

The L'Aquila Earthquake – Science, Politics, and Risk

On 22nd October 2012, a regional Italian court sentenced six scientists and a former government official to six years in prison after finding them guilty of manslaughter over the deadly earthquake that struck L'Aquila in 2009.

The verdict, which has been widely condemned by members of the scientific community in Italy and throughout the world, raises questions about the relationship between science, communication and the authorities.

On 6th April 2009 the Abruzzo region in central Italy was struck by an earthquake which measured 5.8 on the Richter scale. The city of L'Aquila, at the quake's epicentre, was devastated. More than 300 people were killed and around 1500 people were injured. Many more lost their homes.

In the weeks and months leading up to the earthquake, the region was struck by a number of minor tremors. It is the scientists' interpretation of and reaction to these tremors that formed the subject of the trial.

The prosecution argued that the defendants gave 'inexact, incomplete, and contradictory information' about the risk that a large earthquake would follow the smaller tremors.

The accusations and subsequent guilty verdict have caused consternation in the scientific community, with many seeing the defendants as being on trial over their ability to predict an earthquake.

By their very nature earthquakes are, in the words of David Rothery, senior lecturer in Earth Sciences at the Open University, 'inherently unpredictable.'

To view the trial as such is, however, something of a misinterpretation. The seven on trial were accused of '*having carried out a superficial analysis of seismic risk and of having provided false reassurances to the public.*' Essentially, they were not accused of and found guilty of failing to predict the earthquake, but of failing to adequately assess and communicate the risk to the public.

Of course, in a game as uncertain as that of trying to interpret seismic activity, the extent which anyone should be expected to make entirely accurate predictions is highly questionable.

Dr Roger Musson of the British Geological Survey has expressed his shock at the verdict. He said: 'These are people I know, who were doing their best to give an accurate account of large earthquakes. It seems to be wrong that they should be prosecuted for offering scientific advice to the best of their ability.'

The scientists' conviction has, in the view of Dr Musson, the potential to set a damaging precedent.

'It will certainly make scientists less free in speaking out where perhaps their expertises are really needed.'

The convicted scientists have received further backing from Professor Malcolm Sperrin, Director of Medical Physics at the Royal Berkshire Hospital in Reading.

He said: 'In seismology, as with many other branches of the pure and applied sciences, opinions are derived from observables and the application of experience and training. It is never the case that predictions are completely without uncertainty and any scientist will make this clear as well as an estimation of how accurate such predictions are.'

Sperrin suggests that a consequence of the verdict could be that a fear amongst the scientific community of being penalised for making predictions that turn out to be incorrect will stifle scientific endeavour and restrict it to only those areas where there are certainties.

The conclusion that Sperrin draws may be seen as a little exaggerated, as the case of the seismologists is barely comparable to scientific development in laboratories. Whilst there may be serious consequences in the wider scientific field, it seems more likely that the area to suffer will be that of risk analysis and communication.

The fear of being convicted and sentenced to jail for failing to predict an event could have serious implications. It is highly unlikely that these six scientists would have been treated so harshly had they predicted an earthquake which didn't happen, resulting in the costly evacuation of a city, uncertainty and fear.

In the wake of this trial it seems possible, even probable, that the approach of scientists will change and that more often than not they will err on the side of caution. It will be tempting for scientists to view everything as a 'worst case scenario', rather than using their judgement and expertise to make are, more often than not, correct.

If this happens, there could be a number of serious consequences, not least the emergence of the 'boy who cried wolf' complex. If scientists are to be more cautious and convey high levels of risk to the public when they are not real, then how is the public to react when there really is a risk? After a number of false alarms are they likely to react appropriately?

It seems that it would be apt to conclude that to threaten scientists with prison for errors in their analysis and communication of risks which are essentially unpredictable is a mistake, and one which could have serious consequences.

If we are to increase our awareness of the risks that threaten us, then the best way to do so is surely to allow those with expertise and experience to exercise their knowledge and pass it on to the public. Certainly, there should be safeguards to protect against incompetence, but the six Italian scientists do not appear to be guilty of incompetence, but merely uncertainty.

Further reading:

<http://www.guardian.co.uk/science/2012/oct/23/chilling-verdict-laquila-earthquake>

<http://www.bbc.co.uk/news/world-europe-20025626>

http://www.huffingtonpost.co.uk/2012/10/22/laquila-earthquake-trial-verdict-uk-reaction_n_2001964.html

<http://www.guardian.co.uk/world/2012/oct/27/laquila-earthquake-battle-science-politics>

Will CHIVERS, London