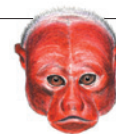


THIS WEEK

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Antarctic Treaty is cold comfort

Researchers need to cement the bond between science and the South Pole if the region is to remain one of peace and collaboration.

“All the day dreams must go; it will be a wearisome return.” Written almost exactly a century ago, in the diary of doomed Antarctic explorer Robert Scott, those words mark the moment at which the British naval officer realized that the game was up. He had lost the race to the South Pole to his Norwegian rival Roald Amundsen, and the return journey was to prove worse than Scott imagined. By the end of March 1912, Scott and his two remaining companions had perished, just 18 kilometres from life-saving supplies. Their ill-fated expedition had a scientific slant too, and the zoologist Edward Wilson, who died alongside Scott, was the first scientist to see the South Pole.

It is perhaps a fitting legacy that the hostile landscape of Wilson's final months is now the scene of unprecedented scientific cooperation. Amid conflicting territorial disputes, the 1959 Antarctic Treaty handed the continent to the world's researchers, with the explicit goal of ensuring “in the interests of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord”. Some 30 countries now operate research bases in Antarctica, and the Iranian Students' News Agency reported last week that Iran intends to open one within three years.

The international rush to Antarctica in the name of science has not gone unnoticed by some with interests beyond research. In an article published in *The Australian* newspaper on 31 December, Sam Bateman and Anthony Bergin of the Australian Strategic Policy Institute in Canberra raised the provocative prospect that countries such as China and India could use bases recently opened there to improve satellite communications to military forces that increasingly depend on space-based infrastructure. “To do so would be at odds with the Antarctic Treaty, but the sparse use of the treaty's inspection mechanisms means that such activity could go undetected,” Bateman and Bergin say. “If Antarctic sites take on military significance, we could see a move towards destabilisation of Antarctica as a zone of peace.”

That may seem a far-fetched scenario, but events may not have to take such a dramatic turn to undermine the treaty and weaken the monopoly that science currently has on Antarctica. The late Christopher Joyner of the Department of Government at Georgetown University in Washington DC identified three potential challenges to the cooperative spirit of the agreement, driven by the changing global political and economic climate. States might implement national continental-shelf claims in offshore Antarctic waters in pursuit of energy resources, he suggested, or tensions could escalate between Japan and Australia over whaling in Antarctic waters. Joyner's third scenario — widespread and unregulated bioprospecting — is a topic already identified as problematic by treaty members, and one discussed at their annual meeting last summer, held in Buenos Aires. Nearly 200 research organizations from 27 states are carrying out research for commercial purposes in the Antarctic, Joyner said, and one big goal is sifting its

plants and animals for beneficial genetic and biochemical resources.

Although the Antarctic Treaty seems under no immediate threat, one need only look at the escalating political importance of the Arctic to see the potential for change in the south. Just this week, members of the Arctic Council were due to discuss requests from China and India for official observer status. And even under the strict conditions of the treaty, the appeal of Antarctica to some nations searching for new mineral and energy resources has never been too far from the surface.

“There remains great appeal in the spirit of Scott's expedition — of scientists as explorers.”

Scientists can play an important part in preserving the treaty and protecting their unique Antarctic playground, and the promise it continues to offer for research. Interest in the poles is currently sky-high — witness the success and international syndication of the BBC's *Frozen Planet* series — and the more that scientists can promote

the work that they do there, the more the bond between the two will be cemented in the public's mind. There remains great appeal in the spirit of Scott's expedition, of scientists as explorers, and in that vein, sometime this year, researchers in Antarctica are likely to be the first to penetrate a sub-glacial lake. The long-standing Russian effort to drill into Lake Vostok stalled again this month, raising the prospect that, if they fail to break through this month, then a British team seeking to investigate Lake Ellsworth could beat them to it in December. Not that priority — the loss of which so devastated Scott — matters in 2012. “It's not a race,” a spokeswoman for the British project insists. We believe them, just. ■

Face up to fraud

The UK government and funding agencies must address research misconduct.

Many people in science would rather not talk about the problem of research misconduct, much less act on it. After all, who directly involved would benefit from a serious crackdown? Certainly not the institutions at which the misconduct takes place — they are nominally responsible, but can face legal repercussions, embarrassing headlines and a public-relations disaster if they expose cheating academics. It is much easier to shuffle miscreants out of the side door with vague references and a promise of silence, effectively pushing the problem somewhere else, and onto someone else.

So it is perhaps a sort of progress that the *British Medical Journal* and the international Committee on Publication Ethics were able to

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How exploring launched Antarctic science:
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organize a meeting on the subject in London last week, gathering representatives from universities, funders, journals and lobby groups to discuss how the problem could be tackled in the United Kingdom (see *Nature* <http://doi.org/hmxj>; 2012). The meeting broke little new ground, but its organizers do, at least, deserve credit for trying.

A big part of the problem is the lack of perceived risk associated with misconduct. Some fraudulent researchers might be sociopaths who don't care about the rules, but many others simply believe that they can anticipate the outcome of a research project, and see no downside to fabricating the required results to save time, or tweaking results to achieve a stronger signal. Either way, stronger action and punishments are needed to discourage such misbehaviour. (Meanwhile, for colleagues considering blowing the whistle, the risks are glaringly huge — witness the plight of scientists, such as cardiologist Peter Wilmschurst, who have raised questions and have faced the full force of Britain's ludicrous libel laws as a result.)

Could publications such as this one do more to deter cheats? Unfortunately, we are often in no position to flag up even proven cases of misconduct, and thereby highlight the risks that miscreants run with their careers. Yes, it is a journal's primary job to clean up the literature, but when papers are retracted owing to misconduct, the libel laws (again) often prevent our editors from saying so. We know that this leaves the affected communities frustrated and in the dark. It leaves us frustrated, too.

So, with journals unable to push towards greater integrity and universities often unwilling to do so, should funding agencies be leading the charge? It is, after all, their money that is wasted if misconduct does occur.

Funding agencies in the United States do sometimes investigate misconduct. Research funded by the National Institutes of Health and some other government agencies falls under the remit of the Office for

Research Integrity (ORI), which has the power to bar researchers from receiving future funding. However, as Nicholas Steneck, director of the research-ethics programme at the Michigan Institute for Clinical and Health Research in Ann Arbor, told the London meeting, this process probably misses most major misconduct. And the ORI can't initiate investigations: institutions must conduct their own inquiries first.

“Stronger action and punishments are needed to discourage misbehaviour.”

In the United Kingdom, there seems to be little appetite for launching an overarching ORI-type regulator. Certainly, the existing independent advisory group, the UK Research Integrity Office in Falmer, is clear that it has no desire to take on such a role. British funding councils — in collaboration with the country's universities — have chosen instead to produce a ‘concordat’ detailing good practice, to which institutions will be expected to sign up. This is laudable, but unlikely to strike fear into fraudsters and fabricators.

So, how can Britain highlight cases of misconduct and discourage it in future? Ultimately, the incentives probably need to come from on high, and the government could get the ball rolling by commissioning an anonymous survey on misconduct that UK researchers have witnessed and perpetrated. An official audit would offer a strong platform for others to build on — perhaps with a parliamentary inquiry and subsequent report on the damage done to UK science by misconduct, and an assessment of the options for tackling it and the investment needed. Funders and universities could then work together to establish common definitions of what counts as misconduct, and how it will be punished. And if a reform of the libel laws goes ahead, journals and other scientists would be able to do more to highlight and expose miscreants.

Sounds ambitious? If the solutions were easy, there wouldn't be a problem to discuss. But there is, so we must face it. ■

Cap in hand

A word to the wise on getting that much-needed research funding.

Would you be willing to spend weekends on the yacht of a friendly billionaire in the name of science? Or insist to airport check-in staff that your life-saving research demands that you be upgraded from economy to business class? Perhaps you would be happy to see your face on a T-shirt? Or for folks you met on the Internet to traipse through your lab, taking photographs?

Welcome to the cold reality of science in a global recession. As the flow of public money slows across the world, academic researchers are increasingly turning to private funders and wealthy individuals-turned-philanthropists to pay for their work. There is a strong tradition of such support already, of course, especially in the biomedical field. But as government cuts around the world begin to bite, more and more scientists will be looking for alternative sources of income.

So, in a short series of articles this week, *Nature* focuses on where that money is and how you can access it. Do not feel too proud to ask. Some of your competitors are doing it already.

In our News Features, we look at the two extremes of research paid for by private individuals — from the billionaires willing to set up entire laboratories and pay for the work done there for years, to the web-based begging bowls that can take just a few dollars each from thousands of different people.

On page 254, we talk to those at the top: the big spenders, the entrepreneurs — and those scientists who have benefited from their largesse. How did they do it? Partly by being in the right place at the right time, although it helps to know where the right places are. And it helps even

more to have something to say when you get there. As Thomas Pierson of the SETI Institute in Mountain View, California, says, “People give money to people.” One secret seems to be to think big. “If I ask for \$100,000 and they say ‘yes’ right away, then I didn't ask for enough,” one university fund-raiser tells us. “It's a common mistake.”

At the other end of the scale are the crowd-funding websites, explored on page 252, where scientists can post details of their projects and ask many individuals to collectively cough up for them. From a low-cost robot for tackling oil spills to a project to map water quality along the Mississippi River, some researchers are already adept at tapping the potential of the masses. And although the target donors may be different, one key strategy remains the same: tell a good story. Sell yourself and sell your science.

Still, be wary of selling yourself short, warns a Comment piece on page 260. Patrick Aebischer, president of the École Polytechnique Fédérale de Lausanne in Switzerland, complains that too many donations to university research from charities and foundations come with a catch — they don't pay for the associated costs, such as salaries and utility bills. “Institutions with many privately funded projects are effectively ‘punished’ for their success,” he writes. “To meet the higher research-infrastructure costs, universities may drain resources from education, or diminish ‘expensive’ disciplines such as physics, chemistry or engineering, in which philanthropic support is scarce.” The solution, he says, is for institutions to identify the full cost of research activities and pass it on. “Private bodies should not hijack university resources. They should contribute a fair share of the expense.”

The money is certainly out there. Just look at the billions poured into football teams. And if the pages of the glossy magazines can be believed, the luxury-goods market remains strong. The money must be spent on something, so why not science? And although those weekends on luxury yachts may be a tough way to make it happen, someone has to do it. ■

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