BBC Horizon's "Science under attack" – Screened on BBC2 9pm Monday 24 January 2011

In this programme from BBC's Horizon team, the incoming President of the Royal Society, Sir Paul Nurse, offers a vigorous defence of the trustworthiness of science. He also reveals an exalted view of the normative authority of science: both in the world of political decision-making (e.g. the cases of climate change and GM crops which the programme selects) and in the private lives of citizens. I suggest that he betrays an underlying adherence both to the linear view that science should drive policy-making and, to a lesser extent, to the deficit model of science communication.

With regard to the relationship between science and policy he regrets that "science is not the only voice that is listened to" when making decisions about climate change. Yet contrary to what Nurse implies it takes much more than trust in science to "make those choices [about climate change] wisely". Wise choices in an open democracy require scientific evidence and reasoning to work alongside other forms of evidence and reasoning - political preferences, public ethics, cultural biases, etc. – and in the processes scientific knowledge will lose 'purity'. Trustworthy science alone is not sufficient for making democracies work well: there are multiple forms of scientific and political representation that a stable society needs, not a simple unmediated speaking of truth to power. I therefore wonder what exactly Nurse means when he seeks to safeguard the "the proper impact of science on society"?

His position on the relationship between science and public understanding is perhaps slightly more nuanced. On the one hand he recognises a failure of scientists to listen carefully to, and seek to understand, public attitudes to science – i.e., a failure by scientists to take public risk perception seriously. Yet on the other hand he bemoans the "unreasonableness" of the blogs and regrets that we live in a society in which "point of view not peer review holds sway". And taking the public seriously means recognising that there are a range of legitimate positions in which the risks of GM crops (or climate change) are weighed differently, each of which may lead to different forms of action and policy. As Nurse agrees in the case of the HIV-AIDS contrarian, "you <u>can</u> have a conversation" with sceptical publics. In fact with a careful framing and public representation of what Professor Andy Stirling has called 'plural and conditional' science, you <u>can</u> have constructive conversations with all members of the public.

In relation to knowledge production and science communication Nurse says "we need to focus on science, keeping politics out of the way". Such a pure separation between science and politics is unobtainable. He should instead be calling for a more mature reflection by scientists about the forms and effects of these entanglements and a more honest disclosure by scientists of their value positions when communicating publicly about tricky issues like climate change and GM. Trust is crucial to science as he correctly points out, but he does not explore sufficiently the different ways trust in science and scientists is gained and lost. There are lots of sociologists of science who study and understand this for him to call upon.

A final point is that I do not recognise his claim that "climate science is reducing uncertainty all the time". There remain intractable uncertainties about future predictions of climate change. Whilst Nurse distinguishes between uncertainty arising from incomplete understanding and that arising from irreducible stochastic uncertainty, he gives the impression that all probabilistic knowledge is of

the latter kind (e.g. his quote of average rates of success for cancer treatments). In fact with climate change, most of the uncertainty about the future that is expressed in probabilistic terms (e.g. the IPCC) is Bayesian in nature. Bayesian probabilities are of a fundamentally different kind to those quoted in his example. And when defending consensus in climate science – which he clearly does - he should have explained clearly the role of Bayesian (subjective) expert knowledge in forming such consensus.

Mike Hulme, 24 January 2011