



**COMETS**  
CNRS Ethics Committee

OPINION n°2013-27

# « NATURAL RISKS, ASSESSMENT AND CRISIS SITUATION »

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## I. SELF-REFERRAL

This own-initiative ruling is concomitant with an INSU alert following the accusations against Italian scientists after the fatal earthquake in Aquila.

In a society riddled with anxiety and fear of the future (economic crisis, the potential dangers of technology, climate change...) it has become very difficult to communicate about the challenges and risks of an uncertain world. Indeed, what characterises these reasons for anxiety is the complexity of the processes that trigger them and the absence of a set of deterministic proofs to establish definitive elements to aid decision-making.

Scientific and public attention was drawn to the problems of expert assessment in crisis situations by the legal proceedings against Italian geophysicists in the case of the Aquila earthquake of 6 April 2009. To give some background on that particular case, we would note that great progress has been made on the causes and effects of earthquakes, which makes it possible to propose effective strategies for minimising risks, but not to make short-term forecasts on the incidence of earthquakes. This state of affairs is accepted and recognised by everyone, including the plaintiffs in the legal case which recently resulted in very severe sentences.

We would recall that the events in question occurred against a dual background of disturbing seismic phenomena and the publication of unfounded predictions. Following a series of numerous small earthquakes which increased the population's anxiety, a group of scientists met to reach an official position on the situation. A reassuring announcement was then made by a representative of the disaster and emergency services. The plaintiffs accused the scientists of having, through this announcement, given the impression that the earthquake risk was negligible. It should be noted that the level of risk in the region, one of the highest risk areas in Europe, is clearly specified in all the documents made available to the public by the Italian scientific community.<sup>1</sup>

The public information meeting cited in the judgement, if it had taken place in France, could have been analysed in the light of the Scientific Assessment Charters available in France. The situation in which the Italian scientists were placed ran counter to several clauses (1, 4, 5 and 6) of the National Assessment Charter adopted in France (see appendix). In the case of the CNRS Charter, clauses 1 ('No confidentiality clause may apply when the assessment made reveals the possibility of a risk, particular relating to the environment or health') and 6 ('Within the framework of an assessment, CNRS can elucidate and evaluate the different options possible for action but is not obliged to make recommendations') could have applied in principle. The dramatic events in Aquila, and the legal consequences that followed, show the need to consider the role of the scientific expert in situations of crisis and the protocols of obligation within which his or her action should be framed.

We live in a time when what scientists say is coming under public challenge. In particular, it seems increasingly hard for scientists to maintain their status as experts in the light of the explosion in

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<sup>1</sup> The reader will find at [processoaquila.wordpress.com](http://processoaquila.wordpress.com) extensive factual information and detailed analyses compiled by a group of Italian geophysicists (A. Amato, M. Cocco, G. Cultrera, F. Galadini, L. Margheriti, C. Nostro, D. Pantosti, INGV working group for the information on the L'Aquila trial)

immediate methods of communication. Paradoxically, political and democratic life seems to be withering before the powers of certain experts. This is particularly clear in the economic domain, where we are witnessing a form of political withdrawal. The growing influence of groups of self-styled experts, to the detriment of democratic representation, is helping to give experts a negative image among a public deprived of its prerogatives, an image that rebounds on our disciplines.

Within an atmosphere of frustration towards experts whose efficacy is perceived to be little evidenced by recent experience (mad cow disease, asbestos, Aquila, economic crisis, etc...), there is a plethora of voices clamouring in the public sphere, justified by a relativism according to which every viewpoint is of equal value. Of course, every point of view has the same right of expression in the social arena, but it is right that scientific views should lay claim to particular status, arising from their method of construction, peer review procedures and well-defined ethical practices.

Our perspective is that full value needs to be restored to the analyses of scientists, who are members of society with no special privileges, justified in their opinions solely by scientific pertinence. This pertinence is not measured by the conclusions we may reach in a particular case, but by the method we use. The subject of expert assessment has already been extensively studied; the charters already published (CNRS Charter, National Charter, COMETS ruling) provide responses to many ethical questions raised by expert assessment. Here, we will concentrate on the specific questions associated with situations of crisis.

In a situation of crisis entailing a potential risk, two factors can considerably complicate application of the principles expressed in the charters. First, the client's need to take a decision very quickly; and second the lack of a simple answer to the question asked. In a situation of uncertainty one must be aware of the reason why the scientific position may not apparently be corroborated by the facts, especially when it is expressed in terms of *probabilities of occurrence* and is therefore open to retrospective criticism. Natural risks, as illustrated in the recent case of the Aquila seismologists, are a good example of the difficulties encountered by experts. COMETS therefore focused its analysis on the questions specifically associated with emergency conditions, on the communication of scientific information characterised by great uncertainties and on the scientist's position in the institutional system and in the public debate associated with emergencies.



## II. ANALYSIS

In the presence of a potential natural risk, the provisions of scientific assessment charters, and in particular the need for terms of reference (dealt with in the recommendation of the 2005 COMETS), can become tricky to apply because of the urgent need for a response (crisis situation). Beyond the measures planned, the scientists concerned need to be able to prepare procedures for undertaking assessments which ensure that the ultimate decision-makers receive timely and useful information and the public is guaranteed proper communication.

It is important to ensure that this communication is actually received, even if the sincere conclusions of the assessment, which should be a collaborative effort, are expressed in terms of probabilities of occurrence that depend on models and very large systemic uncertainties. We should not deny the difficulties associated with the fact that a large section of the population and many decision-makers do not understand the probabilistic nature of scientific knowledge. The realities concerned are fundamentally complex and need to be described without excessive simplification. Finally, it should be noted that in many spheres it would be difficult to go very far without encountering profound divergences within the scientific community, because of the existence of opposing views. It will be necessary to identify which methods and interpretations attract sufficient consensus. Scientific discussion is governed by comparisons in which knowledge is recognised as falsifiable; in the public sphere, debate is driven by the confrontation of opposing views and convincing arguments. Experts may be disconcerted by media representations in which the authority of constructed knowledge yields before the power of personal conviction. Scientists therefore need to learn to tame this public space, just as scientific knowledge needs to be accommodated within the public sphere.

Clause 9 of the National Charter (and the CNRS Charter in almost the same terms) stipulates that: *“In the event that a risk, in particular an environmental or health risk, should be identified by any one of them, the signatory institutions undertake to investigate it in order to reach an opinion on what measures should be taken in terms of assessment.”* The principle is certainly a good one, but once again not very compatible with the real world, in the presence of a phenomenon that could indicate the imminence of a disastrous event (e.g. volcanic). Scientists are required to deal with two distinct demands, from the public and from the political decision-makers, the responses to which must be identical in their content. Formulations will need to be adapted. It should be made clear that the content of scientific assessment is only one element of a political decision that entails broader considerations. The role of scientists acting as experts is to provide scientifically relevant, accessible and comprehensive information. The legal position of the expert was amended by Act 2013-316 of 16 April 2013, on the independence of scientific expertise with regard to health and environmental matters and on the protection of whistleblowers.

Finally, beyond the question of emergencies, it is important to consider the ethical questions raised by the exploitation of fear (natural or industrial risks, climate change...) to validate or justify research. The implications of research on safety and protection need to be assessed with realism and sincerity.

## III. Recommendations

### A. General recommendations

- Fundamental research can contribute effectively to the long-term reduction of risks to the population. The justification for applied research in the sphere of risk must be particularly specific and realistic with regard to its implications for citizen safety, with particular reference to the time needed to make significant progress.
- CNRS needs to be careful to clarify the scope of its action, in particular by separating expert assessment and operational tasks. The organisation needs to be sure that the system of laboratory funding does not make researchers dependent on funding providers who are also potential clients for scientific assessment.

### B. Good practice recommendations

- Drawing on the existing charters, and for each type of risk, procedures for undertaking assessment must be prepared in advance of crisis situations. Communication is particularly difficult on complex phenomena, where forecasting requires a probabilistic approach. Spokespersons must be appointed, prepared and trained for that task, because the democratic public arena has different rules and operates on a different register from scientific discussion.
- The exploitation of the conclusions of scientific assessment is not the role of the scientific expert, but of the political decision-maker. This must be made clear to the public in all aspects of communication. Scientists do not need express agreement with decisions that are taken on the basis of an ensemble of information, in which their assessment is only one factor.
- Experts retain the power to monitor the content of their assessments, which should not be distorted in their presentation to the public. Apart from the right of rectification, experts are covered by the general provisions set out in Act 2013-316 of 16 April 2013 on the independence of scientific assessment with regard to health and environmental matters and on the protection of whistleblowers. In application of Clause 2 of this Act, it is also incumbent on the organisations to inform the Ethics Committee established under the Act about the action they take with regard to scientific assessment, and particularly about the ethical codes they establish.
- The scientific content of the assessment should include an account of the technical information and the status of knowledge on the issue. This content must be made public in a timely manner. The experts must as far as possible give their opinion in the ongoing debates in the public sphere. With regard to problems of natural events, the scientific conclusions are often characterised by great uncertainties associated with the dynamics of the system concerned. Communication should seek to make this reality comprehensible to all.

## IV. Appendix

### **Clauses quoted from the National Scientific Assessment Charter in France.**

Clause 1: “Any scientific assessment task shall entail the writing... either of an agreement signed by both the client and the provider, specifying the purpose, timetable and conditions of the assessment,... or, in the case of an own-initiative assessment, of terms of reference drawn up by the operator concerned and containing the same information.”

Clause 4: “The public operator, in accordance with procedures to be determined by itself, shall report any community of interest between the experts employed and the parties concerned by the assessment.”

Clause 5: “The assessment report shall state the sources underpinning the conclusions reached in the assessment. The operator shall make them accessible.”

Clause 6: “The assessment must specify points regarding which the state of existing knowledge is such that a conclusion may not be reached with sufficient certainty. It must also describe areas of controversy, whether or not they are linked with those uncertainties. It may also make relevant comments on the formulation of the question raised.”

