

Maintaining a global vision

The rules on sharing large-scale facilities are under pressure. Neither politicians nor scientists should ignore the role of self-interest. But respect must, where possible, still be maintained for universal values.

There is a troublesome conflict of principle bubbling beneath what might otherwise seem to be an innocuous issue: the rules of access to large and, increasingly, medium-sized, publicly funded research facilities. At stake is the question of whether access should be determined primarily by scientific merit, or by the interests of those who have sponsored the facility. In an ideal world, the two would be congruent. In reality, the pressures of self-interest that such rules are increasingly written to reflect can, without proper safeguards, end up threatening those universal values on which the health of science depends.

The lesson is brought home sharply by a recent report prepared for the Megascience Forum of the Paris-based Organization for Economic Cooperation and Development (OECD). The report was commissioned at a time when certain constituencies in the United States were balking at the idea of having to contribute to the construction of the Large Hadron Collider at CERN, the European Laboratory for Particle Physics, in Geneva. The argument being used was that, since foreign researchers were able to compete for the use of many major US science facilities without having to pay for their construction, European scientists should conduct the same 'open door' policy in return.

The OECD report concluded, after studying a wide range of facilities, that there is no universally appropriate set of access rules, implicitly rejecting the arguments that everyone should adopt the US principle that access be based purely on scientific merit. It is a timely reminder that the more utopian ideals of a single, global scientific community are frequently at variance with the growing demands to show value for money in the use of public funds.

The key question, of course, is: value to whom? It is difficult to convince a small country that pays a relatively large proportion of its science budget as a subscription to an international facility — such as CERN — that its interests are being met through experiments conducted by scientists from a large, non-paying state. This is particular-

ly so if its own scientists are, for whatever reason, badly placed to conduct comparable experiments themselves.

It is not only international facilities that experience tension. In the United States, synchrotron facilities have traditionally been built by the Department of Energy. This reflects both the disciplinary skills required for the machines' construction and the fact that much of their use has been in the physical sciences. Their increasing use by biologists has inevitably raised questions about the fairness of the traditional distribution of responsibility, particularly at a time of burgeoning political support for the biomedical sciences. It is thus entirely appropriate that the National Institutes of Health should make a contribution to future construction costs (see page 203).

Such issues are likely to grow, partly reflecting the increased interest in biology in recent decades. Particle physics and space exploration have been joined as big spenders by areas such as human genome sequencing and biodiversity research that, while still of global interest, cannot easily be categorized as 'big science'. The instrumentation needs of 'small science' are also growing, to the extent, for example, of leading to demands for regional nuclear magnetic resonance spectrometers in the United States (see page 201).

The merits of funding such facilities, where needed, on a regional basis are obvious. And, from a purely national perspective, the purview of a single funding agency would, hopefully, ensure that access was not determined solely by ability to pay. At the international level, however, the global perspective provided by the value of large scientific projects in helping to forge political alliances has largely disappeared in a world no longer dominated by competition between power blocs. As the terms of self-interest move from the political to the economic, it is important to find new ways of supporting the universal ideals from which science has taken so much strength — for example by allowing facility managers a degree of freedom in allocating research time to the 'worthy but needy'. □

Pie in the sky

Ageing astronauts should be more honest about their motivations for wishing to return to space.

Few people actually believe that Senator John Glenn's recent space shuttle jaunt was conducted primarily in the interests of science. But since he and the US space agency NASA repeatedly and adamantly defended his flight on those grounds, it deserves comment from the research community. For while NASA and the Senator apparently believe that any attention to science is positive, their overhyped claims mean that public understanding of what makes a well designed experiment may well have taken a step backward.

The flight undoubtedly succeeded in calling attention to parallels between the physiological effects of ageing and the 'deconditioning' that occurs in weightless astronauts. That line of inquiry may even be promising if humans continue to travel into space. But calling the experiments in which Glenn participated 'cutting edge' research on ageing misrepresents how scientific studies are conducted.

None of the shuttle experiments required a geriatric test subject. Before Glenn lobbied his way onto the flight, NASA had no plans to

send an older astronaut into space. In fact, the agency had pushed at least one shuttle veteran in his sixties — and with far more spaceflight experience than Glenn — out of the door. Furthermore, flying one old person in space doesn't yield statistically valid conclusions about old people in general. And NASA has no plans for follow-up studies with other test subjects of a similar age.

Glenn is surely aware of the limited scientific value of his flight. But he desperately wanted to return to orbit, and seized on science as a convenient way to make his joyride sound more high-minded than it really was. Ironically, he didn't need the fig-leaf. The American public seemed more than willing to give an ageing hero his 'victory lap' without any trumped-up justification. Why harp on the research, then? The astronaut-turned-Senator-turned-astronaut has said his next goal will be to help combat what he views as apathy and cynicism among young people. Perhaps a good starting point would be for public figures to be more honest about their motivations. □