Pure hype of pure research helps no one

Congressman Lamar Smith hopes to ‘improve’ peer review by adding a layer of accountability, but his bill aims at imaginary ideals, argues Daniel Sarewitz.

What do you get when you cross science hype with conservative politics? The answer is the High Quality Research Act, a draft bill that would require the director of the US National Science Foundation (NSF) to certify the quality of every science project that the agency funds with its roughly US\$5.6-billion research budget.

The proposed legislation was drawn up last month by Lamar Smith (Republican, Texas), the new chairman of the House of Representatives Committee on Science, Space, and Technology. He says it will help to “ensure that taxpayer-funded research projects are of high quality and benefit the American people”.

Leaders of the US science community have a different view: they believe that the bill is an inappropriate and partisan intrusion of politics into science. The American Association for the Advancement of Science’s ScienceInsider website portrayed the draft legislation as “the latest—and bluntest—attack on NSF by congressional Republicans”, while explaining that the bill “would replace peer review at the [NSF] with a set of funding criteria chosen by Congress”. Similar objections were voiced in letters sent to Smith by various former NSF officials and in statements by President Barack Obama’s science adviser, John Holdren.

Actually, the bill doesn’t say or imply anything at all about replacing peer review. It doesn’t give Congress new powers over the NSF, nor does it impose on the NSF any new responsibilities. Yes, it requires that the NSF director “certifies” that projects funded by the agency are “in the interests of the United States to advance the national health, prosperity, or welfare”, that the research “is of the finest quality, is ground breaking” and so on. But these vague requirements merely rearticulate the same promises that scientists and government agencies use all the time to justify their existence. Indeed, the NSF’s own proposal review guidelines say that all NSF-funded science should have the potential to “benefit society or advance desired societal outcomes” and “have the potential to advance, if not transform, the frontiers of knowledge”. So the bill seems mostly to be asking the NSF director to certify that the NSF is doing what the NSF says it already does.

In other words, it’s not a very good bill, but neither is it much of a threat. In fact, it’s just the latest skirmish in a long-running battle for political control over publicly funded science — one fought since at least 1947, when President Truman vetoed the first bill to create the NSF because it didn’t include strong enough lines of political accountability.

The core argument of the scientific community and its leaders has always been that they are perfectly capable of ensuring accountability themselves, thank you. After all, the outcomes of basic research are unpredictable and

therefore politicians need only pour in the money and stand aside as the scientists make the world a better place.

This simplistic and self-serving myth was trotted out yet again in an 8 May letter from former NSF officials to Smith, which explained that the “history of science and technology has shown that truly basic research often yields breakthroughs... but that it is impossible to predict which projects (and which fields) will do that... Over the years, federal funding of basic research, using peer review evaluation, has led to vast improvements in health care, national security, and economic development.”

Smith seems to believe all of this. Conservative politicians are typically loyal supporters of basic science because they recognize that it is one domain that does not provide sufficient incentives for private sector investment, so government must play a part. What Smith is doing is reminding the scientific community about Congress’s authority to

establish broad research spending priorities in the context of the ongoing budget gridlock, and he is reminding the NSF about its accountability to his committee: “The draft bill maintains the current peer review process and improves on it by adding a layer of accountability.”

So the problem here isn’t that Smith doesn’t understand what the scientific community is saying, it’s that after more than 60 years of hype about unpredictability and the inevitable benefits of pure science, he and other conservatives seem to understand and believe it all too deeply. Thus it’s no surprise that when budgets are tight and progress towards achieving many goals — from curing cancer to revitalizing the nation’s manufacturing base — is a lot slower than promised, a

new conservative chairman would seek to make his mark by trying to make things run better. The grave danger here is not that he is going to interfere with peer review but that he will discover that the real world of science — in which progress is often halting and incremental, a lot of research isn’t particularly innovative or valuable, and institutional arrangements are often more important than peer review or serendipity for determining the social value of science — doesn’t match very well to the world on which he has been sold.

As of now, Smith’s bill has not been formally introduced for congressional consideration, and perhaps it is best understood as a shot across the science community’s bow. But with years of budgetary stress ahead, the science community needs to be much more assertive in articulating a vision for science that doesn’t depend on continually rising budgets and isn’t defended by resort to some mythical ideal of pure research. Hype is fine until people start to believe in it. ■

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