



University cuts show science is far from saved

Scientific leaders have been too quick to praise the reprieve for research money, says Colin Macilwain. The slashing of teaching funds will do real damage.

In countries where the economic crisis has hit hardest, science has not done badly — so far. But universities from Bologna to Berkeley face an almost existential crisis. While governments defend research spending, they are simultaneously slashing public funding for universities, where most research takes place.

The reaction from science lobby groups and figureheads in the scientific community to this situation has been bafflingly cheerful. Either they have lost touch with what's happening on the ground, or else they are preoccupied with flattering politicians for 'saving science' — when politicians are actually cutting the very ground from underneath it. Most researchers know what is really going on, however, because they work in the universities where overall budgets are under the hammer.

Science today is so thoroughly embedded in universities that the line between the two has become difficult to discern. And research in universities requires solid undergraduate and graduate learning and teaching. It is foolhardy to weaken this foundation, because the modern research university is built on the energy and ideas of students. Students are not customers of a university; they are its very soul. The idea that research will prosper while teaching and learning decay is a dangerous fallacy.

The failure of many in the science establishment to pursue this point is most visible in Britain, where money for research and teaching comes from the same pot: the Department for Business, Innovation and Skills. In the autumn spending review, warmly praised by many who claim to speak for UK science, this department saw its budget cut more steeply than any other big-spending arm of the UK government — by 8% a year for four years.

When the cuts were announced, John Beddington, the government's chief scientific adviser, joined other officials in boasting that science had been protected, after Treasury officials were persuaded of its worth (see *Nature* 467, 1017; 2010). But the Treasury hadn't given an inch. Science was protected purely by eviscerating public support for university teaching in England.

The reaction of Wellcome Trust head Mark Walport was typical. "I am delighted that the government has recognised the huge importance of science," he said. "The government has listened to the voices of the science community who argued that continued investment in science was vital to the United Kingdom's future success. It is now up to the science community to ensure it delivers on this crucial vote of confidence."

One problem with this promise is that it isn't within the power of the universities, or scientists, to deliver a competitive economy.

As Geoffrey Boulton of the University of Edinburgh and Colin Lucas, former vice-chancellor of the University of Oxford, have pointed out,

governments have started to make crazy assumptions about the ability of universities to deliver innovative companies and successful economies. In a 2008 League of European Research Universities paper, *What are Universities For?*, the duo argued that the thrust of higher-education policy in many countries is "squeezing out diversity of function and undermining teaching and learning". Among policy-makers, they warned, "slipshod thinking about universities is leading to demands that they cannot satisfy, while obscuring their most important contributions to society and undermining their potential".

Boulton and Lucas were talking mainly about Europe, but there are related problems in the United States. University management there is too often obsessed with building grandiose labs, to be financed by over-heads on future research grants they expect to win from the National Institutes of Health (NIH) (B. Alberts *Science* 329, 1257; 2010). With major expansion at the NIH over, and state government support for

teaching in rapid decline, many institutions are now locked in a futile battle to fill these white elephants, creating what biochemist Kenneth Mann of the University of Vermont in Burlington has dubbed "a toxic, uncertain environment" for students.

With the long-term decline of top-class independent or corporate laboratories, almost all Nobel prize-level science is now done at universities. And the greatest universities, starting at the top with Harvard, increasingly define themselves chiefly in terms of their scientific prowess — or, more prosaically, by the amount of research funding they can attract.

When the universities were doing well — and in many parts of the world, they have just enjoyed decades of expansion — the concentration of scientific research within their walls was more or less entirely beneficial. When the economic storm struck in 2008, the ride came to an abrupt end. Now,

as Western governments attempt to maintain investment in science as a route to innovation and industrial development, they are undermining support for students and the quality of their education. Instead of joining with students and teaching staff elsewhere in academia in protest, too many scientific leaders have stood aloof. (Martin Rees, until this month the president of the Royal Society in London, is a notable exception.) Strategically, this approach is a disaster in waiting.

China and India know this and are building universities from the ground up, with a firm emphasis on student education as their bedrock of energy and ideas. In the United Kingdom and elsewhere, these foundations are being demolished, and students drowned in debt, to keep researchers' grants flowing. It can only end badly, and more in the scientific establishment should have the courage to say so. ■

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WHILE TEACHING
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