

Correspondence

L'Aquila: governance flaws exposed

The decision of an Italian court to hold several scientists accountable for deaths caused by the L'Aquila earthquake (*Nature* **490**, 446; 2012) is indicative of flaws in the sensitive, but indispensable, relationship between science and politics.

Implicating a scientific advisory committee in the death of so many people in L'Aquila reflects troubling tendencies in modern Western governance: Italy seems to have made scientists co-responsible for governing the country. The court's decision might also deflect attention away from the failures of the democratic institutions responsible for dealing with the aftermath of the earthquake.

Such defects can be corrected only through recognizing the democratic accountability of government as well as the science it enlists for policy-making.

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*On behalf of 4 co-authors (see go.nature.com/axfa3u for full list).

L'Aquila: science is not a crystal ball

The manslaughter convictions of seismologists in Italy offer a timely reminder of science's core functions to both scientists and non-scientists (*Nature* **490**, 446; 2012).

Over time, combining existing scientific data and new methods has allowed scientists to predict possible outcomes and associated probabilities. But the accurate prediction of certain events is, and will continue to be, challenging — particularly in economics, climate research, disease pandemics and natural disasters. Science can predict the probabilities of events occurring under a given set of circumstances, but not the events that will occur.

The public may not fully

appreciate probabilities and risk assessment, but scientists must work to change this. Researchers need to be able to present information about uncertainty, prediction and probabilities in simple terms, and to convey information to the public and to government that is accurate, consistent and clear.

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Rigid guidelines may restrict research

Our research centre is already planning to adopt the excellent guidelines suggested by Story Landis and colleagues to improve reporting standards in preclinical research (S. C. Landis *et al.* *Nature* **490**, 187–191; 2012). However, I am concerned about the wholesale adoption of recommendations that could, paradoxically, have a restrictive effect on the early stages of basic research.

Curiosity and observation are critical to science, and although blinding is good experimental practice in most research scenarios, it should follow an exploratory period. In several of the behavioural studies conducted in our lab over many years, we have done the experiment at least twice — once unblinded and then blinded — followed by a check that we get the same results. Usually we do, but not always. Sometimes we deliberately include a procedure that causes performance to fall to chance (see, for example, D. Tse *et al.* *Science* **316**, 76–82; 2007). If it does not, there might be uncontrolled variables.

Researchers thrive on noticing something subtle and pursuing it, but this is most effective when they do not have one hand tied behind their backs. Stringent guidelines should then follow.

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Call for a European integrity standard

The global market for diplomas and academic rankings has had the unintended consequence of stimulating misconduct, from data manipulation and plagiarism, to sheer fraud. If incentives for integrity prove too hard to create, then at least some of the reasons for cheating must be obliterated through an acknowledgement of the problem in Europe-wide policy initiatives.

At the Second World Conference on the Right to Education this week in Brussels, we shall propose that the next ministerial communiqué of the Bologna Process in 2015 includes a clear reference to integrity as a principle. The Bologna Process is an agreement between European countries that ensures comparability in the standards and quality of higher-education qualifications.

Furthermore, the revised version of the European Standards and Guidelines for Quality Assurance, to be adopted by the 47 Bologna Process ministers in 2015, should include a standard that is linked to academic integrity (with substantive indicators), which could be added to all national and institutional quality-assurance systems.

We believe that an organization such as the Council of Europe has enforcement capabilities that can create momentum for peer pressure and encourage integrity. A standard-setting text, such as a recommendation by the Council of Ministers, or even a convention on this topic, would be timely given the deepening lack of public trust in higher-education credentials.

We do not expect that a few new international rules alone can change much. But we aim to create ways for institutions to become entrepreneurs of integrity in their own countries, as some models already exist (A. Mungiu-Pippidi and A. E. Dusu *Int. J. Educ. Dev.* **31**, 532–546; 2011).

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Europe on the rise in Science and Nature

I analysed the geographic distribution of authors of papers in *Nature* and *Science* during 1996–2010 (data from Thomson Reuters' Science Citation Index; 2012) and found that both journals are publishing an increasing number of contributions from Europe. In *Nature* these now predominate alongside papers from the United States; in *Science*, European publications have successfully eroded the monolithic US dominance of the mid-to-late 1990s.

Within Europe, the preponderance of publications from the United Kingdom in *Nature* during the 1990s has given way since 2000 to papers from Germany, France, Switzerland, the Netherlands, Italy, Spain, Sweden and others (in that order). Spain has markedly increased its presence in both journals: comparing two 5-year periods (2001–05 and 2006–10), publications from Spain increased from 156 to 226 in *Nature* and from 80 to 203 in *Science*.

The UNESCO Science Report 2010 found that the publication gap between developed and developing countries is also closing, largely thanks to the proliferation of digital information and communication technologies. The proportion of papers from developed countries fell from 84.3% in 2002 to 75.3% in 2008; those from developing countries showed an increase from 20.9% to 32% over the same period.

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