

Thabo Mbeki, HIV/AIDS and bogus scientific controversies

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Martin Weinel writes on the dangerous consequences of political meddling in science

Almost every day governments around the world have to make political decisions that depend on scientific or technical knowledge. Where and how to store nuclear waste? How to respond to global climate change? Should a particular medicine be made freely available to the whole population or should its use be highly restricted or even banned? These and countless other 'science policy decisions' show that policy making is highly dependent on scientific knowledge.

The difficulty, however, is knowing how much weight to give to scientific knowledge. In some cases this appears straightforward. For example, there is a scientific consensus that prolonged exposure to high doses of radiation from nuclear waste is lethal for human beings. Thus, if somebody suggests storing nuclear waste in cardboard boxes in down-town Johannesburg, the suggestion would be immediately rejected based on our knowledge of the effects of radiation. In other cases, particularly those where people with specialist knowledge - i.e. the experts - disagree about scientific issues it is not so easy.

For example, there is disagreement between experts about whether cross-fertilisation between genetically modified crops (GM crops) and unmodified crops represents a real risk and if it does, which measures are most suited to prevent cross-fertilisation. As such, although no-one can point to conclusive scientific evidence that shows cross-fertilisation will occur, critics of GM crops can point to the uncertainties behind the claims of GM proponents and by doing so urge policy-makers to adopt a precautionary approach.

Put another way, it seems that a scientific consensus should constrain policy makers more tightly than a scientific controversy. In the case of radioactive waste, the scientific consensus means that, if it has to be stored, then it should be stored in containers that reduce the emission of radiation as far as possible and in places that offer protection from radiation should the containers be damaged. This is not to say these constraints fully determine the policy but to acknowledge that they do set some limits within which policy makers must work. For example, while safe storage might be theoretically feasible, policy-makers might choose to abstain from using nuclear power altogether.

If there is no consensus amongst the experts then the effect of scientific knowledge is less powerful and political judgement more important. If it is unclear whether genetically modified crops do cross-fertilise with unmodified plants then a decision to introduce GM crops carries an unknown risk of affecting bio-diversity. Policy makers

can either choose to accept this risk, perhaps pointing to some other benefits, or they can decide not to allow GM crops to be planted. Both positions fit with at least some of the available evidence and, because both sides in the argument have at least some scientific credibility, neither puts a binding constraint on the policy debate.

The observation that scientific controversies create a space that scientific consensus effectively closes down has not been lost on political strategists, campaigners and lobby groups. During his presidency, George W. Bush famously abstained from acting on climate change by referring to a controversy among scientists about the causal role of humans. Frank Luntz, a Republican pollster, made the rationale behind this stance explicit when he was quoted in an [editorial](#) of the *New York Times* on 15 March 2003:

'Should the public come to believe that the scientific issues are settled', he [Luntz] writes, 'their views about global warming will change accordingly. Therefore, you need to continue to make the lack of scientific certainty a primary issue.'

The question is whether or not the Bush administration was correct to invoke scientific uncertainty in this way. If there is a *genuine scientific controversy* then allowing a greater role for political judgements is the correct way to proceed. But what if there is a consensus within the scientific community and the policy makers create the impression of a controversy in order to delay or avoid a decision. In this case, it would seem odd to allow such an *inauthentic scientific controversy* to have a powerful effect on policy.

But how can we tell whether a controversy is authentic or not? If we define a *genuine controversy* as one that the relevant scientific community would accept as real then an *inauthentic scientific controversy* is one in which the degree of publicly invoked disagreement does not represent genuine uncertainty within the community of relevant experts. In the case of global climate change, we can see that even though science of global climate change is beset with many uncertainties, the International Panel on Climate Change (IPCC) - probably the most authoritative and representative expert institution on question of climate change - has unequivocally endorsed the view that human use of fossil fuels is at least partly to blame for the change in climate patterns that is observable around the globe. This is not to say that what these experts say is true or right - they might be wrong - but their advice is the best scientific advice that we got on this matter and that, at this moment, it tells us that anthropogenic climate change is happening. Politicians should take this into account in deciding on their actions.

Another example of such an 'inauthentic scientific controversy', although arguably less strategically inspired, was observable in South Africa a few years ago: the 'controversy' about the safety of AZT when used to reduce the risk of mother-to-child transmission of HIV. On 28 October 1999, President Thabo Mbeki [told the members](#) of the National Council of Provinces:

Two matters in this regard [the demand to make AZT available in the public health service] have been brought to our attention.

One of these is that there are legal cases pending in this country, the United Kingdom and the United States against AZT on the basis that this drug is harmful to health.

There also exists a large volume of scientific literature alleging that, among other things, the toxicity of this drug is such that it is in fact a danger to health. These are matters of great concern to the Government as it would be irresponsible for us not to heed the dire warnings which medical researchers have been making.

I have therefore asked the Minister of Health, as a matter of urgency, to go into all these matters so that, to the extent that is possible, we ourselves, including our country's medical authorities, are certain of where the truth lies.

To understand this matter better, I would urge the Honourable Members of the National Council to access the huge volume of literature on this matter available on the Internet, so that all of us can approach this issue from the same base of information.

Apparently the first argument, related to pending legal cases, turned out to be wrong. But President Mbeki obviously did not believe that this was a strong argument in any case as he only mentioned it briefly and it never appeared again in his public speeches. The second argument is much more elaborated and represented one of government's main arguments against the introduction of AZT (or Nevirapine for that matter as the Minister of Health, Tshabalala-Msimang, would tell Parliament in a statement on 16 November 1999). In this case, the idea of a scientific controversy is invoked when President Mbeki claims that 'a large volume of scientific literature' exists which alleges that AZT is so toxic that it is a 'danger to health' and not, as one of its proponents [put it](#), a 'medicine from heaven'. The contributors to this body of literature were apparently 'medical researchers'.

Identifying this as an inauthentic controversy requires more work but can be done. The initial problem is that President Mbeki is acting, so it seems, merely as a journalist: he just reports or describes what some medical researchers are saying in order to bring it to the attention of the government and the medical authorities in South Africa.

The reason why this also counts as an inauthentic scientific controversy is that President Mbeki is not, in fact, acting as a reporter; instead, he acts as a creator of the controversy. The revealing statement is found in the last paragraph of the above quote when the President urges the Members of the National Council to lift themselves up to the same level of understanding by 'accessing' - and presumably reading - the 'large volume of literature on this matter on the Internet' for themselves. Whether Mbeki really found the literature he was referring to on the internet - as is often assumed - or whether it was [given to him](#) by people such as Anthony Brink, Anita Allen or Zigi Visser does not

really matter. What matters is that the President's knowledge about AZT comes not from the scientific community itself but from *reading* the scientific literature. By forming a judgement on AZT, he has to rely on his own expertise on the matter, which is insufficient, as I will argue below.

President Mbeki confirmed that he was reading the scientific literature on his own in the welcome speech to members of the *Presidential Advisory Panel on AIDS* in May 2000 when he [reflected](#) on how he started to immerse himself into the scientific literature (which he probably did wholeheartedly only after his speech in late October):

[...] I faced this difficult problem of reading all these complicated things that you scientists write about, in this language I don't understand. So I ploughed through lots and lots of documentation, with dictionaries all around me in case there were words that seemed difficult to understand. I would phone the Minister of Health [who holds a couple of degrees in health-related disciplines] and say, 'Minister, what does this word mean?' And she would explain.

So what exactly is the problem with accessing scientific literature on your own and reading it? While President Mbeki's effort to read scientific literature himself is admirable, the decisive question is how reliable are the conclusions that can be reached solely from reading the academic literature.

Perhaps surprisingly, it is entirely wrong to assume reading alone can give you enough specialist knowledge - expertise - to intervene on a scientific matter. The problem is not so much to understand the content of scientific papers: well written scientific papers can be unexpectedly accessible and simply reading the abstract might sometimes be enough for even the uninitiated to gain a rough but sufficient understanding of what the paper is about.

The real problems start, however, when it comes to judging the credibility of a paper and its relative importance to a scientific field. While to the outsider journal articles and books - written material in short - might seem to embody the essence of science, science is predominantly an oral culture. The publication of results is important but it is only the first hurdle. Having them read and believed is even more important but this attribution of credibility and importance is much harder to outsiders to pick up as it takes place in the personal encounters between scientists at conferences, workshops and other meetings.

Other markers of credibility, which do not necessary involve face-to-face contact, but which nevertheless presuppose familiarity with the field, include the prestige of a lab, a research group or institution, the standing and reputation of the co-authors and the methodological assumptions and techniques that are conventionally used in different settings.

In short, to know which papers and results to trust and to judge their relative importance in a scientific field, one needs to immerse oneself into the 'culture' of a particular scientific community. Without immersion an isolated reader simply lacks the necessary, often tacit, knowledge needed to know what to read and whom to trust.

In the case of AZT, President Mbeki never immersed himself in the community of experts on anti-retroviral drugs and prevention of mother-to-child transmission of HIV. Instead he assumed that reading alone gave him enough expertise to declare AZT a 'danger to health'. President Mbeki created an inauthentic scientific controversy by referring to the 'warnings of medical researchers' as this gave the impression that a scientific controversy about the safety of AZT was ongoing and that no scientific consensus constrained the policy options of the government.

While any positive claim can be challenged if enough effort is made, it remains that for all practical purposes it was a 'certainty' in 1999 (and is still one today) that the benefits of anti-retrovirals in their use to prevent mother-to-child transmission largely outweighed the existent risks. By relying on the reading of scientific literature to make a judgement about AZT's safety, President Mbeki made a mistake.

Had the President done what politicians usually do when they are confronted with technical matters that are well beyond their own expertise -seeking the advice of experts on the matter - he would have discovered at least two things. First, he would have learned that the vast majority of scientists with expertise on AZT and other anti-retroviral drugs shared the view that the benefits of anti-retroviral drugs largely outweigh the risks when it comes to the prevention of mother-to-child transmission.

In this regard, the composition of Presidential Advisory Panel on AIDS, which was established in May 2000, did not even approximately reflect the opinion within the scientific community. As a leading South African scientist told me last year:

Out of the 33 people on the panel about 16 of them were dissidents [people who do not believe that HIV causes AIDS and/or that anti-retroviral drugs have some therapeutic effect], which is about the sum-total, the grand sample of dissidence, this is the census, and then the 16 scientists were a small sample from across the globe.

Second, had President Mbeki asked experts directly he would also have learned more about those he had apparently chosen to trust as reflected, again, by the composition of the AIDS Advisory Panel. He would have learned, for example, that they not only represented a very tiny minority as the above quote shows, but also that some of them had hardly any direct expertise of anti-retrovirals or HIV/AIDS. He would also have learnt that their credibility within the expert community was very low and that this was not because the scientific mainstream feared their theories like the church feared the theories of Galileo, but rather because their theories had been shown to be wrong on many occasions.

The consequences of Mbeki's mistake were grave. By creating an 'inauthentic scientific controversy' and delaying the introduction of a widely supported policy, Mbeki's actions have led, according to recent estimates, to the unnecessary infection of about 35,000 babies with HIV in South Africa between 2000 and 2005 (Chigwedere et al. 2008, see also Natrass 2008).

This shows that inauthentic scientific controversies can have devastating effects. It is for this reason, if not other, that recognising such controversies and preventing them from influencing policy-making matters.

Bibliography

Chigwedere, Pride *et al.* (2008) '[Estimating the lost benefits of antiretroviral drug use in South Africa](#)', *Journal of Acquired Immune Deficit Syndrome* 49(4): 410-415. < >

Natrass, Nicoli (2008) '[AIDS and the scientific governance of medicine in post-apartheid South Africa](#)', *African Affairs* 107(427): 157-176.