News, Comment and Reviews

REVIEW

The Geek Manifesto. Why Science Matters by Mark Henderson. Bantam Press, 2012

David Elliman

In his book, Mark Henderson explains "how and why politics lets science down and fails to exploit its powerful approach to evidence in pursuit of effective policy" and makes suggestion to rectify this. Unfortunately, this issue is not new, being central to the writings of the author and scientist C. P. Snow over 50 years ago, in his pithy observations of the two very different cultures. While the specialist knowledge base of many sciences is important in much political decision making, it is the scientific method per se to which Henderson refers. The ability to formulate a hypothesis, to testing and then reformulate it as a result of that testing, even if means abandoning it, is central to science. All this has to be done transparently, so that others can scrutinise it and draw their own conclusions. Mark Henderson argues this methodology should be brought to bear in many aspects of life, including politics, government, the media, the economy, education, court and healthcare and devotes a chapter to each, giving examples of how we ignore it at our peril. . Sadly he notes that of 650 MPs, 158 have a background in business, 90 are political advisers or the like, 86 are lawyers and 38 journalists or publishers. Few are science graduates. (I am somewhat saddened that he doesn't mention the number of doctors, as they do have a scientific training!)

Many government departments now have scientific advisers, but their independence and the notice taken of them is variable. There is still a tendency to seek policy based evidence, rather than evidence based policy and if the advice does not fit in with preconceptions, further advice will be sought until it does. The absence of proposed legislation on minimal alcohol pricing and plain packaging of cigarettes from the Queen's speech has nothing to do with evidence, but more to do with industry lobbying. When the House of Commons Committee on Science and Technology recommended that homeopathy should not be supported by the NHS, the government response was 'interesting' – *"We agree with many of the Committee's conclusions and recommendations. However, our continued position on the use of homeopathy within the NHS is that the local NHS and clinicians, rather than Whitehall, are best placed to make decisions on what treatment is appropriate for their patients - including complementary or alternative treatments such as homeopathy - and provide accordingly for those treatments."*

Like politicians, the lay public have little concept of the critical analysis of information. Unfortunately the media does not always facilitate understanding and a desire to maintain balance, which is interpreted as meaning giving equal weight to opposing views, whatever the strength of evidence, can give a very misleading impression. This was certainly a factor in the MMR scare and even worse, a journalist recently told me that she has no responsibility to

put things in context, but to write a good story. Fortunately this is not the view of most responsible journalists!

Education is fundamental to so many aspects of life that one would think this is an area which might be given priority, in the sense that educational methods should be tried and tested before becoming the norm. However, Henderson points out that this is far from the case. There is little attempt to perform rigorous trials. Even when these are attempted, as with the "Every Child a Reader" programme, there was no randomisation and the trial was terminated after the first year (it was planned to last for three years) and rolled out nationally. It was argued that a rigorous trial would have been too expensive and it would have been difficult to recruit schools. It is generally accepted that we carefully test drugs before they are introduced, yet that is not so for how we educate our children.

Henderson urges scientists ('geeks') to stand up and be counted, both to influence politicians and to counter irresponsible media stories. If more had done when the MMR scare was brewing, we might not have been in the current situation where, at the time of writing, Wales is in the grip of the largest outbreak of measles in over 20 years, with over 1,000 reported cases and healthcare professionals in England are embarking on a campaign to immunise about a million under-immunised school age children against measles with the MMR vaccine.

There is hope. In the recent US budget, the Obama administration stated its intention to look at ways of implementing evidence-based decision making. Nearer home, the doctor and journalist, Ben Goldacre was commissioned to write a report for the Secretary of State for education on how to introduce more evidence-based practice into education, an area renowned for being evidence free. Perhaps the 3 Rs could be expanded to reading, 'riting, 'rithmetic and reasoning, with the latter being taught as part of science?

I strongly suggest that you read this interesting and enjoyable book.

David Elliman
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COMMENT

An Inherent Complication in Assessing Tests of Scientific Hypotheses
Larry Brownstein

The testing of scientific hypotheses is not as straightforward as it often looks and perhaps contributes to the fact that many politicians do not pay as much attention to the character and context of scientific evidence as they should.

Most of us are familiar with the probabilistic character of many scientific hypotheses and the ways in which these can affect the testing scenarios. But what is not as well-known is a strategy for "saving the hypothesis" that is independent of probabilistic considerations. This strategy makes the testing of scientific hypotheses more complicated than Karl Popper and others thought it was.