

Conflict of interest

SIR—There was one omission in your leading article on conflict of interest (*Nature* 340, 664; 1989). This is the situation when an academic department, or individual, receives both governmental and industrial funding. The conflict arises not from individual inclinations towards the source of the funding, but rather from the source of the funding itself. Benefits, if any, from research supported by the government should go back to the ultimate source of the funding, the taxpayer. On the other hand, benefits from research supported by industry end up as profits to shareholders.

The conflict arises because in many cases the benefits are not the same. I think we would all agree that industrial money becomes available to an academic department or individual because of a good track record in the fruition of the research which in most cases was supported by government funds. In other words, industry buys rather cheaply the fruits of government funding. Shareholders thus get a pay-off from this latter work, while taxpayers pay twice, once for supporting the original research and again in paying for the results of the research in the form of profits to the company.

One remedy is to cut off all government funding to departments or individuals who obtain industrial funding. This move will not, however, solve the main problem. In our capitalistic society, the only solution is for a portion of the profits resulting from research supported by both funding sources to be ploughed back by industry, either into general government research funds or back to the taxpayer in the form of payback into general government funds. Equity demands that research supported by government supposedly to benefit all should not be used to benefit only a few. Just because industry is the only source, for example, of mass-produced drugs does not mean that industry should not pay a fair share of the taxpayer's part of the cost of the research done to obtain these drugs.

PHILIP SIEKEVITZ

Rockefeller University,
New York, New York 10021-6399, USA

SIR—Your sensible leading article (*Nature* 340, 664; 1989) missed one important point. Rules about conflict of interest are designed to eliminate unfair personal gain, or at the least to minimize its likelihood. In the leading article and in most other discussions of conflict of interest, personal gain is assumed to be of the financial or other material variety.

Everyone is to a greater or lesser degree interested in material rewards. But some scientists, perhaps particularly those who are the brightest and most ambitious, are

likely to value academic reputation and prestige at least as highly as financial gain. Scientists may therefore be susceptible to the temptation to act in ways that may enhance their reputation or may damage the reputations and research opportunities of academic competitors. The obvious situation in which this may occur is in peer review of papers or grant applications.

Conflict of interest rules that concentrate purely on material issues are likely to miss many situations in which scientists can take unfair advantage. Guidelines should also require scientists to be explicit about purely academic conflicts of interest. I suspect that many of the complaints about unfair refereeing would disappear if this were the case.

DAVID F. HORROBIN

Efamol Research Institute,
PO Box 818, Kentville,
Nova Scotia, Canada B4N 4H8

Alkaline rain?

SIR—Søren Peter Lauritz Sørensen (1868–1939) must be turning in his grave in Copenhagen. As every student of introductory chemistry knows, Sørensen (in 1909) defined pH as $-\log a_{H^+}$, and therefore, as acidity increases, the pH value decreases. Although David Swinbanks' report on acid rain in Japan (*Nature* 340, 671; 1989) clearly and consistently recognizes this fact, the title "China blamed for high [sic] pH," apparently written by someone other than the author, is incorrect and does not make sense.

GEORGE B. KAUFFMAN

Department of Chemistry,
California State University, Fresno,
Fresno, California 93740, USA

To boldly go . . .

SIR—The article by Andrew Tudor on the image of scientists in horror films (*Nature* 340, 589; 1989), was amusing and interesting. I'd like to add a note about more recent films in the genre of science fiction.

Lately there has been a reaction against the *Frankenstein* image. Films such as *Altered States* and *Brain Storm* have begun taking a rebellious, almost faustian tack, in which the scientist is depicted as an adventurer, a hero. Even if his daring leads to pain, that is nobody's business as long as the only one hurt is himself. Since biblical times there have been messages decrying hubris, and *Frankenstein* does warn us to beware unforeseen consequences. Still, it's good to hear the other side as well.

The best recent example of these two views in conflict were two popular films in the *Star Trek* series. In *The Wrath of Khan*, the son and former wife of Captain

Kirk have invented a 'Genesis Device' which causes life-bearing worlds to coalesce out of a dusty nebula. This unabashedly faustian film utterly rejects the biblical-Frankenstein code, depicting this creative act as a glorious one, filled with hope and pride.

But old habits reassert themselves in the sequel, *Search for Spock*. The genesis world is flawed, falling apart just as Frankenstein's monster did. Indeed, the 'creator' is killed by his creation. The lesson, once again, is that man should never try to assert the prerogatives of heaven, and what was noble in the earlier film is now portrayed as horrible.

All this may be dismissed as irrelevant, but it is in popular media that public attitudes — and our children's — are formed. Scientists may stay aloof, but that will surely leave myth-making in the hands of ignorant men.

DAVID BRIN

11625 Montana Avenue, Apartment 9,
Los Angeles, California 90049-4676,
USA

Plagiarism

SIR—The view of the National Institutes of Health Investigating Committee as reported in *Nature* (340, 173; 1989) is surely mistaken. Plagiarism is not "at least as serious a misconduct in science as outright fabrication of experimental data". Both fabrication and plagiarism are dishonest and abuse the peer-review system, but fabrication is harmful for science in a way that plagiarism is not. Fabricated data can be detected and corrected (if at all — consider the difficulties in ecological research) only at great cost, whereas plagiarism is often a matter of public record. When undetected, fabricated data are actively misleading, whereas plagiarism merely introduces redundancy. Neither is excusable, but they are not equally damaging to science.

IAN J. GORDON

Department of Zoology,
University of Nairobi,
PO Box 30197, Nairobi, Kenya

Mirror in space

SIR—In response to the suggestion of putting a large lightweight mirror in space between Sun and Earth in order to reduce the solar radiations on our planet (*Nature* 340, 603; 1989), let me point out that the energy requirement for such an operation would be substantially diminished (two orders of magnitude, at least) if we could take the Moon as a starting point, that is, if we managed to build the mirror in the Moon with lunar material and subsequently bring it to the appropriate point.

KEPA ZUBIA

Unbemendi, 113, Apartado 829,
48080 Bilbao, Spain