

Scientific Illiteracy: Why The Italian Earthquake Verdict is Even Worse Than it Seems

By [Jeffrey Kluger](#) | Oct. 24, 2012 | [31 Comments](#)



Guardia Forestale Handout / AP

An aerial view of the destruction in the city of L'Aquila, central Italy, April 6, 2009.

Yesterday was a very good day for stupid — better than any it's had in a while. Stupid gets fewer good days in the 21st century than it used to get, but it enjoyed a great ride for a long time — back in the day when there were witches to burn and demons to exorcise and astronomers to put on trial for saying that the [Earth](#) orbits around [the sun](#).

But yesterday was a reminder of stupid's golden era, when an Italian court sentenced six scientists and a government official to six years in prison on manslaughter charges, for failing to predict a 2009 earthquake that killed 300 people in the town of L'Aquila. The defendants are also required to pay €7.8 million (\$10 million) in damages. "I'm dejected, despairing," said one of the scientists, Enzo Boschi, in a statement to Italian media. "I still don't understand what I'm accused of."

As well he shouldn't. The official charge brought against the researchers, who were members of the National Institute of Geophysics and Volcanology (INGV), was based on a meeting they had in the week leading up to the quake, at which they discussed the possible significance of recent seismic rumblings that had been detected in the vicinity of L'Aquila. They concluded that it was "unlikely," though not impossible, that a serious quake would occur there and thus did not order the evacuation of the town. This was both sound science and smart policy.

The earthquake division of the U.S. Geological Survey (USGS) [estimates that](#) the world is shaken by several *million* earthquakes each year, most of which escape notice either because they are too small or are in remote areas that are poorly monitored. An average of 50 earthquakes do manage to register on global seismographs every day, or about 18,000 annually. The overwhelming majority do not lead to major quakes and the technology does not exist to determine which ones will. The best earthquake forecasters can do is apply their knowledge and experience to each case, knowing that you can't evacuate 50 towns or

cities every day — and knowing too that sometimes you will unavoidably, even tragically, be wrong.

“If scientists can be held personally and legally responsible for situations where predictions don’t pan out, then it will be very hard to find scientists to stick their necks out in the future,” said David Ogleby, an associate professor on the earth sciences faculty of the University of California, Riverside, according to CNN.com.

The Italian seismologists are appealing their sentences and the global outcry over the wrong-headedness of the ruling will likely weigh in their favor. But whatever the outcome of their case, they’re really just the most recent victims of the larger, ongoing problem of scientific illiteracy.

Just the day after the ruling came down, University of [Michigan](#) researchers released the latest results from the Generation X Report, a longitudinal study funded by the National Science Foundation that has been tracking the Gen X cohort since 1986. One of the smaller but more troubling data points in the new release was the finding that only 43% of Gen-Xers (53% of males and 32% of females) can correctly identify a picture of a spiral galaxy — or know that we live in one.

Certainly, it’s possible to move successfully through life without that kind of knowledge. “Knowing your cosmic address is not a necessary job skill,” concedes study author Jon D. Miller of the University of Michigan, in a release accompanying the report. But not knowing it does suggest a certain lack of familiarity with the larger themes of the physical universe — and that has implications. It’s of a piece with the people who believe humans and dinosaurs co-existed, or the 50% of Americans who do not believe that human beings evolved from apes, or the 1 on 5 who, like Galileo’s inquisitors, don’t believe the Earth revolves around the sun.

More troubling than these types of individual illiteracy are the larger, population-wide ones that have a direct impact on public policy. As my colleague [Bryan Walsh observed](#), the issue of climate change received not a single mention in all three of this year’s presidential debates, and has barely been flicked at on the campaign trail. Part of that might simply be combat fatigue; we’ve been having the climate argument for 25 years. But the fact is there shouldn’t be any argument at all. Serious scientists who doubt that climate change is a real threat are down to just a handful of wild breeding pairs. But sowing doubt about the matter has been a thriving industry of conservatives for decades — most recently in the form of a [faux scientific study](#) published by the Cato Institute, that purports to debunk climate science as fatally flawed at best or a hoax at worst. Speaking of a federally funded and [Congressional mandated report](#) by the U.S. Global Change Research Program that responsibly reviewed the state of climate science, the Cato publication argues:

"It is immediately obvious that the intent of the report is not to provide an accurate [sic] scientific assessment of the current and future impacts of climate change in the United States, but to confuse the reader with a loose handling of *normal climate* [italics theirs]...presented as *climate change* events."

Well, no, but never mind. Our willingness to believe in junk science like this exacts a very real price — in an electorate that won’t demand action from its leaders on a matter of global significance; in parents who leave their babies unvaccinated because someone sent them a blog post fraudulently linking vaccines to autism; in young gays and lesbians forced to submit to “conversion therapy” to change the unchangeable; in a team of good Italian scientists who may spend six years in jail for failing to predict the unpredictable. No one can make us get smart about things we don’t want to get smart about. But every day we fail to do so is another good day for stupid — and another very bad one for all of us.



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