CORRESPONDENCE

Complexity clouds finance-risk models

We question the usefulness of focusing on sophisticated ecosystem or other models for assessing financial risks (*Nature* **469,** 302–303 and 351–355; 2011) when practical solutions are to hand.

The main bottleneck is more political than technical, driven by a US banking oligarchy that effectively controls the economy. (Europe's and China's banks have more complex interactions with the state.)

We agree that traditional economic models need to be enhanced with interdisciplinary system theory in the medium and long term. But known short-term solutions have demonstrated their value in previous successful policies, and we should relearn and expand some of the old economic wisdom about the specific role of banks.

Banks are important because they create credit in a fractional reserve system, and credit markets are crucial allocators of capital to entrepreneurs. However, this is not considered in macro-economic models used by central banks (indirect influence through interest rates aside). The Austrian school of economists and scholars in the 1930s correctly emphasized that too much credit, encouraged by artificially low interest rates set by the central banks, can lead to bubbles and unsustainable booms. This is what happened in the run-up to the current financial crisis.

One problem that is often overlooked is the misalignment of interests between credit creation by banks for profit maximization versus the amount of credit required by the economy. The Glass–Steagall Act of 1933 reconciled these interests by separating investment, commercial and retail banking and insurance. Most scholars attribute much of the economic stability after the Second World War to this legislation. Its repeal in 1999 was the culmination of a decade of deregulation justified by the 'great moderation' (go.nature.com/ehkgvv), which turned out to be just a consequence of the actuation of a perpetual money machine that promised unrealistic economic growth.

We need to stop being blinded by complexity so that policy-makers can develop effective responses to the financial crisis and academics can create a genuine science of out-of-equilibrium system economics.

Didier Sornette, Susanne von der Becke *ETH Zürich, Switzerland.*
dsornette@ethz.ch

Science and religion are wise to talk

As recipients of several peer-reviewed grants from the John Templeton Foundation over the past decade, we agree with other recipients who report that the foundation has never sought to interfere with their grant-funded projects (*Nature* **470,** 323–325; 2011).

For those who think that this grant-giving body should not have funded some projects, we might say the same about all the other agencies that have funded our research in biomedical science and geophysics. Receiving a grant does not entail accepting the worth of all the other grants given by the same body.

As far as the mingling of scientific and religious language is concerned, we agree that this is a justifiable concern. In the United Kingdom, the Faraday Institute (our institution) is well known for its criticism of both creationism and intelligent design. Attempts to introduce theological language into the practice of science is as damaging for theology as it is for science. Each academic discipline has its own specialized language and its own criteria for justifying its claims; mixing them only creates confusion.

However, we disagree with the scientists you cite who oppose any kind of interdisciplinary engagement between science and religion, or who maintain that they are in conflict. Given that almost all organized science education in Europe was carried out by religious institutions for many centuries, and that the premises and practices of science have deep theological roots, such a stance is implausible. The world is as religious as it has ever been — perhaps more so. The scientific community is often embedded in highly religious societies, the United States being a prime example. Friendly dialogue is a wiser strategy than aloof isolationism.

Denis Alexander, Bob White *The Faraday Institute for Science and Religion, Cambridge, UK.*
dra24@hermes.cam.ac.uk

Infrastructure vital to genome success

Eric Lander's assessment of the impact of the publication of the human genome sequence (*Nature* **470,** 187–197; 2011) does not comment on the substantial progress made in research-infrastructure development in areas such as resources, technology, computational biology, training, education and ethical, legal and societal issues, as envisaged by the genome community (*Nature* **422,** 835–847; 2004).

Look at the key experimental resource of human cohorts. For example, more than 500,000 volunteers have now signed up for the world's largest prospective study, UK Biobank. Comparable studies are ongoing in Norway and China. A retrospective study, Biobank Japan, has already proved its investigational value. Researchers are also building a global network of cohort studies through the Canada-based Public Population Project in Genomics.

Biobanking networks are emerging across the European Union. Examples are the Biobanking and Biomolecular Resources Research Infrastructure and the UK DNA Banking Network.

Advanced data-management systems at the Cancer Biomedical Informatics Grid, the US National Center for Biotechnology Information and the European Bioinformatics Institute near Cambridge, UK, are facilitating meta-analysis and experimental design.

Across the European Research Area, under the aegis of the Innovative Medicines Initiative and the European Strategy Forum on Research Infrastructures, an ambitious programme of research-infrastructure development is under way for the entire 'value chain' of medicines. As part of this, biomedical education and training are being revamped through, for example, the public–private European Medicines Research Training Network.

Without such experimentation in and development of its research infrastructure, the fecundity of genome-based research will not fulfil its promise for health and society.

Martin Yuille *University of Manchester, UK.*
martin.yuille@manchester.ac.uk

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CONTRIBUTIONS
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