

## Invited Lecture

## ‘We’ve had enough of experts’: the enduring charm of quackery†

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## Introduction

The Schorstein Lecture was proposed in the letters pages of the BMJ in 1907 to perpetuate the memory of the late Dr Schorstein, and was to be an “advanced course of lectures in clinical medicine” given by “a physician”. Well, I am a doctor – indeed a professor and a Fellow of the Royal College of Physicians. But alas, not a real one. Since I’m going to be discussing quackery, I need to be clear I am an *honorary* Fellow, a *visiting* professor. In short, I fail the Schorstein criteria on two counts out of two.

I hope I can get away with that because I’ve been asked to address the question of how the scientific community relates to the broader context of society. My interest is the boundary between easy thinking – fast, intuitive, barely conscious and which leads to quackery, prejudice, populism – and the stuff you have to work at: slow, calculating, conscious, which leads to science, maths, evidence and, above all, accepting contra-evidence (the stuff that challenges or undermines a truth you’ve long regarded as fundamental). It’s what Daniel Kahneman popularised in his book *Thinking Fast and Slow*<sup>1</sup> where he refers to the two types of thinking as System 1 and System 2.

Type 1 thinking is quick, a rule of thumb, accepting; it’s faith, it’s believing in a narrative: perhaps the literal truth of ancient scriptures – or for that matter, what you read in today’s newspaper. It fits snugly with your world-view of life. It avoids cognitive dissonance. It’s been neatly summed up in America by Donald Trump’s rejection of disagreeable information as ‘fake news’, or in the UK by Michael Gove’s infamous outburst: ‘We’ve had enough of experts’.

System 1 thinking leads me to think Michael Gove is a buffoon. Would he have had enough of experts if he needed surgery, or someone to do the maintenance on the next aircraft he’s to fly on? System 2 thinking leads me to doubt that someone of Michael Gove’s intelligence would really think such a thing. And it turns out he doesn’t.

In fact it turns out the phrase itself is a classic illustration of what one might call System 1 reporting: it was taken out of context. We all remember the juicy bits, not the other stuff.

What he actually said was in response to a comment that the leaders of the IFS, CBI, NHS and TUC all disagreed with him about Brexit. His reply was, people have, ‘had enough of experts from organisations with acronyms saying that they know what is best and getting it consistently wrong’.

This, of course, has a very different meaning. He’s right: economic forecasters have often got things wrong. It was just unfortunate phrasing ... because it invited a collective frenzy of Type 1 thinking.

† Given as the Schorstein Lecture on 18 October 2017.

And what is so fascinating, is how it caught on with the public. Brexit, of course, is a matter of faith. No one has conducted randomised trials of Britain in the EU and Britain outside it. No one has tested a hypothesis. It’s driven by ideology about national identity, not spreadsheets of economic formulae. Overnight Mr Gove became a champion of those who were pro-Brexit but didn’t bother with the details. Arguments about who will do pharmaceutical regulation, set engineering standards, the future of London’s financial services, the risks of inflation, skills shortages or reigniting problems in Northern Ireland, the lack of any other trade deals... all these could be consigned to the box marked “Fake news”, or “Had enough of experts”.

Of course the dedicated Remainers also resorted to Type 1 and concluded Michael Gove was beneath contempt.

## Medicine’s failures

What has intuitive thinking got to do with medicine? I think it explains the enduring power of quackery in so-called alternative medicine: the mumbo-jumbo like homeopathy, the new age salesmen like Vitabiotics who peddle pills without any credible evidence that their supplements do any measurable good for the health of the vast majority of people who buy them; or the outright fraudsters who claim to cure cancer with crystals or stem cells. It’s even better if you brand whatever you’re selling as reassuringly scientific. (The strapline for Vitabiotics is Science for Healthy Living.)

The gravitational pull of intuitive thinking is comforting and reassuring. You can cherry-pick your evidence, gloss over inconvenient facts. It’s the shortest route; it avoids a troublesome detour. It explains why many qualified doctors believe in this stuff.<sup>2</sup> It explains the strange world of psychobabble psychotherapy, and I’m afraid it explains quite a bit of counselling too for which there is precious little evidence-base that it does more good than harm.<sup>3–5</sup>

But it also explains why rotten and misguided ideas hang round the neck of conventional medicine for so long.

Even after Dr Schorstein’s death – well into the 20th century – patients in Britain were still being bled, as they had been in the dark ages. Textbooks were recommending bloodletting right up to the 1923 edition of Ostler’s *The Principles and Practice of Medicine*.<sup>6</sup>

In fact medicine has a pretty disgraceful record of Type 1 thinking. Voltaire wasn’t entirely joking when he described the art of the great physician as keeping the patient amused until she either got better or died. For 2,000 years doctors either stuck pins into sick people, or purged and bled them – and that’s if they were lucky. They tried trepanning, sulphuric acid, and any number of appalling bits of flimflam because they couldn’t shake off almost religious dogma about how the body worked.

In the east, of course, it was all about energy flows. If you were ill it was because your vitalism was disturbed as it flowed through a

network of invisible channels called meridians. Here in the west it was your temperaments that were disturbed: the four humours that had to be rebalanced.

These theories weren't entirely misguided. Sometimes they were based on anatomical studies, and sometimes they just got the arrow of causation the wrong way round. For example, it seemed obvious that the heart was the seat of emotion. If you were frightened or excited, your heartbeat went up. According to Galen the heart was the organ most closely associated with the soul.

It was clear by the 17<sup>th</sup> century that Galen may have got it wrong. In 1628 Harvey, whom we celebrate today, published his now legendary treatise, *On the Circulation of the Blood*. The rest of Galenic medicine looked increasingly shaky too.

Famously, around the 1640s, the Flemish scientist van Helmont challenged the medical establishment to take:

“200 or 500 poor people with fevers, pleurisy etc. and divide them in two: let us cast lots so that one half of them fall to me and the other half to you. I shall cure them without blood-letting, you will do so according to your knowledge, and we shall see how many funerals each of us will have. The outcome of the contest shall be the reward of 300 florins.”<sup>7</sup>

15 years later the Anglo-American chemist George Starkey made the same challenge in London, that he could cure more patients:

“without blood-letting, promiscuous purge or vomiting... without desiccation or cautery, without clyster (meaning enema) or suppository.”<sup>8</sup>

He too wanted what we'd now call a randomised trial.

So how come it took 300 years for medicine to become scientific? How come a medical journal this year (the *JRSM* 3 months ago) could note, with some legitimacy, that:

“medicine's conservatism, its reverence of authority and its still incomplete attachment to empirical observation and experimental lives on.”

I can vouch for that on a personal basis. I am president of Healthwatch (not the government quango but a small charity dedicated to evidence-based medicine). For the past 16 years we've held a competition for medical students and trainee nurses inviting them to uncover obvious flaws in statements or in experimental protocols. The quality over the years has varied but of those who try their hand at it (presumably those who think they know about experimental methods) roughly 60% get it wrong. Many student doctors and nurses – can't tell science from pseudoscience.

My worry is that they'll carry their naivety through the entirety of their professional career. Which means that medicine's conservatism, its reverence of authority and its still incomplete attachment to science will carry through to another generation. And since so much of medicine is about the rigour of science, and cautious management of uncertainty, I find that worrying.

What's more, if we still have professional clinicians who can't tell good evidence from bad (and almost half of them seem to prescribe the stuff)<sup>9</sup>, it's little wonder that so many of their patients believe in quackery and woo.

### Does the lack of evidence based medicine matter?

Does it matter? Should we care that some doctors can't make proper judgements from what they read in scientific journals? Is it important if at the fringes of medicine some clinicians dabble in a bit of flimflam? Does it matter that some parts of the NHS still pay for homeopathy, based on the idea that water has a memory? Does it matter that Victorian charlatanism is now a multibillion dollar

global industry, pushing pills like Vitabiotics onto the worried well? (You can tell how much I'm a fan of Vitabiotics – their science, at least their science of persuasion, helps them pocket £100 m a year from gullible consumers). Does it matter that two-thirds of the UK population believes in treatments for which systematic reviews conclude there is *no condition for which they are convincingly effective*?

I argue that it does. Firstly, because this is not just being peddled to the worried well, but to the worried sick. Second, because it's dishonest to lie to patients, dressing unproven remedies as cures. I'd say that's even true when you hope for a placebo effect. The only exceptions can be in ethically approved trials to which participants have given informed consent. If you propose surgery you should explain the potential complications and failure rate. Surely it's the same with acupuncture. Informed consent means the patient has a right to know not just that there's a slight chance of infection – but more importantly that mostly it doesn't work. Even in chronic pain, where there is some evidence of efficacy, the largest studies involving 18,000 patients have shown its effects are modest.<sup>10</sup> What's more the effects are the same even if the needles aren't placed on the so-called meridians.<sup>11</sup> So even if you're seeking a placebo effect, it is surely ethically questionable not to tell patients the truth.

Third because pseudoscience imposes pressures to provide cake and circuses rather than better clinical outcomes. The NHS is already trapped in the headlights of populism. The last thing rational priority-setting needs is succumbing to the 30% of the public who say reflexology (i.e. treating the body through the feet) should be free on the NHS.<sup>12</sup> Money spent on quackery is money siphoned off treatments that work.

Fourth because quackery is intrinsically damaging to rationality. Type 1 thinking is knee-jerk thinking. It requires little information and is prey to misinformation. It nourishes primitive thinking and prejudice. It is the enemy of informed democracy, let alone informed consent.

I know perfectly well that I'm tilting at windmills. I know that a love of quackery is woven deep into the human psyche. Type 1 is the basic way we think, the default decision-making process, the shortcut, by far the most cost-effective cognitive strategy, and – often – the only practical one.

If I hit my head on a wall it will hurt – for practical purposes the wall is solid. If you ask most people how radio signals get through the wall – and I've tried – you're likely to provoke blank faces. Life's too short to consider a wall as a vast empty canvass of nothingness populated by trillions of infinitesimally small atoms.

Similarly, consider our perceptual processes. We seek meaningful images in random Rorschach ink-blot tests. We love optical illusions – in fact we rely on an optical illusion of motion when we go to the movies and watch a series of still-frame photographs that we call a film. (We even try to believe the sometimes puerile story lines.)

We go through life approximating, and mostly it works. True there are problems of bias. In 2006 a friend of mine, the forensic psychologist Itiel Dror, sent fingerprints to 5 experts to eliminate them from a serious crime, and all 5 experts obliged. Some months later he sent them the same prints, this time seeking confirmation they came from the prime suspect. This time 4 of the 5 experts found a match. Even in science our preconceptions pose a fundamental danger.

The biggest risk comes once we've reached a decision. We're reluctant to undo it, to accept we're wrong. We all know we're subject to confirmation bias – but even so we're all still biased to believe we're right. You can call it *faith* if you admire it, dogma if you doubt it, superstition if you disagree with it, or prejudice if you oppose it. But essentially it's all the same way of thinking. Its prejudice if you're against Catholicism; its dogma if you think Catholicism's daft; its faith if you *are* a Catholic.

And if you instil a belief when someone’s young, that bias is likely – for good or ill – to persist for life. As someone (probably Aristotle) said, give me the child at 7 and I’ll give you the man. It works equally for prejudice and faith. A Protestant boy brought up on the Shankill Road in Belfast is likely to grow up to be a Protestant. And, if his parents are bigots, he’s also likely to be anti-Catholic. As the book of Jeremiah puts it: “The fathers have eaten sour grapes and the children’s teeth are set on edge.” Similarly a Brahmin girl in Calcutta will almost certainly grow up believing herself to be superior to other castes, and shunning the Untouchables. We like to think we have all chosen our outlook on life. Often our outlook on life has chosen us.

This is uncomfortable, even outrageous, to anyone who does have faith – the idea that belief, devotion, prayer, is a defence-mechanism, type 1 thinking taken to extreme, and tantamount to a superstition. But as Alan Sokol, the particle physicist, puts it ‘Faith is the pseudo justification that people trot out when they want to make claims without the necessary evidence’.<sup>13</sup> To believe in vague notions of god (or gods) is one thing. That requires no evidence. To believe in scriptures as the literal word of god is quite different; for where is the proof of authenticity; where, except in circular argument, is the evidence they represent the word of god? Similarly, to believe in ill-defined gods is one thing. But to bestow logical or testable powers to him/her/it/they is another. For example, to believe that any god is all-powerful is simply illogical since it is mutually contradictory; even god can’t create something which is too big to lift – or if he/she/it can, he/she/it can’t lift it.

I know I am now venturing where many say you shouldn’t. It’s conventional and convenient to say that science and religion occupy different realms; that they are not remotely comparable. But of course they are. Science goes to great lengths to avoid the very pitfalls that religion encourages. As Karl Popper pointed out, bias is the enemy of science and we must always be aware that unconsciously, intuitively, we prefer confirmation to falsification. We have a profound tendency to gather and process information selectively; to confirm a hypothesis or preconception by looking for evidence that would validate our expectations; and to reject or ignore evidence that could contradict our beliefs.

Since intuitive thinking leads to selective information, contextual bias and even tunnel vision, it’s a paradox that many scientists celebrate faith as though it was intrinsically something noble.

Science is where you put your treasured idea on a pedestal and try to knock it over. If you can’t, then you invite your friends and rivals to knock it down. Faith and prejudice are where you put your treasured idea on a pedestal and bow down before it. You disparage people who try to knock it over, you call them unbelievers or infidels, and in centuries past – and in some cultures today - you put them to death. 500 years ago, for saying what I’m saying today, I’d have been burned at the stake. In some parts of the world I still would be.

Why am I trespassing on hallowed ground? It is not to be controversial. On the contrary. It’s to help keep my own feet on the ground.

I’d like to think we could one day have a new Age of Reason where everyone is dispassionate and open-minded; where we’re all eternally open to new evidence. And where no-one takes intellectual short-cuts. But there is good reason for Type 1 thinking. There’s too much going on in the world for us to analyse it all. We simply have to take many things on faith. We buy newspapers that reinforce our existing stereotypes and switch channels if the TV says something offensive to our views. We buy brands that we trust rather than look up the evidence every time we make a purchase. And talking of *trust*, maybe that is the key that unlocks the reason for all this – the reason that faith – and prejudice – are so hard-wired; why they’re so valuable to humankind.

In his remarkable book *Sapiens*, a biography of our branch of our species, Yuval Noah Harari proposes that it is our Type 1 thinking – our prejudices – that make us so successful; that creates for us a unique

evolutionary advantage. Provided we share our prejudices – or faith (it doesn’t matter which) we form a bond. We’re all Sunni Muslim, or all Romans, or doctors, or socialists, or scientists, or racists; or we all believe that a US \$ has intrinsic value – even though it’s just a piece of paper. This shared vision creates a kinship. Whereas other apes are restricted to bands of a few dozen, we’ve learned to share visions and create trust with people we’ve never met before. We’re in the same team. Of course when that shared trust breaks down it can be nasty. That’s why civil wars tend to be the ugliest.

But is Harari right? Does our hard-wiring mean *homo sapiens* will always default to prejudice and faith; that science will always have an uphill struggle. Does it mean that prejudice and faith in society – and quackery in healthcare – are unassailable? Plainly they are not. And Harari himself is optimistic.

In his lifetime, and in mine, prejudice against women, homosexuals, Jews and black people has declined hugely. Incidentally, or maybe it’s coincidentally, so has faith in organised religion. More than half of Britons now say that for all intents and purposes they don’t believe in god.<sup>14</sup>

Maybe we will progress to a time when even Prince Charles will see that homeopathy is nonsense. At least one person thinks we’re nearly there. In his 30-part series for the BBC featuring religious artefacts from the British Museum, the museum’s former director, Neil McGregor, argues that Britain is the first society in history to operate without shared religious beliefs and rituals at its heart. Maybe he’s right. Maybe the reasoning of science really will displace the pseudo-thinking that leads to quackery. Maybe we can help the process by not teaching children science as a set of disciplines like chemistry and physics but as a robust way of checking evidence which is equally applicable to history or, one of my own pet subjects, security and crime prevention.

But I won’t hold my breath. Immanuel Kant was overly-pessimistic, but not entirely wrong, when he said: “Out of the crooked timber of humanity, no straight thing was ever made.”

Personally I’m sanguine. If you take the long view, the very long view, then I don’t think this is a zero-sum game. Steven Pinker is convincing in his bestseller, *The Better Angels of Our Nature*,<sup>15</sup> that over centuries and millennia humans have become less violent, more thoughtful, more tolerant of cognitive dissonance.

But at best its 2-steps forward, 1 step back.

I wish I could close by saying, don’t have nightmares- do sleep well. But in medicine, as in every other aspect of human existence, reason will always have to struggle with unreason. The power of the intellectual short-cut is too beguiling.

Humans, being human, will never be entirely immune to the enduring charm of quackery.

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