

SIR — Why do you say that “the University of Cambridge should have thought harder before accepting a donation joining science and theology” when this is for a lectureship in divinity, one of the longest established faculties in the university?

Perhaps because of doubts that there can be any useful relationship between the natural and the theological sciences, or whether theology is a sensible subject for study nowadays anyway. Science can tell us approximately when the Universe is supposed to have begun and why it developed as it did, and when life originated on Earth and how it has evolved to where we are today. These are scientific questions which theology cannot and should not attempt to answer.

But what science cannot tell us is *why* the Universe started at that time, nor indeed why it exists at all. Some may say that because such questions are unanswerable they ought not to be asked. But, granted that science cannot provide the answers, the questions still remain. Theology does try to answer them, and that the answers may not always be thought to be the right ones doesn't mean that this isn't a proper subject for rigorously academic study.

C. B. Goodhart

*Gonville & Caius College,
Cambridge CB2 1TA, UK*

SIR — In your attack on the establishment of a lectureship in theology and natural science in the University of Cambridge, you make the extraordinary claim that the sciences can be pursued with academic rigour, whereas the study of the relationship between science and theology necessarily lacks such rigour. Apart from being an unnecessary slur on the faculties of theology which form an integral part of many universities, such comments also ignore the obvious fact that many of the leading figures in the history of science have displayed considerable intellectual energy in the task of relating their science to their faith. A list of such individuals would certainly include Kepler, Galileo, Boyle, Descartes, Bacon, Pascal, Ray, Newton, Priestley, Kelvin, Faraday and Maxwell, as well as a large number of twentieth century scientists. If anyone thinks that investigation of the interactions between science and theology lacks academic rigour, then a recent book by John Brooke, editor of the *British Journal for the History of Science (Science and Religion — Some Historical Perspectives*, CUP, 1991), should dispel such doubts.

Today, modern science is placing enormous power in the hands of humanity which can be used for either creative or destructive purposes. There is an urgent moral responsibility to harness such power for the common good and

the fulfilment of that responsibility is becoming increasingly complex. Rather than the outmoded attempt to draw sharp boundary lines around their fields of investigation, there is a need for a more humble approach whereby scientists welcome attempts to relate their knowledge to theology and moral philosophy. The decision to establish the lectureship in theology and natural science is therefore not only a continuation of a tradition of partnership between science and theology which goes back many centuries, but also provides a further valuable opportunity to explore the ethical responsibilities of the scientific community with respect to the applications of their science.

R. J. Berry (*University College, London, UK*);

D. C. Burke* (*University of East Anglia, Norwich NR4 7TJ, UK*);

J. N. Hawthorne (*University of Nottingham, UK*);

R. B. Heap (*Babraham Institute, Cambridge, UK*);

John Houghton (*Rutherford-Appleton Laboratory, UK*);

C. Russell (*Open University, UK*).

* For correspondence

Two-way adaptors

SIR — V. Bauchau¹ referred to the contribution of Dover² dismissing Dawkin's claim for Universal Darwinism³. As to the fact that laws may deal with very general statements rather than with precise predictions on a system's detailed development, I agree with Bauchau completely. Whether, however, evolution by natural selection is such a universal law, as he called it, will depend on the units of selection he may have in mind. If one goes high enough in the general hierarchy of organisms, then, of course, evolution is a zero-sum-game between winners and losers. But as soon as forms of cooperation and function sharing come up, one can no longer separate the losers from the winners, that is, from those who have been selected⁴.

Another point is that it is not compelling to say that the (social, organic or physical) environment will exclusively define the conditions to which the organism has to adapt in order to survive. One can also say that organisms through their own evolution have defined the criteria to be met by the environment, and that in all cases where the environment is not appropriately adapted, the organism will try to modify the environment according to these criteria by means of acting in the wider sense (including emigration). Then, as Waddington⁵ said, the organism will select the environment rather than the reverse. In Darwinian parlance, a species will die out (and be replaced by others) if its members and the environment are ill-matched. Yet the same can

happen also to a special environment itself if it is occupied by species which developed tools to modify their surroundings. One may well continue to speak in terms of conditions to which organisms have to adapt and to use the notion of selection accordingly, but then it has to be made clear that, to a great extent, organisms themselves have brought about these conditions as well as they can modify them.

Olaf Dietrich

*Commission of the European Community,
DG XII E-1, Biotechnology,
Rue de la Loi 200,
B-1049 Brussels, Belgium*

1. Bauchau, V. *Nature* **361**, 489 (1993).

2. Dover, G. A. *Nature* **360**, 505 (1992).

3. Dawkins, R. *Nature* **360**, 25–26 (1992).

4. Dietrich, O. *Evol. Cogn* **2**, 163–188 (1992).

5. Waddington, C. H. *Nature* **182**, 1634–1638 (1959).

University funding

SIR — Your recent Opinion article on “University competition” (*Nature* **362**, 2; 1993) expounded the view that the research assessment exercise has to a considerable extent followed the Matthew principle “to him who hath shall be given”. To satisfy the requirements of including some reward for research merit, of providing safety-net funding as well as of keeping within the available budget, the Higher Education Funding Council resorted to a formula incorporating a crude capping mechanism. As a result, the University of Cambridge, which came top of the list, received an increase of only 15 per cent in its research award rather than the figure of nearly 30 per cent which it might otherwise have been given. This means in practice that a grade 5 department at Cambridge will receive about 10 per cent less research funding under the award than a similar department at an uncapped university.

High-quality research departments have been further penalized by two additional factors. First, the research assessment scales terminated at 5 rather than at 7 or even 10, which might have been a better indicator of true international quality. Second, early experience of the recent overhead transfer exercise suggests that this will cause a substantial loss of support money which the more research-intensive departments will find impossible to cover by any other means.

I do not believe that we are complacent about any of the features of the new system — either its wider challenges to which you rightly draw attention, or its defects which we hope will swiftly be rectified.

Archle Howle

*Cavendish Laboratory,
Cambridge CB3 0HE, UK*