

THIS WEEK

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A different agenda

An attempt by Congress to save money by not funding political science seems to be motivated by ideological rather than financial reasons.

A fundamental question for democracy is what should be submitted to the democratic process. The laws of physics are presumably immune. But should public opinion help to decide which areas of science are studied or funded?

That is the implication of an amendment to the 2013 spending bill for the US National Science Foundation (NSF), which was approved by the House of Representatives in May. The amendment, proposed by Jeff Flake (Republican, Arizona), would prevent the NSF from funding political science, for which it awarded about US\$11 million in grants this year. The Senate may well reject the amendment, but it is troubling that it has got so far, for two reasons.

First, to target a specific research programme marks an escalation from the familiar trick of finding research projects with apparently trivial titles and parading them as a waste of taxpayers' money. And second, scientists should ask themselves which vulnerable research programme could be next on the hit list — climate-change education, perhaps?

The social sciences are an easy target for this type of attack because they are less cluttered with technical terminology and so seem easier for the layperson to assess. As social scientist Duncan Watts at Microsoft Research in New York City has pointed out: "Everyone has experience being human, and so the vast majority of findings in social science coincide with something that we have either experienced or can imagine experiencing." This means that the Flakes of this world have little trouble proclaiming such findings obvious or insignificant.

Part of the blame must lie with the practice of labelling the social sciences as soft, which too readily translates as meaning woolly or soft-headed. Because they deal with systems that are highly complex, adaptive and not rigorously rule-bound, the social sciences are among the most difficult of disciplines, both methodologically and intellectually. They suffer because their findings do sometimes seem obvious. Yet, equally, the common-sense answer can prove to be false when subjected to scrutiny. There are countless examples of this, from economics to traffic planning. This is one reason that the social sciences probably unnerve some politicians, some of whom are used to making decisions based not on evidence but on intuition, wishful thinking and with an eye on the polls.

What of the critics' other arguments against public funding of political science? They say that the field is more susceptible to political bias; in particular, more social scientists have Democratic leanings than Republican. The latter is true, but it is equally so for US academics generally. We can argue about the reasons, but why single out political science? The charge of bias, meanwhile, is asserted rather than demonstrated.

So, what has political science ever done for us? We don't, after all, know why crime rates rise and fall. We cannot solve the financial crisis or stop civil wars, and we cannot agree on the state's role in systems of justice or taxation. As *Washington Post* columnist Charles Lane wrote in a recent article that called for the NSF not to fund any social science: "The 'larger' the social or political issue, the more difficult it

is to illuminate definitively through the methods of 'hard science'."

In part, this just restates the fact that political science is difficult. To conclude that hard problems are better solved by not studying them is ludicrous. Should we slash the physics budget if the problems of dark-matter and dark-energy are not solved? Lane's statement falls for the very myth it wants to attack: that political science is ruled, like physics, by precise, unique, universal rules. In any case, we have little idea how successful political science has been — politicians rarely seem to pay much

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heed to evidence-based advice from the social sciences, unless of course that evidence suits them. And to constrain political scientists with utilitarian bean-counting undermines the free academic nature of the whole exercise.

The idea that politicians should decide what is worthy of research is perilous. The proper function of democracy is to establish impartial bodies of experts and leave it to them. But Flake's amendment does more than just disparage a culture of expertise. The research he selected for ridicule included studies of gender disparity in politics and models for international analysis of climate change — issues that are unpopular with right-wingers. In other words, his interference is not just about cost-cutting: it has a political agenda. The fact that he and his political allies seem to feel threatened by evidence-based studies of politics and society does not speak highly of their confidence in the objective case for their policies. Flake's amendment is no different in principle to the ideological infringements of academic freedom in Turkey or Iran. It has nothing to do with democracy. ■

Death of evidence

Changes to Canadian science raise questions that the government must answer.

The sight last week of 2,000 scientists marching on Ottawa's Parliament Hill highlighted a level of unease in the Canadian scientific community that is unprecedented in living memory.

The lab-coated crowd of PhD students, postdocs, senior scientists and their supporters staged a mock funeral for the 'death of evidence'. They said that the conservative government of prime minister Stephen Harper intends to suppress sources of scientific data that would refute what they see as pro-industry and anti-environment policies. Their list of alleged offences against science and scientific inquiry is lengthy and sobering.

It is important to note that the Harper government has increased science and technology spending every year since it took power in

2006, and has made a serious and successful attempt to attract top researchers to Canada. It has also set its sights on bolstering applied research, an area in which Canada has been relatively weak.

Nonetheless, the critics' specific complaints do give cause for deep concern — which is borne out by a close look at the specifics of the Harper budget that was passed into law late last month. In an effort to funnel more research money to commercialization and to erase the Canadian deficit by 2015, the government plans to cut the Research Tools and Instruments Grants Program (RTI), the main equipment-funding scheme for basic researchers, and to jettison the 24-year-old National Round Table on the Environment and the Economy (NRTEE), an independent source of expert advice to the government on sustainable economic growth. The government has also substantially weakened key laws that protect fish species and that require environmental assessments of development projects.

Of paramount concern for basic scientists is the elimination of the Can\$25-million (US\$24.6-million) RTI, administered by the Natural Sciences and Engineering Research Council of Canada (NSERC), which funds equipment purchases of Can\$7,000–150,000. An accompanying Can\$36-million Major Resources Support Program, which funds operations at dozens of experimental-research facilities, will also be axed. Canadian researchers have already warned the NSERC of 'drastic and irreversible' effects on the country's fundamental scientific research.

Even world-class facilities have not been spared. The government is closing the Polar Environment Atmospheric Research Lab (PEARL), located 1,100 kilometres from the North Pole and one of only three stations that keep a close watch on the polar atmosphere. The move comes just as data from the fast-changing Arctic climate are most needed. Another research station will be built to replace it, the government says, opening in 2017 — twice as far from the region it is supposed to monitor.

Equally disturbing is the proposed elimination next year of the internationally renowned Experimental Lakes Area (ELA) — a collection of

58 lakes and a field station in northwestern Ontario that has operated since 1968 as a natural laboratory. Work at the ELA has produced important evidence on the effects of acid rain and led to the discovery that phosphates from household detergents cause algal blooms. It has elucidated the impacts on fish of mercury and shown how wetland flooding for hydroelectricity leads to increased production of greenhouse gases.

It is hard to believe that finance is the true reason for these closures. PEARL costs the government about Can\$1.5 million a year, and the ELA Can\$2 million. The savings from eliminating the NRTEE would come to

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Can\$5 million — all from a total science and technology budget of some Can\$11 billion. Critics say that the government is targeting research into the natural environment because it does not like the results being produced.

Instead of issuing a full-throated defence of its policies, and the thinking behind them, the government has resorted to a series of bland statements about its commitment to science and the commercialization of research. Only occasionally does the mask slip — one moment of seeming frankness came on the floor of the House of Commons in May, when foreign-affairs minister John Baird defended the NRTEE's demise by noting that its members “have tabled more than ten reports encouraging a carbon tax”.

Governments come and go, but scientific expertise and experience cannot be chopped and changed as the mood suits and still be expected to function. Nor can applied research thrive when basic research is struggling. If the Harper government has valid strategic reasons to undermine vital sectors of Canadian science, then it should say so — its people are ready to listen. If not, it should realize, and fast, that there is a difference between environmentalism and environmental science — and that the latter is an essential component of a national science programme, regardless of politics. ■

London calling

The battle for gold is about to begin — and science is taking its place behind the podium.

As *Nature* went to press, excitement was mounting in the United Kingdom that Bradley Wiggins could become the first British cyclist to win the Tour de France this weekend. Win or lose, Wiggins will be back in the saddle a week or so later for the London Olympics — and he is already making headlines as he rebuffs Internet gossip that riders rely on performance-boosting drugs. “I cannot be doing with people [the critics] like that,” was one of his more printable responses. “It justifies their own bone-idleness because they can’t ever imagine applying themselves to do anything in their lives.”

The use of drugs in sport and our inability to detect every case of misuse has an unfortunate side effect: the unfair suspicion that falls on those who win clean.

So, why bother? If we cannot ensure that everyone who competes is drug free, is one solution to remove the need for them to be so? That's one of a number of provocative ideas highlighted by a special series of Olympics-themed articles in this week's issue of *Nature*. (The opening ceremony next week, after all, will take place just a 5,000-metre race or so from our London headquarters.)

How much faster and stronger would an army of Olympians be if they were all allowed to get higher? And would medically supervised doping be safer? Some experts quoted in our News Feature on page 287 think so. One even goes so far as to call for a cross-sport ‘pro-doping’ agency to invest in safer forms of enhancement. And why stop at chemical help? The future could see runners with bionic limbs

and swimmers with feet made webbed by skin grafts — developments that could demand separate events, so great would the advantages be.

It may sound far-fetched, but according to a Comment piece on page 297, the Olympic playing field is already tilted towards those with “unearned advantages” over the rest: their genes. Enough common genetic ground has been found to link successful athletes, the article says, to ask whether the Olympics is merely a showcase for “hardworking ‘mutants’”. If so, then would it be more sporting to hamper the lucky few — to make Usain Bolt run in heavy boots, say — or to cream the lot of them off into a separate competition entirely and leave the rest of us to have our mediocre fun?

For now, science remains a tool to catch those who break the existing rules, and to help those who want to play properly to compete. Profiles of some of the researchers who will work on these and other issues behind the scenes at London 2012 start on page 290. They include a psychologist who is working to assess intellectual disability in budding competitors in the Paralympics, and an epidemiologist waiting to map the inevitable spread of infectious disease among the several million expected visitors to London. Then there is the — unnamed — scientist who volunteered to be pulled through a swimming pool on a winch, subjected to a full body wax and then pulled through again, all to confirm what swimmers have long suspected, that body hair is a drag.

Finally, a Comment piece on page 295 examines the idea that humans evolved to run, and that a lifestyle without running could contribute to the modern boom in diseases such as obesity, diabetes and psychiatric disorders. Exercise doesn't just help muscles, it activates our brains. Armed with sticks and stones, our ancestors would have to chase down prey for hours, until the animals collapsed. The best weapon, the article says, was endurance. Bradley Wiggins, and the plucky researcher in the swimming pool, would surely agree. ■

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