President's column

In early August, an internal communication at the National Institute of Water and Atmospheric Research (NIWA), sent out by the Executive Team, made serious claims about the New Zealand Association of Scientists. These claims, subsequently reported by Radio New Zealand, strongly misrepresent the position that this Association has taken, going so far as to claim that we are 'an organisation that actively lobbies against science and the integrity of scientists'.[1]

There are two aspects to this claim: the first is that, by discussing constraints on the ability of scientists to speak publicly – that *scientists in many organisations are being prevented from talking about the science they undertake* – we are impugning the integrity of scientists. The second is that we have suggested *that science being done on a commercial basis is somehow not credible, or is biased.* I would like to take this opportunity to refute the way in which the Executive Team at NIWA have misrepresented our position on these two points, in the hope of clarifying the key issues at stake in an important conversation.

Firstly, in conducting a survey of scientists in which we invited them to share their concerns and experiences, we were explicitly aiming to defend the integrity of individual scientists. Our survey was conducted in response to claims that a Code of Public Engagement was needed to prevent scientists from 'straying into advocacy rather than sticking to their expertise'.[2] We were keen to draw attention to the current Code of Professional Standards and Ethics of the Royal Society of New Zealand[3], as it covers these issues quite thoroughly, and indeed our survey showed that the majority of New Zealand scientists who responded to our survey consider that it applies to them and their work, whether or not they are bound by it as members of the Royal Society. There is no sense at all in which I can see that our survey casts aspersions on the integrity of scientists; indeed, I think it shows quite the opposite. Scientists in New Zealand are concerned about ethical issues and take them seriously.

The subsequent implication – attested to in many survey comments – that commercial relationships and sensitivities might be a reason for scientists feeling unable to speak publicly on controversial topics, in no way suggests that scientists are behaving unethically, either. To quote from the RSNZ Code (8.1.2): *When a member undertakes work for employers or other purchasers, the interests of these clients normally take priority over other interests but always within the limits imposed by law, by this Code, by accepted ethical standards and by the public interest.* Or in (8.1.3(d)): *A member must encourage employers and other clients to permit public disclosure of their results unless there are legitimate and lawful reasons for confidentiality but, nevertheless, always respecting that confidentiality when it is legitimately required by the employer or client.* The consideration of legitimacy in this clause suggests that ethical behaviour requires reflection on when confidentiality is justified. There is nothing unethical in the consideration of these concerns; indeed, quite the opposite.

The second claim made by NIWA is that we have argued against commercially funded science as being biased. I certainly have discussed biases in science on more than one occasion, but I think that this misunderstanding stems from conflating some of those comments with the concerns about commercial contracts requiring confidentiality, as discussed above. Certainly there is no sense in which we consider that companies should not be contracting scientists to inform their decisions: it is hard to imagine any scenario in which companies would be making better decisions in the absence of scientific expertise!

However, it is clear that there can be valid concerns, or simply scepticism, about the validity of scientific research paid for by companies. This is perhaps best illustrated by a counter-example, that of the Danish Dairy Research Foundation, which funded a study investigating the effect of butter on blood cholesterol. The paper, published in the *American Journal of Clinical Nutrition,* found that butter is worse for you than alternatives such as olive oil. This unsurprising result earned itself a surprising amount of media attention[4] because it was an industry-funded study that had actually been published despite being unfavourable to the industry that funded it.

The question that needs to be asked, though, is whether this is so different from the situation of any other individual scientific study. There has been a lot written, for example, about the difficulty that scientists have in publishing negative results that do not demonstrate the effect that researchers were looking for, and that this amounts to a bias in the scientific literature. In particular, it can be more difficult to correct the scientific record if a false positive has been published, due to this bias against negative results. Biases such as these do distort science. We do science a disservice by ignoring them; awareness is the pre-requisite to managing bias.

Neither an industry-funded study on the nutritional properties of butter, nor a report by researchers looking for new physics beyond the Standard Model, can be considered completely 'bias-free'. Studies become scientific only when they are placed in the context of the scientific literature; that includes both those articles published prior, and those that come about through subsequent work. Science may aspire to describe objective reality, but it does so through teamwork: through peer review and an insistence on reproducibility. This is why, as much as the RSNZ Code requires that members *strive to be fair and unbiased in all aspects of their research* (2.1.2(b)), it also requires that they *accept that researchers working on different approaches to a problem may reach different but supportable conclusions within the context of their own research; and acknowledge that in some instances and in some areas of research their own values may impinge on the way they approach a problem and that different values and paradigms may also have validity* (6.1.2 (d-e)).

Declaring conflicts of interest is the only way to manage them; there is nothing inherently unethical about having a conflict of interest – only in concealing it. There is nothing inherently unethical in the biases that exist in scientific funding, for example through the increased involvement of end-users in determining where government funding of science is directed. Acknowledging that bias is, however, a pre-requisite for those involved in strategic decision making about the proper balance of science funding in New Zealand.

Nicola Gaston
President NZAS

[1] http://www.radionz.co.nz/news/national/282618/association-of-scientists-says-niwa-claims-ironic
[2] http://www.radionz.co.nz/news/national/255991/fears-proposed-code-could-gag-science
[3] http://www.royalsociety.org.nz/organisation/about/code/#1-1-introduction
[4] http://www.washingtonpost.com/news/wonkblog/wp/2015/08/07/the-butter-industry-probably-regrets-paying-for-this-study-that-shows-butter-is-bad-for-you/