

view from the top paul crowther

Dance to the music of space

The *Hokey Cokey* provided the easiest way for me to explain the UK's involvement in the Gemini Observatory to US astronomers at a Spitzer Space Telescope committee meeting in Pasadena last week.

For 15 years, we were "in"; then we were dumped "out" a few weeks ago, after the Science and Technology Facilities Council announced in November that it was planning to withdraw from the international partnership; now, UK observations at Gemini are back "in" for the next six months; although the UK is currently still "out" in the longer term.

It would be funny, were it not for the numerous PhD theses, young scientists' careers and instrument builders' jobs that are at stake.

The downturn in the US economy suggests lean times ahead, but American astronomers are looking across to unfolding events in the UK with a mixture of bewilderment and sympathy. This is a dramatic turnaround, not least because the UK is widely regarded internationally as second only to the US in astrophysics.

The origin of the crisis affecting fundamental physics has been the widely publicised 'flat cash' settlement for the STFC in the Comprehensive Spending Review for 2008-11 (CSR07), announced in October.

Over at the Engineering and Physical Sciences Research Council, the other research council primarily involved in physics funding, flat cash translates into a modest decrease in the volume of responsive grants that can be funded.

In contrast, flat cash for the STFC has resulted in the threat of large numbers of redundancies at the Rutherford Appleton Laboratory, the Daresbury Laboratory and the Astronomy Technology Centre; breathtakingly quick withdrawals from long-term international projects; plus an unprecedented 25 per cent decrease in the previously planned volume of research grants that aim to exploit

the STFC's share of particle accelerators and telescopes over the next three years.

This outcome contradicts the government's recognition of the importance of science to the UK economy and society. Astrophysics and particle physics attract students to the field of physics, a subject that underpins many other disciplines. Indeed, the present Secretary of State for Innovation, Universities and Skills (and soon to include 'Science'), John Denham, has stressed that basic research

should not suffer as a result of the drive to achieve a more effective use of research for the UK.

The UK has experienced a 'brain gain' from the increase in basic physics funding over the past decade. But this advance could quickly go into reverse if the UK is not judged to be so attractive for bright young physicists. Reductions in funding, regardless of how they are presented, send a very clear signal to current students: if they want to pursue careers in astronomy or particle physics, they would be best to do so overseas.

More university physics departments may now follow the example of Reading and close as a direct result of these cuts. Even worse, physicists have had to draw the government's attention to the present crisis through the media. This approach may exact a heavy toll, and turn undergraduates away from physics just as, ironically, the number of applications for undergraduate physics degree programmes are rising, and as the government seeks more students in science, technology, engineering and maths.

The opaqueness in the STFC leadership's decision making has attracted wide criticism, most recently from the Council of the Royal Astronomical Society (see opposite). The STFC advisory structure has failed to engage with the wider communities on setting scientific priorities. The previous research council involved with funding blue skies physics research, the Particle Physics and Astronomy Research Council, had a sufficiently broad advisory structure that it could credibly claim to develop science themes through peer review. At first glance, the STFC advisory structure mimics that of PPARC, but priorities across such a broad spectrum of physics has been heavily reliant on too small a pool of scientists.

All large facilities involved in blue skies research are both international and long-term in nature. And yet STFC administrators decided to withdraw the UK from Gemini, the International Linear Collider and ground-based Solar Terrestrial Physics before the council's own science committees could fully consider the options. Some welcome steps are now being taken to minimise the damage over the UK's ejection from Gemini, and perhaps reverse the decision through dialogue with the US National Science Foundation. Nevertheless, this sequence of events has been damaging both to the UK's research credibility and its reputation as a reliable, long-term partner.

Alarm bells may already be ringing at NASA headquarters over moonLITE, a joint technology-led lunar mission with the UK. Such ventures are intended to provide a stimulus for UK industry, and encourage it to

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increase research budgets for both science and technology. Unfortunately, the STFC's strategy for balancing the demands of industry, technology and science has not been communicated to the academic community.

In response to the consequences of the STFC's settlement in CSR07, the government set up a review of UK physics research under the chairmanship of Bill Wakeham, vice-chancellor of the University of Southampton. The government now expects a report in the summer, several months earlier than planned. Many physicists hope that Wakeham will consider whether the hybrid structure of the STFC, forged last April from PPARC and the Council for the Central Laboratory of the Research Councils, has led to the current crisis and whether such a structure makes the most effective use of government funding.

In the short term, one way to minimise damage and restore confidence would be for the government to provide the STFC with an extra £25 million to maintain the volume of research grants. It could go a long way in doing so by waiving VAT on running costs at the new Diamond

synchrotron, in which the STFC has an 86 per cent stake, and by restoring protection from currency and GDP fluctuations for subscriptions to international facilities. In the longer term, crises might be averted by setting up an independent committee, as the Royal Society told Parliament in December, "to advise the Director General for the Research Councils on the Science Budget".

Although things remain bleak right now, there are some positive developments that might follow from the current crisis. Many scientists have been in touch with their MPs for the very first time, opening up a welcome dialogue. Many astronomers have also recognised that our community needs to be better organised, and see the American Astronomical Society as a possible role model.

Finally, particle physicists and astronomers need to be more effective at explaining to the wider public how we benefit UK plc, and what would be lost to the UK if a decision was taken to withdraw from funding such esoteric subjects. "That's what it's all about!"

Something to add? Email comment@ResearchResearch.com

Sweet Valentine

Last Wednesday, the eve of St Valentine's Day, Michael Rowan-Robinson, president of the Royal Astronomical Society, forwarded a critical memorandum from the RAS Council to Keith Mason, chief executive of the Science and Technology Facilities Council.

Dear Keith Mason,

I had hoped to speak to you on the phone before sending the attached statement, agreed at RAS Council on Feb 7th.

Although you will find it critical of STFC, I hope you will interpret it in a positive light, as a guide to reestablishing the confidence of the community.

Several of us met with Peter Warry [Chair of the STFC Council] last week and raised most of these issues.

I know that STFC is trying very hard to do more in the way of informing the community and that you intend to set up an advisory structure below PPARC [Particle Physics, Astronomy and Nuclear Committee].

So I do ask you to see whether you can avoid a defensive reply to this statement (I entirely accept that you would be able to mount a strong defence of STFC) and try to use it to reengage with the community.

If I may give a couple of examples. Keith O'Nions [Director General of Science and Innovation at the Department for Innovation, Universities and Skills] told me on Friday that he thought that STFC was the only research council that did not publish its minutes. I understand from Peter Knight [Chair of STFC Science Board] that Science Board is now publishing its minutes. This is a very good step in the right direction.

I also do not see why you cannot publish the Programmatic Review ordered list, without at this point specifying where the cut is likely to fall (I appreciate that this remains uncertain for the moment).

I know that your first reaction is likely to be one of irritation at our lack of confidence in STFC. However I'm sure you are aware of a rather widespread view that we should be calling for even more drastic measures.

I will not be sending this out to RAS members until tomorrow, to give you some time to think about it. We do not intend to put out a press release on this or to send it to DIUS. I can be reached on my mobile [number given].

Regards, Michael

Statement from RAS Council

(For the full version see the RAS web site.) Mindful of very strong feelings in the entire astronomical community, RAS Council expresses a lack of confidence in STFC's handling of the current funding crisis:

(1) In its actions since it was formed, STFC has failed to pay sufficient attention to the part of its mission associated with the delivery of first class science in astronomy, particle physics and nuclear physics;

(2) In making its bid to CSR2007, little

emphasis was placed on the importance of these areas for UK science and for UK physics in particular. The DIUS does not seem to have been made sufficiently aware of the potential damage...despite the fact that the Government has made Physics a high-priority in its long-term economic policy. Astronomy and space science play a key role in attracting school children to science...There is now a real danger that the recent improvement in Physics enrolment will be reversed;

(3) The STFC's Delivery Plan pays lip-service to the need to foster the UK academic community, who play the key role in delivery of all of STFC's outputs... The 25 per cent decline in grants...with no sign of any intention or even desire to level this out in later years, has filled the community with deep pessimism and anger;

(4) STFC has failed miserably to communicate with the community...;

(5) STFC claims that its Delivery Plan has been and is being arrived at through a process of Peer Review...the community has no confidence in this process... It was a catastrophic error not to set up an advisory structure...The requirement of confidentiality...goes far beyond any legal requirements;

(6) STFC needs to develop with the community a clear science strategy, so that both the community and those on STFC panels can make operational decisions with precision and clarity;

(7) In dealings with international partners, STFC needs to take advantage of the contacts and diplomatic skills of members of the community. A take-it-or-leave-it approach to an international partnership will never succeed.