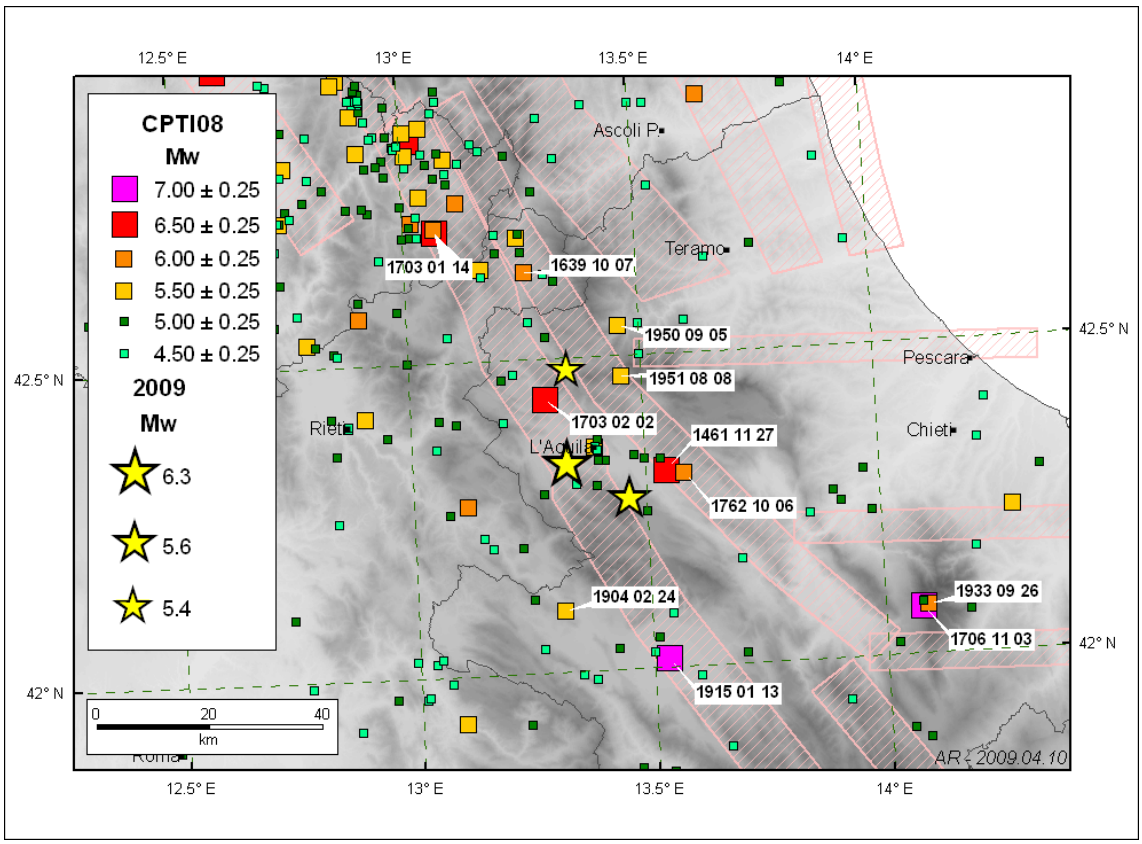

Figure 1. Historic seismicity of the central Apennines near L'Aquila (Rovida et al., 2009).

This seismic event has been followed by a great technical and scientific debate, still ongoing. The topics discussed concern the progress of studies on the earthquakes forecasting, the interpretation of the seismic precursors, the vulnerability of the buildings prior using the seismic codes, the adequacy of the common structural interventions for seismic risk mitigation. But it is mainly questioned about the most effective ways of communicating to the people the information about the hazard and the evolution of seismic sequence.

The media have entered into this discussion from the beginning. If, on the one hand, they have had the noble aim of giving people the information necessary for the management of emergency and of reassuring people on the timeliness of the relief and on the prospects of reconstruction, on the other hand from time to time the media have emphasized a specific research more than an other, looking for the sensationalism of the news rather than the quality of the scientific study. In many cases it has been possible to observe the transfer of news absolutely false or highly improbable to the population. This is the evidence of the superficial behaviour often showed by the media, totally irresponsible from an ethical point of view.

Many information, exposed by the press as scientific certainties, have been proved to be without foundation (Figure 2): journalists have published news on the front page to support commonplaces, stereotypes, totally ignorant about the handled scientific issues.

In the worst cases, the media have tried to enter the political controversies in favour of one party or the adverse, according to their own advantage.

All these events show that the mass media have also the control of scientific information and transfer opinions aimed at safeguarding various kinds of political interests, without contributing to a genuine progress of humanity.

What this way of using scientific information produced in the population? Disorientation, mistrust, ignorance, arrogance towards science and loss of opportunities for the mankind to improve its quality of life.

And what have the scientific community done to avoid the drift towards an information ever more not scientific? It has done little. The theme of the scientific information is insufficiently managed by scientists. They are very interested in research, in teaching, in advice, but devote too little time to the divulgation of the science.

In the pages of newspapers scientific articles are written by qualified journalists, while scientists are only consulted as authoritative experts, but they are not the authors of these articles. On television, except for rare cases, the scientific debate are inadequate, simplistic. The discussed issues

constantly run the risk of being banalized, in order to be made accessible to an audience considered little curious and puerile.

Figure 2. "Smooth iron bars" used before 1980 R.C. building. The use of this technique is not due to an imprudence or incapacity, as media have said, because until 1976 (Friuli earthquake, Mw=6.4) the seismic code didn't prescribe "improved adherence iron bars".

Even on television very often the scientific communication is entrusted to journalists that interview a single researcher on a specific argument, without taking into account that science not always has a univocal vision about a topic: the themes are dealt from different perspectives, with different instruments and the results obtained by various parties can be in contradiction.

Only a serious study allows a better understanding of the problem and the achievement of positions shared by a growing number of scientists. Therefore, it would be helpful if media undertook to analyze the different aspects of the same problem, trying to enrich the debate rather than trivialize it (Figure 3).

It is also true that today scientists have many responsibilities towards themselves and the community to which they belong: they are called to perform many tasks, that are difficult to face without an adequate and continuous financial support. They should add another activity (the scientific information), very demanding from a cultural point of view, to their many daily

commitments (teaching, management, research, scientific and financial reports, publications, bureaucracy, etc.).

Therefore, an assumption of responsibility by the scientific community can not be longer postponed. If science has assumed over time an ever greater authoritativeness from a technical point of view, it has lost importance in education and training of the critical conscience of the society: it is not able to provide the community with the tools to become self-understanding and self-judging about the various problems and the proposed solutions.

This situation has also occurred because the same researches (in good or bad faith) often tend to confuse the observed data with their scientific interpretation. And so a theory, made by a politically established team of scientists, becomes a dogma for the society, without any possibility of verification.

Figure 3. A journalist interviews Giampaolo Giuliani, a technician living in L'Aquila, who launched an alarm to the population through the media, based on his Radon anomalous measurements in an independent research activity, the day before the earthquake (from YouTube: http://www.youtube.com/watch?v=WieaAPrQEN4, in italian). His alarm regarded Sulmona, a town 80 km SE far from L'Aquila. What had to be done?

It is necessary to reverse this trend. The scientist must assume the responsibility of his educational and formative role in the social community, acting at different levels: in the school, in the university, in the professional world, in the information field.

In general, the scientific information has to become central in the activity of the researcher, completing the sense of his role. The scientist has to offer himself as an element of individual and collective progress in human society.

The centrality of the scientist in civil community is an ethical necessity, so the society can develop a more critical sense. In this way it will be possible to lay new foundations to set a different relationship between society, media and politics.

When we are faced with a problem of great impact, when wise policy decisions and social consensus are indispensable, then it is essential that the society is able to understand the various elements of the problem, the best choices to be implemented, the most suitable tools from use. On these occasions a proper communication and a prior training of the people prepare the ground so that the problem can be understood and addressed with a mature and practical discussion rather than ideological and simplistic.

In a democracy, with his vote the citizen gives the power to the politician, who manages that power and needs the social consensus. Ignorance, for example in the scientific field, produces the absence of specific requests from the people towards the politician: society is conditioned not by an awareness of the political offer, but rather by the ideology and influence of the media, often managed by the same politicians or having autonomous power.

If the scientist assumes the responsibility of the scientific information at various levels, he becomes one of the mainstays of the education system, he properly informs the community about natural hazards, problems of the research and the adoptable solutions, making the community more aware and erudite, able to face the debate on different problems. Then the same community, so accountable, will demand from the politicians the due attention to those issues that directly affect people and the most suitable solutions, in the direction of the sustainable resources.

Today the media influence public opinion and in some cases the politics, by creating expectations, problems and solutions functional to partisan interests. On the contrary, the community must send its demands to politicians through the media.

A community poorly informed today is easily manipulated, can not be independent in its judgments because does not know the contours of the problems, does not know how things really are. In this climate of falsification of the information, it is possible to follow only what the media suggest.

Scientists must act in the field of information, preparing the society to discriminate the falsities, forcing the media to put more attention in the quality of the data and their interpretations. A more aware society will require a more aware media system.

Therefore, a new relationship between citizens, media and politics can born from an act of responsibility: first, individual responsibility by every single researcher, and then by the scientific

community as a whole, that assumes the role of raising culturally the society where it operates, making citizens more conscious in their analysis, evaluations and opinions.

Scientists, because of their own education and the method adopted in the practice of their activity, could provide correct tools of knowledge to the community, favouring a fair debate, rather than dogmatism and certainties not verified .

A more prepared society in scientific terms, well-informed about the possible causes and effects of phenomena, will be able to discern the quality of the media information, will be able to demand to politicians more efficacious solutions to the problems and will force the media to become conscientious spokesperson of these social instances.

Scientists should look for the best political, legal and administrative ways to be effective, without waiting that the consisting system allows them to operate in this sense. In fact, each system has its own inertia and resistance to a change, which could be irreversible.

In this way, it will be possible to lay new foundations to set the relationship between society, mass media and politics. A virtuous circle will be triggered, in which all the players involved will assume the ethical responsibility of their role, in this process that, starting from the knowledge of the problem, leads to its solution, with the aim of the common good.

References

GEER Report (2009). Preliminary Report on the Seismological and Geotechnical Aspects of the April 6 2009 L'Aquila Earthquake in Central Italy (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Italy_2009/italy_2009_index.html).

Rovida A., Castelli V., Camassi R., and Stucchi M. (2009). Historical earthquakes in the area affected by the April 2009 seismic sequence. INGV Report (http://www.mi.ingv.it/eq/090406/storia_eng.html).