

How can we build a 'knowledge economy' if research is handcuffed?

Sir—New Zealand has found a novel approach to the problems caused by the brain drain and by chronic underfunding for basic biological research^{1,2}. The government's solution is to make much biological research illegal instead of just prohibitively expensive (see page 8).

The Hazardous Substances and New Organisms (HSNO) Act has imposed the most oppressive restrictions on laboratory biological research in the Western world, making even safe science a potentially criminal endeavour. Most universities and research institutions were unaware of the act's full implications until they recently started coming up against them. Just this April, the Environmental Risk Management Authority (ERMA) revoked all previously given institutional authorities to approve laboratory experiments. It halted any new work involving genetic modification, even the most trivial, until ERMA itself had inspected each experiment.

HSNO makes no distinction between, on the one hand, routine genetic manipulation such as making a DNA library, performed in containment laboratories designed to keep organisms in and the public out, and, on the other, genetic manipulation designed to produce a biological product or organism for field release. Every procedure that puts DNA with any history of *in vitro* manipulation into any 'organism' has to go through an expensive risk assessment by ERMA. The assessment must anticipate every manipulated nucleic acid and every recombinant organism: imagine that, if you are making a DNA library.

ERMA requires up to NZ\$3,000 (US\$1,400) for each application to import modified organisms safely into containment, even if they are only a source of a new cloning plasmid. So research organisms identical to those that might be considered safe if developed in New Zealand—where there is not enough money to fund their development—are too expensive to import. Materials developed here will still be distributed freely as part of the generosity shown by scientists to one another, but we will not be able to afford to import the analogous materials offered to us for free.

As a university lecturer, I think it would be irresponsible of me to not advise New Zealand biology students to leave for an overseas education. In the short term, we cannot afford to teach them modern genetic techniques—not because our laboratories are unsafe, but because of the ongoing compliance costs under HSNO. In the long term, we will neither keep those most qualified

to teach modern biology, nor attract many of our best young biologists back.

Ironically, our government is advocating a new 'knowledge economy'. How this is to be created is not clear.

Jack A. Heinemann

Department of Plant and Microbial Sciences,
University of Canterbury, Private Bag 4800,
Christchurch, New Zealand

1. Heinemann, J. A. *Drug Discovery Today* **5**, 222–223 (2000).
2. Swinbanks, D. *Nature* **379**, 112 (1996).

Climate-change analysis has been changing too

Sir—The valuable Commentary by Hans von Storch and Nico Stehr¹ is of critical importance for what it tells us about the cultural context of climate change and impacts research. However, we do not agree with some of the authors' more rhetorical statements.

First, the authors go from a description of how climate change has been perceived in the past to a claim that current impact assessments are simplistic: a scientific judgement. Surely the historical facts don't tell us whether or not a contemporary climate impact analysis is simplistic.

Second, the authors state that climate change is occurring, but that claims about significant future impacts are only a hypothesis. Of course, the science of analysing climate-change impacts is in its early stages, and there is much more uncertainty about the precise nature of those impacts than about whether climate change will happen. But this is not because our information about future impacts is hypothetical whereas that about current climate changes is not. There is a vast literature in the climate-impacts field that criticizes past work as simplistic and argues for more sophisticated approaches (for example, discussions about the 'naive farmer' hypothesis). This is a normal progression, not a sign of fatal weakness.

Studies on global water and food security^{2,3} and regional case studies on impacts and adaptation^{4–8} illustrate that the dialogue has become much more mature. The 'apocalyptic scenario' has been replaced by genuine concerns about how climate change will exacerbate food, water and health problems in many countries.

The real value of the historical analysis in the Commentary is the cultural context it provides for research on climate change and impacts. In turn, this gives us an important indication of how the climate issue may play out in the public arena; about how it may be interpreted by politicians, members of the public and others; and about possible reactions and responses to climate-policy initiatives. To grapple effectively with these questions, we need

more integrated analysis that takes into account such historical, philosophical and social-scientific questions.

John B. Robinson and Stewart J. Cohen*

Sustainable Development Research Institute,
University of British Columbia, 2202 Main Mall,
Vancouver V6T 1Z4, Canada

* also at the Adaptation & Impacts Research Group,
Meteorological Service of Canada, Environment
Canada, 2029 West Mall, Vancouver V6T 1Z2,
Canada

1. von Storch, H. & Stehr, N. *Nature* **405**, 615 (2000).
2. Arnell, N. W. *Global Environmental Change* **9**, S31–S51 (1999).
3. Downing, T. E. (ed.) *Climate Change and World Food Security* (Springer, Heidelberg, 1996).
4. Cohen, S. J. *Arctic* **50**, 293–307 (1997).
5. Yates, D. N. & Strzepek, K. M. *Climatic Change* **38**, 261–287 (1998).
6. Nishioka, S. & Harasawa, H. *Global Warming: The Potential Impact on Japan* (Springer, Tokyo, 1998).
7. University of Washington. *Impacts of Climate Variability and Change in the Pacific Northwest* (JISAO/SMA Climate Impacts Group, Seattle, 1999).
8. Huq, S., Karim, Z., Asaduzamana, M. & Mahtab, F. (eds) *Vulnerability and Adaptation to Climate Change in Bangladesh* (Kluwer, Dordrecht, 1999).

Unrealistic promises on AIDS fuel scepticism

Sir—Incredulous as I am about South African President Thabo Mbeki's ill-informed perspective on HIV and AIDS, I am even more incredulous that, according to your News report "Letter fuels South Africa's AIDS furor" (*Nature* **404**, 911; 2000), the president of the World Bank, James Wolfensohn, "promised that there would be 'no limit' to the funds available for combating AIDS in the developing world".

Does this mean the World Bank intends to assume the entire cost of AIDS medicine and medical care for all those in the developing world? I very much doubt it. It is precisely this kind of claim—reported without qualification—that makes Mbeki and many others regard Western pronouncements on AIDS as untrustworthy.

Your reporter's description of the right-wing Boerestaat party's support for Mbeki's stance as coming "from an unusual quarter" overlooks the well-reported right-wing sentiments of several prominent US opponents of the HIV–AIDS connection. Many right-wingers see AIDS as a "moral" disease, caused by degenerate sexual and drug habits. It is not surprising that those sharing this political perspective have opposed efforts, such as clean-needle programmes, aimed at resisting the spread of this scourge.

To minds such as these, death from AIDS is the appropriate remedy for immoral behaviour. Those who support the South African right wing are also unlikely to feel distressed at the prospect of an AIDS-depopulated black Africa.

Dan Dorritie

PO Box 738, Davis, California 95617, USA