

# Too little science, or too much?

Tracey Brown weighs up the evidence

We're all evidence-based now. Evidence is everywhere, thrust under our noses in support of the latest action to reduce anti-social behaviour, to reduce recidivism among prisoners on parole or introduce the HPV vaccine for girls in secondary schools.

I recently looked at references to evidence in government statements over the previous year. When I got to over 500, I stopped counting. Now shouldn't we all be happy and fetching our coats? Not quite.

## Wading through treacle

We might have a big debate about what that evidence is and how it is derived. Indeed, those of us insisting on the use of high quality, scientific evidence have had to wade through treacle, despite all the lip service to that since the Phillips Report into the BSE crisis.

While there has been recognition of the role that evidence should play in public affairs, we have seen during those same years consultations, reports, policy announcements, and Bills that make little distinction between doubtful, self-published research results or conjecture and large-scale, controlled studies. The biggest problem in the use of science in policy seems to have been judging significance and quality rather than recognising the need to look at evidence per se.

## Struggles ending

But efforts are underway to change all that. There is cross-cutting activity to review use of research and analysis in government.<sup>1</sup> The National School of Government is now running a course for senior civil servants on the analysis and use of evidence.

The Commons Innovation, Universities, Science and Skills Committee are on the case too.<sup>2</sup> So perhaps this will end the tortuous

definition struggles ('we can say that evidence is any information that Defra can use to turn its policy goals into something concrete [and] manageable') of some government departments.

## Magic policy potion

Nor should we lose sight of the risk that scientific evidence may be seen as a magic policy potion. Rub it on and people who object to your idea won't have a leg to stand on! You will be powerless to resist my demands to give up smoking/save the polar bear/fluoridate the water supply.

Scientists themselves are often not as careful as they should be in endorsing policy extrapolations from their work. They're entitled to do that, but as pundits like anyone else.

There seems to have been a worrying rise in the idea that science could do the work of policy and argument. There we've been, chuntering on about evidence, and consequently promoting the idea that scientific evidence carries more weight than political and social arguments.

## Worthless evidence

This is dangerous stuff. If we move towards evidence-based everything, where there seems to be no room for people to debate or dissent because the evidence tells them how it must be (though they may have been consulted in the 'evidence gathering stage' of course) scientific evidence will become so political as to be worthless.

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This can only promote an atmosphere in which policy makers and campaigners see themselves as 'commissioning evidence' rather than 'commissioning research'. (We may have had an experience of that at the end of 2008 when the government decided to ignore the conclusions of its advisory committee on the misuse of drugs.)

Misguided and cynical usage is likely to empty the term 'evidence-based' of any meaning and authority. It's hard to discuss the idea of sound policy and the problems of particular unsound science claims without mentioning 'evidence-based', but I know that every time I'm using it I'm wincing that bit more. On health, safety, environment, education, crime, the evidence never says it all.

1 Analysis and Use of Evidence: Research and Analysis in Government, PU565 July 2008

2 IUSS Committee Third Report 20 January 2009



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# Shining a light on engineering

Phil Willis on a critical profession

The new Commons Innovation, Universities, Science and Skills (IUSS) Committee is holding an inquiry called *Putting science and engineering at the heart of government policy*.

The state of engineering in the UK was the committee's unanimous choice for its first major enquiry. Engineering was chosen primarily because it is critical to every aspect of government policy both nationally and internationally. It is engineers who turn ideas into products and services, and it is engineers who make innovation reality.

## Huge demand

Over the next ten to fifteen years the UK will need tens of thousands of engineers for programmes such as the London 2012 Olympics; Crossrail; new nuclear power stations; renewable energy installations; and Building Schools for the Future. The opportunities go much further with new engineering disciplines in telecommunications, bioinformatics, genomics, logistics and systems deployment emerging regularly, not to mention of course areas like Formula 1, satellite technology and robotics where the UK leads the world in engineering.

So why does the engineering community feel ignored and often devalued? Why do so few young people see engineering as their future career? Since 1997, the number of registered engineers has fallen by eight per cent and, despite a 33 per cent increase in the number of undergraduates, there has been a mere four per cent increase in those studying engineering – with an actual decline in UK-domiciled students.

My committee recognised that the recruitment of top nuclear or space engineers will inevitably come from an international pool, because many projects are themselves international. However, if the UK cannot provide

talent into that pool, we will find it more difficult to be an intelligent customer and potentially place ourselves at risk at times of high demand. Crucially if we do not recapture the essential magic of engineering, our ability to utilise fully the rich seams of intellectual capital that flow from our research base will be seriously impaired.

## Image problem

The fightback starts from a recognition that engineering not only has a recruitment and retention problem but a serious image problem too.

Ask a group of 15 year-olds to name a great engineer, and they may well mention Isambard Kingdom Brunel, but not his current equivalent Norman Haste, the engineer behind the remarkable Severn Bridge. Or Dervilla Mitchell, the exceptional female engineer who led the team that built the roof for Heathrow Terminal 5, the largest free standing building in Britain. Lewis Hamilton may well be World F1 Champion, but how many young people realise that his success was only possible because of the engineering brilliance of Ron Dennis?

To make engineering relevant to young people, engineers must stop hiding their success and instead shout their brilliance from the roof tops.

Indeed the image of engineering is hardly assisted by the 60 plus institutes, societies and professional associations which, no matter how worthy, present engineering as of another era. To be fair, this problem is being addressed with real leadership from the Royal Academy of Engineering and the

indefatigable efforts of Sir Anthony Cleaver, Chairman of the Engineering and Technology Board. However, greater co-ordinated action is still needed.

Nowhere is this more pertinent than in government, where even the mention of 'engineering' appears problematic. The Government Chief Scientific Adviser is in fact the head of the 'scientific and engineering' profession in government – yet there seems to be little emphasis on the role of the engineer in government.

## Bright light

Perhaps the time has come for the engineer to take his and her rightful place at the centre of our society? Certainly the IUSS Committee intends to shine a very bright light on engineering in our report. It is then for others to keep the power supply on.

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