

Loss of scope as council cuts funding

The Science and Technologies Funding Council impose cuts which look set to jeopardise future programmes

By KATE OLIVER

The national science budget has risen by 13.6% this year, but the body responsible for distributing this money, the Science and Technologies Funding Council (STFC), is now cutting £80million from its science spending. This is mostly set to come out of the £200 million particle physics and astronomy research budget.

"To withdraw from the state-of-the-art Gemini facilities leaves the UK ground-based astronomy strategy in disarray," said Prof. Paul Crowther from Sheffield University. The deficit seems to spring from a number of sources – some projects that STFC is committed to have cost more than expected, and administration costs have spiralled. It has to be said, the STFC was onto a loser from the start; formed in 2007 from two previously established funding bodies it inherited their combined deficit of £265 million, despite assurances from the Minister for Science that it would not.

Most worrying for students is the cutting of a quarter of postgraduate research places in astro- and particle physics. These positions, which produce highly-trained programmers and analytical thinkers of benefit to the economy, always experience a high take-up. Given the current lack of science graduates, this money-saving technique seems extremely short-sighted.

Current post-graduates are also experiencing difficulties. The first casualty of the cuts is participation in the Gemini telescope programme, an international project which the UK has invested 15 years and £70million in. The withdrawal will cost STFC



The Gemini Observatory consists of two 8-inch telescopes in Hawaii and Chile.

£7million in penalties for early withdrawal, and UK astronomers will now be unable to observe the sky of the Northern Hemisphere. Those who undertook programmes using Gemini are left to try and find international collaborators who still have access, and try and tag along.

On the particle physics front, the International Linear Collider is also losing British support. Designed to collide electrons with their anti-particle, the positron, the ILC is the next big project in particle physics after the Large Hadron Collider at CERN opens this year. After the UK's large

involvement with the LHC construction, particle physicists are gutted that they're blocked out of its successor. These international collaborations are the first casualties. They may not be the last. With this sort of track record, there are worries that the UK will be seen as an unreliable research partner, and may not be invited into future collaborations. Britain's position as a centre of scientific research is starting to look a little thin.

The STFC maintains that these actions will enable it to participate in exciting new future projects, such as the unimaginatively named Extremely

Large Telescope, and to 'move forward on a stronger sustainable financial footing'. It continues to fund several facilities in the Rutherford Appleton Laboratory that produce interdisciplinary research opportunities, such as the Diamond Light Source and ISIS. Both of these offer new ways of examining the structure of matter. The DLS uses the bright, intense light given off by accelerated electrons racing round in a circle, while ISIS produces pulses of muons, a type of heavy electron, and neutrons. These penetrating emissions are used by physicists, chemists, materials

scientists, engineers, biologists and geneticists.

There's no direct link between particle physics and astronomy and an improvement in people's lives, unlike medical research or semiconductor technology, so they may seem a good place to make cutbacks. But these seemingly abstruse areas do have an impact. Particle physics has produced spin-off technologies that are indispensable. MRI scanners are a godsend for medical diagnoses and neurological research – and would you want to live without the World Wide Web? On a deeper level, astronomy gives us a broader, truer picture of our place in the cosmos, injecting a much-needed awareness at the miniature size and precarious environment of our Earth.

The study of sub-atomic particles and their bizarre interactions, through reconstructing the massive energies present at the birth of our universe, costs. Building massive telescopes to extend our visibility of the depths of space also costs.

But these areas are the ones that fire the imagination. These are the ones that children ask questions about, that adults like to wonder at – these are the concepts that get people into science. They are also the areas that keep people in science – 80 per cent of physics degree students report that the chance to study particle physics had a significant impact on their choice of degree. This money pays for more than research. It buys a passion for knowledge, a desire to push back the frontiers of ignorance. It buys fascination and elucidation of a beautiful, complex universe. And these are things we cannot afford to lose.

Creationists continue to battle with Darwin

By RACHEL MUNDY

Many events are planned to celebrate Charles Darwin's birthday on 12th February (see www.darwin-day.org). One entitled "Why don't creationists just shut up?" raises an interesting question. Here in the UK, the teaching of evolution forms part of the standard curriculum. But in America, and some parts of Europe, Darwin's theory has yet to receive a warm welcoming.

Creationism and a new branch – Intelligent Design, which invokes 'design' in nature, contradicts the understanding of the earth that underpins modern science. Yet in some states of America, Creationism is given equal weight to evolution in science education, while Romania has recently removed it from the curriculum.

Creationists believe the earth to be less than 10,000 years old, and that each type of animal, including humans, were created as separate entities. They reject that animals could gradually change form to adapt to new environments through time. Proponents argue the evidence for evolution is contradictory and can only be demonstrated within a species.

Intelligent Design (ID) support the

Creationist argument that complex systems such as the eye could not have evolved incrementally. It is claimed that individual components, such as rods and cones in the retina can have no survival advantage without operating as part of a whole system.

The proponents believe that Darwin himself supports their theory: "If it could be demonstrated that any complex organ existed which could not possibly be formed by numerous, successive, slight modifications, my theory would absolutely break down." Recent experiments and research claim to have observed this process in action.

'Why don't creationists just shut up?'

In contrast to Creationism, modern science dates the world at over 4.5 billion years. Evolution describes the variety of species on earth in terms of selective pressures, acting on random mutations within a genome of an

organism through time. Evidence to support the theory comes from fossils, DNA, field studies and direct experiments.

To understand the debate and put it in context it is important to distinguish science from religious belief. "Science is one way of understanding knowledge. Religious belief is an alternative based on faith," says Dr Ian Barnes, a lecturer in Evolution at Royal Holloway University.

Supporters of ID justify their position as being more "scientific" than Creationism, and publish several papers to support their theories. Yet it is still termed "creationism in a tuxedo," by the director of the Natural History museum at the University of Kansas - a clever re-branding.

Many scientists argue that including Creationism within religious and bible studies is appropriate. However teaching it as a science is to misunderstand its meaning. "Intelligent Design fails to generate a testable hypothesis – that is science," explains Dr Peter Credland, another expert at Royal Holloway.

Criticism for evolution is often based on its apparent inconsistencies but as Barnes does not believe this disproves anything: "Because the scientific method is based on the



development of ideas through time it's inevitable if you take all the ideas in one go you will find it contradictory." Evolutionary theory has itself evolved and adapted through time.

To complicate matters further some of the controversy can become political, often reflecting public opinion. Republican Presidential hopeful Mike Huckabee answered "no" when asked if he believed in evolution. Around half of the American public surveyed in a poll, published last June, said the same.

Some argue that today's Creationists are more fundamentalist than

Victorian theologians. While there were many criticisms to Darwin's ideas, there was little opposition for directly contradicting Genesis. Since the Enlightenment Christians had been encouraged to regard the stories of creation as metaphors, not literal accounts.

Since the publication of Darwin's Origin of the Species in 1859, the debate has yet to show any signs of stopping any time soon. Whilst many religious leaders do not think their belief system and evolution are incompatible, there are just as many that disagree.