

THIS WEEK

EDITORIALS

CREATIVITY The downside of brainstorming science issues **p.134**

WORLD VIEW The sorry state of science in Venezuela **p.135**



PRINTING Image breakthrough paints pictures without ink **p.137**

Clause for concern

Scientists studying addiction report a troubling rate of interference from funders whose contracts insist on the right to vet results or gag researchers.

Kypros Kypri was pleased to receive funding from a government agency in the Australian state of New South Wales to study problem drinking. But when the contract arrived in 2012, he was surprised to find a demand that the agency could review and sign off on any reports before they were published. Other language allowed the agency to terminate funding without notice or explanation.

Kypri, who now studies the epidemiology of alcohol-related injuries at Australia's University of Newcastle, saw this as a threat to academic freedom and so fought for months to have the fine print removed. Eventually, it was. But he has since realized that his experience is not unusual. In March, Kypri and his colleagues published the results of a survey indicating that many researchers who study addiction think that funders have interfered with their work — most commonly by censoring it (P. Miller *et al. Addict. Behav.* **72**, 100–105; 2017).

The survey was completed by 322 authors who had published in the journal *Addiction*, and a little more than one-third of them reported interference at least once in their careers. That proportion must be taken with a pinch of salt — it is possible that researchers who had experienced interference were more motivated to respond to the survey than those who had not, for example. And some of the reports go back almost a decade. But the survey nevertheless captures more than 100 experiences of research interference, spread across Europe, Australasia and North America.

There is a long and well chronicled history of private companies striving to keep tight reins on the results of research that they fund, particularly when it comes to studies of tobacco or pharmaceuticals. The survey showed that this remains a problem despite public attention, which is disappointing. Indeed, respondents reported their perception that such interference is on the rise.

But there has been less attention paid to censorship by government agencies, which is perhaps motivated by fears that politically sensitive results will highlight flaws in public programmes and so generate bad publicity. Some researchers and academic institutions accept clauses such as those that Kypri encountered as standard contract language. More should object, as he did.

Survey respondents highlighted a fear that standing up to funders could jeopardize their future funding opportunities — particularly given that emerging for-profit research organizations might be more willing to accept limitations on their publications and study designs. Other researchers may believe the clauses to be harmless and unlikely to be brought to bear on their work.

To accept such limits, however, runs counter to the public interest. And the addiction-research survey shows that such clauses are not harmless. One European respondent said a epidemiology publication had been blocked because it was not in the interest of the sponsoring government department; another, from North America, said the government had enforced a request from an industry representative to remove recommendations in an epidemiology report. Researchers

from Australasia looking at fatal drug overdoses said that after they published data that were embarrassing to the government department, they were denied access to that department's data. Interference can also come in other forms. Researchers must be wary of limits that public or private funders may attempt to place on study design or data sharing. For example, one senior researcher in North America said that his team was allowed to access a particular data set only if it agreed not to

“To accept limits on publications and study design runs counter to the public interest.”

ask a politically sensitive question about the effectiveness of a government policy. Journals and journalists should make it a habit to inquire about the conditions, if any, imposed on researchers by their funders, so that those conditions can be disclosed when results are disseminated to the wider public.

Trends in some countries are encouraging. Kypri has encountered many researchers in the United States who say their institutions would not let them accept research contracts with clauses that allowed funder interference. In 2016, the UK government was forced to exempt scientific research contracts from new rules that would have banned government-funded organizations from lobbying for change.

Since his experience in 2012, Kypri has begun to systematically collect examples of clauses in government contracts that could enable interference in research. He worries that in some areas, particularly his own Australia, the clauses have become so common that they are viewed as normal. But his experience shows that it is possible to push back and perhaps even find compromises that satisfy both funder and researcher — without compromising research integrity. ■

Blurred lines

Presenting science as a battle for truth against ignorance is an unhelpful exaggeration.

Antimatter annihilates matter. Anti-science, it is said, destroys what matters. And fears are increasing that anti-science forces are on the march. Indeed, on last month's March for Science, a 'war on science' was frequently invoked as a reason for researchers to mobilize. Signs held aloft warned of a conflict.

True anti-science policies — the early Soviet Union's suppression of genetics research, for example, and its imprisonment of biologists while trying to revamp agriculture — can wreck lives and threaten progress. But it's important not to cheapen the term by overusing it. And it's wrong for researchers and others to smear all political decisions

they disagree with as being anti-science. For instance, despite being labelled by many as anti-science, the US Republican Party — for all of its flaws — is not trying to hobble innovation or seeking to dismantle the research enterprise.

In fact, Republicans have historically been strong supporters of science. They led the effort in the 1990s to double the budget of the National Institutes of Health (NIH), and they enthusiastically support space exploration. In March, when President Donald Trump proposed cutting nearly 20% of the NIH's budget, Republicans on spending committees in Congress were among the first to scoff at the idea.

In no way does this defence of politicians excuse the blatant climate denial, the politically motivated budget cuts and the interference with peer review that all too frequently characterize government. Plenty of politicians, particularly in recent years, have made a habit of choosing certain inconvenient facts and dismissing them entirely. But to claim that this constitutes a strategic war on science is to argue that science is a single, unified entity: that if you are not with science on any given issue, you are against science.

Science does not speak with a single voice. Sit at a hotel bar during any conference and you will hear impassioned debate over what the data have to say about a certain question. Equally credentialled researchers fall out on whether carbon dioxide levels in the atmosphere have passed a tipping point, or on the health risks of sugar.

Those who claim persecution in their pursuit of science would do well to consider whether the pursuit is as pure as they might wish. Science is ripe with problems: irreproducible results, manipulation of statistics, widespread sexual harassment and gender discrimination, and conflicts — or at least what seem to be conflicts — of financial

interest, to name but a few. Stepping back to see how all this comes across to non-scientists could be educational.

If politicians don't oppose the concept of science, why do so many seem to dismiss it? Many 'anti-science' measures have nothing to do with science at all. US politicians who want to weaken the Environmental Protection Agency, for instance, tend to want also to weaken all sorts of federal programmes that they see as examples of 'big govern-

"Many 'anti-science' measures have nothing to do with science at all."

ment' interfering in local issues. Debates about the labelling of genetically modified food are driven less by health concerns than by distrust of the agriculture industry's business practices. Government science agencies — shock, horror — are not always operated efficiently, and moving funds to more-effective programmes might sometimes be justified.

Science is only one of many factors and interests that a thoughtful politician needs to weigh when choosing a position on a complex topic. If science sometimes loses out to concerns about employment or economics, scientists should not immediately take it as a personal slight. Rather, it is a reason to look for common ground on which to discuss the concerns and work out how science can help: creating jobs in green energy, for instance, or revamping wasteful grant programmes.

Of course, corruption and conflicts of interest can frequently motivate political decisions as well, and researchers and others should not hesitate to highlight them. But name-calling and portraying the current political climate as a war between facts and ignorance simply sows division. If scientists are feeling threatened by budget cuts and real anti-science rhetoric, they should look for all the help and support they can get. ■

Yes, but ...

Brainstorming is of dubious value in discussions of scientific issues.

The idea was simple. Strapped for cash and searching for ways to persuade funders to be more generous, one Italian scientist had a brainwave. Why couldn't researchers trade their old microscopes for cash? The car company Fiat, after all, ran a scheme that paid owners to relinquish ten-year-old models, with the amount of compensation matched by the government.

History suggests the microscope idea went nowhere. It was quickly dismissed as unworkable. Indeed, it survives only because it is mentioned in *The Lancet* in a brief write-up of a 1997 meeting, described as a brainstorm on European Union research funding.

That makes it unusual, because unused suggestions that emerge in brainstorming sessions tend not to even leave the room. They lie forgotten, scrawled on pink sticky notes on walls and flip charts in corporate headquarters everywhere. And they have done since the concept of the brainstorm was popularized in the 1950s as a way of freeing the creativity of a group.

No idea generated, the brainstorming rules insist, is a bad idea. But what if that itself is a bad idea? In a Comment article published this week in *Nature Human Behaviour*, the organizational psychologist David Burkus argues that brainstorming sessions stifle, rather than unleash, solutions (D. Burkus *Nature Hum. Behav.* <http://doi.org/b6t6>; 2017). It's not a new suggestion. Indeed, Burkus draws on research published more than a decade ago to help make his case that immediate criticism helps, rather than hinders, creativity. But it comes at a valuable and pertinent time: a time when the intellectual free-for-all of the brainstorm is leaking noticeably more and more into public and political discussions of scientific issues.

The Wellcome Trust, for example, is concerned that "something

seems amiss". The UK-based biomedical funder last week launched a project to investigate the perceived "pushback in society on 'experts'" and whether this hinders the environment for research. Also last week, *The New York Times* was heavily criticized by climate scientists and others after its new conservative columnist Bret Stephens shared his (predictably negative and depressingly tired) opinion on the robustness of data and models used to assess global warming.

The newspaper offered a defence that sounds awfully like the instructions issued by the moderator of a corporate brainstorming session: it's an idea and one just as valid as yours. Shouldn't we hear all opinions? Please don't respond with 'Yes, but'. Say 'Yes, and ...'.

Yes, but. As has been pointed out many times before, although everyone is entitled to their own view, it is not unreasonable to judge (and to expect responsible media to choose to highlight) opinions that rest on documented evidence — concerning, for example, climate change, childhood vaccinations, evolution — as carrying more weight than those merely perched on top of other opinions.

An intellectual brainstorm is no way to respond to the legitimate concerns thrown up by the shifting political sands of today, and an uncertain place for science and reason. Because it is not a lack of creative thought that threatens at present, it is more an unwillingness to seek and agree common ground and then build on it. That is a difficult job, but one — as *Nature* has said before — that more scientists must embrace, by reaching out to communities and engaging with the issues they raise.

Science is a creative process, and the free expression of ideas is a vital component. But so, too, is the robust (and expert) criticism of those ideas, and the rejection of ideas that fail. In his piece, Burkus presents a telling statistic about the role of the devil's advocate in the Roman Catholic Church's process of beatification. This individual was instructed to criticize, to say 'yes, but', and to present all the reasons why someone should not be sainted. From 1587 until 1983, when the practice was abolished, just 98 people were canonized. From 1983 until today, the number is more than five times greater. ■