

PARADIGMS, PARADIGMS...

Philosopher Dr Martin Cohen is interviewed by Richard House, Ph.D.

During revolutions, scientists see new and different things when looking with familiar instruments in places they have looked before. It is rather as if the professional community had been suddenly transported to another planet where familiar objects are seen in a different light....

Thomas S. Kuhn

Richard House [RH]: Martin, it's always a great honour for me to be able to interview writers for whom I have great admiration – and your 2015 book *Paradigm Shift* is one of the most important books I've read in many years. I discovered Thomas Kuhn and Paul Feyerabend way back in the 1970s, and I'm thrilled that you've brought their vital work into the 21st century, and to a more popular audience. Can we start by you sharing something of your own intellectual and academic journey, and how you came to write this brilliant book?

Martin Cohen [MC]: First of all, let me sincerely say how much of a pleasure it is to talk to readers about the ideas in my books. Over the years, I've had quite a few exchanges – particularly about some of the more 'logical' philosophy problems. By contrast, what is called the 'philosophy of science' often gets eyes glazing over... It's certainly the poor relation in many university departments to 'pure philosophy' – let alone 'real science'!

But that's why looking at the foundations of science is so important. So much of what we think we know about the world comes from science – which is why scientific questions originally belonged to the philosophers. We think, for example, that we have pretty much unravelled the secrets both of the universe – and of our own minds and brains! We think we know what makes us fat, what drives the Earth's climate, what keeps economies ticking over. And, in recent months, we have been assured by scientists that they have the secrets of the control of viruses – things so tiny that for centuries their existence was denied by very respectable thinkers. Indeed, all of these things have at one time or another been hotly contested areas; and if we now think of them as 'settled', that only shows how limited a horizon our collective memory and imagination have.

So, to cut a long story short, Richard, my interest in scientific paradigms is in how an understanding of them can help us to understand questions and issues more deeply. Or, put another way, in how to see the world in new ways.

RH: I so agree with all this, Martin. Not least, I absolutely agree that 'looking at the foundations of science is so important' – and especially in the context of what you so

rightly say near the end of your book, that ‘no natural history can be interpreted in the absence of at least *some implicit body of intertwined theoretical and methodological belief*’ (p. 184, my italics). And yet fearlessly and systematically interrogating these ‘foundations’ rarely seems to happen in scientific practice! Speaking as a psychologist for a moment, there surely have to be deep (and perhaps unconscious) *psychological* reasons for this phenomenon (see the interview with Bruce Scott in this volume). We’ll certainly be considering this ‘neglected foundations’ question both in this interview and in the book. I’m also so glad you’ve immediately named the (sometimes) elephant in ‘*the science’s*’ room – viz. that (my words here) it’s sheer arrogance for scientists to imagine that we’ve even begun to understand reality and the cosmos in all its impossible complexity and wholeness (as John Horgan seems to be claiming, quoted on p. 176 of your book); and that you’ve also immediately named the current (largely uncontested) claim that ‘scientists... have the secrets of the control of viruses’. But more on these crucial issues later, I expect.

But now I’m really going to embarrass you, Martin. I’ve just re-read the Introduction to your *Paradigm Shift* book (pp. vii–x), and I have to say that this text of just four pages should be **required reading on every first-year university science and social science degree course**. In fact, in my view every first-year university degree programme should have a module constructed around this text. I’m deadly serious – and I speak as someone who senior-lectured in psychology and education studies departments for a decade until 2014 (and readers need to know that I’m not your dad, or your book agent! – indeed, we’ve never met before). So in this interview I hope we can use this brilliant text as a way into a deep conversation about the nature of scientific paradigms, and just what’s at stake in all this in relation to the truth claims that ‘the science’ routinely makes.

But first, a little ground-clearing. I want to ask you about the term ‘paradigm’ itself. Based largely on personal experience, I’m wondering whether the term might have been promiscuously over-used, and (often rhetorically) deployed by so many for opportunistic motivations that the power and profundity of its original meaning and connotations might have been compromised, or even lost. (And for the record, I plead ‘guilty as charged’ to over-using the term myself, by the way!) Put bluntly, it’s a term that anyone and everyone tends to deploy to make whatever they might be saying sound grander and more substantial than it actually is. I’m wondering what your view is on this – and if you agree, how we might respond to this colonisation and dumbing-down of the term.

MC: Well thank you, for your enthusiasm on the pedagogical side, Richard! Indeed, I’ve studied and later taught on such courses, and there are really not so many books around that talk in an accessible and wide-ranging way about what I think are issues that affect everyone, every day. Why do we instead study things that are irrelevant to us? But we do; it seems to be part of the definition of education that it should be detached and ‘pure’.

So yes, the world ‘paradigm’ is much batted around, but I think in a way it has become better appreciated for all that. The term does not need to be guarded by social scientists; it’s always better that the ideas intended to be conveyed in a term be spelt out in the plainest language, even if this requires several sentences – or a whole book! In other words, a term is only useful as a shorthand, a signpost, and (as I explain in the book) the term ‘paradigm shift’ has never had a tightly agreed use or sense. Thomas Kuhn (1962) himself used it in quite different ways! The important thing is the ideas, not the language they are expressed in.

RH: I’m determined to keep my questions shorter than your answers, Martin! – so a briefer question this time; and yes, let’s get on to the ideas – as you rightly say, that’s what really matters. Early on in the Introduction to your book, you refreshingly take on the question of *expertise* – writing of the self-referential bubble of ‘experts’ merely following other ‘experts’, and also of ‘the downright dishonesty of much of what we are repeatedly told is expert opinion’ (p. vii; cf. the interview with Brian Martin in this volume). I’ve long lost count of the number of times I’ve heard the ‘expert’ discourse being uncritically invoked by both politicians and media commentators during the current Covid experience.

I’ve just also been re-reading the book *Trust Us, We’re the Experts! – How Industry Manipulates Science and Gambles with Your Future* (by Sheldon Rampton and John Stauber). For these authors, ‘expertise’ is unavoidably contaminated, even ‘captured’, by money, power and corporate interests. Your book has many index entries under ‘expert opinion’, so I sense you have much to say on this key issue. What is your view on the extent to which the pontifications of ‘experts’ are genuinely held and unconsciously paradigm-bound, and the extent to which there is indeed *conscious* manipulation and corruption amongst ‘the expert class’? And do please feel free to share any other insights you might have that are relevant to the ‘expertise’ question.

MC: Let’s look first at the specific issue of mask-wearing in the current Covid crisis. Until the summer of 2019, there *was* a settled scientific consensus on masks, Richard. Now I’m not saying it was right, but there *was* such a consensus. And then there was almost no new evidence produced, yet somehow that consensus was shifted. Now (as we write in Spring 2021) we have a position where anyone citing evidence against the efficacy of masks is dismissed. They are ‘anti-maskers’. What is interesting for us, then, is not the rights and wrongs of this particular debate – but how opinion was changed, so far and so quickly.

Actually, I think Thomas Kuhn’s point – thesis, if you like – is that ‘normal science’ is a mixture of all these things – and you really can’t get away from it. That’s what was radical about his thesis. There is no cool, clinical science that sifts facts; rather there is this fetid swamp of bias and vested interests, which coalesces around certain viewpoints. Sounds ridiculous? But take nutrition, one of the issues I explored at some length in the

book. Here, as we all know, views change almost day by day. Salt, sugar, fat, meat... – they all have their turn as the big bad diet enemy.... Governments legislate, health experts issue guidance. And of course, everyone is operating on the basis of scientific studies, data, ‘new evidence’. It’s the old truth, it’s not the evidence, it’s the *selection* of evidence. It’s the framing of the questions, and the exclusion of other aspects.

Returning to masks and (respiratory) viruses: I originally assumed that there were studies showing them to be effective at reducing the spread of the virus, and that these had been selected to support a politically driven programme. Actually, and rather bizarrely, there don’t seem to be, though. Recall that the study that politicians and their ‘experts’ apparently used to justify changing the established consensus that mask-wearing by the general public was futile and irrelevant (the one known as ‘the Danish study’) explicitly states two very unhelpful things for mask mandates – the policy being argued for. First, it says that the masks cannot protect wearers; and secondly, it states that it has not attempted to evaluate whether or not they can protect others.

This is a revealing episode, because the ‘science’ is clearly saying ‘no evidence for X, but the policy makers are quoting it as saying ‘probably X’. This is where paradigm theory is, as I say, both controversial and powerful, because the line between fact and opinion is erased. If, in influential people’s opinions, in the views of powerful groups, ‘the science’ says something, then it jolly well does.

Of course, there must be limits to how far notions of truth and facts can be set aside. Pigs cannot fly, even if some studies are published indicating that are. But paradigm theory shows that the limits are surprisingly generous!

RH: That’s so clearly expressed, Martin – and (hopefully!) hugely sobering for anyone who uncritically worships at the altar of ‘the science’. Provocatively, I’m even tempted to say that such people (of which there seems to be a terrifying number) appear to possess, and believe in, an implicit creed, which says: ‘Follow “the science”... – **right or wrong!**’ (I’ll return to this phenomenon later).

Re ‘...there is this fetid swamp of bias and vested interests, which coalesces around certain viewpoints’ – that doesn’t sound ‘ridiculous’ at all to me; rather, it accords exactly with my own experience and perception. I was struck by what you wrote in your book about BBC ‘journalism’ – viz.: ‘All BBC staff carry an identity card which proclaims the first BBC’s mission to be independent, impartial and honest...’ (p. 139). Pardon?... Alas, I’ve neither the time nor the patience and competence to do it; but at some point I’m sure that some top media researchers will carefully analyse all of the BBC’s coverage of the covid ‘vaccines’ issue (which at least some experts call ‘experimental treatments’), and discover what is plain for all to see who possess anything approaching an open mind – viz. that BBC coverage of both the vaccines issue and the pandemic more generally have

been nothing more than excruciatingly one-sided (and quite possibly deliberately orchestrated) propaganda.

Now if we did live in a society where Kuhn's and Feyerabend's views on paradigm theory were wrong, and objectivity and rationality did prevail, then such research findings would cause a high-profile national scandal, and would thence have a dramatic impact on the quality of BBC journalism going into the future. But if Kuhn and Feyerabend are right – which I think we both believe they are – then pretty much nothing would change following research findings such as these, notwithstanding the evidence-based *scientific* exposure of the BBC's flagrant bias and propagandising. This is certainly what happened with the BBC's patent bias against then Labour leader Jeremy Corbyn, when a number of top academic studies revealing chapter-and-verse on their anti-Corbyn bias made little if any difference to their continuing media coverage of Corbyn and Labour under his leadership.

I've also been re-reading Frank Fischer's 1990 book *Technocracy and the Politics of Expertise*, in which he writes that 'We live in a world utterly dependent on expert knowledge... [and yet] evidence of the failures of experts [are visible] in large-scale technologies... and in economic and social policy as well' (p. 49). Fischer goes on to ask, 'Can we restructure expert planning and decision processes to make them better serve social and democratic purposes?... In political terms, *it is a question of how to break the experts away from their allegiances to the elites*' (p. 50, my italics). Indeed, it seems that democracy itself is at stake here – for the “scientitization” of social and political life [causes] people to lose their intellectual and emotional capacities to critically discuss their social needs and political interests' (p. 48).

So what we have, then, is a posturing, virtue-signalling establishment claiming impeccable 'scientificity', objectivity and balance in the media narratives it weaves for us, the peanut-crunching crowd (Plath) – which any dispassionate analysis quickly reveals to be disingenuous and essentially fictional. With some exasperation (which I know many share), I suppose the time-old question to ask is, 'What on earth is to be done' in the face of all this? Is there any more we can do other than write our books, articles and letters, Martin, and hope that enough people wake up to the reality of what's happening? I'd really welcome your views on all this, and on the parlous scientific state we find ourselves in.

Far too much from me again; please write as much as you like in response!

MC: That's a very good quotation from Frank Fischer, Richard. Indeed we're seeing right now with the emasculated debate surrounding the myriad of issues, scientific and social, of the coronavirus exactly that the “scientitization” of social and political life [causes] people to lose their intellectual and emotional capacities to critically discuss their social needs and political interests'.

Take the latest drama in what has become a multi-year media saga, whether the Astra-Zeneca vaccine is safe for people under 35 or not. It turns out in the UK that at least 20 people in this age group – previously in good health – died from blood clots after taking the vaccine. By contrast, the number of people in good health and under 35 dying from the virus is roughly the same. The maths, let alone the science, does not seem to add up. Nonetheless, the sister of an unfortunate young man who died after vaccination took to the media waves to implore other people not to be put off taking the treatment! Surely here is an example of someone with an immediate, personal reason to at least wonder about the treatment, yet who instead endorses it. And in the process, essentially abandoning any right to judge both for themselves and everyone else.

There's a useful term in social science of 'label libel' – and by the way, I'm not an 'anti-vaxxer' by any means, as the term so freely thrown about goes. Indeed, in *Paradigm Shift*, I give a generally enthusiastic account of medical science, even though I note that while the *benefits* of vaccines are carefully explained to patients, doctors and other experts tend to keep the risks to themselves, making the judgement that people will otherwise fail to put the risk into context.

Yes, if we take a young person in good health contemplating a vaccine for Covid, the risk to them of serious consequences, let alone death from the illness is, as the phrase goes, 'vanishingly small' – and the risk of the vaccine becomes significant. The evident public consensus that people really can't judge their best interests, even in matters of their own health, is highly political – because if we can't make these sorts of judgements, just which ones *can* we make? Presumably we are not allowed to judge on any important matter.

The Covid debate became even more sharp, and political, with the proposals to force people to have vaccines by preventing them participating in normal life otherwise. People are told they cannot go to restaurants or cafés, not libraries and cinemas, maybe not even shops.

But let's broaden this out: if people cannot judge scientific matters, there are very few areas of life that they are fully competent in. And the notion of competence easily becomes a wall-around orthodoxy. Which reminds me of one of the great lines in Kuhn's 1962 book: 'In science, as in the playing card experiment, novelty emerges only with difficulty, manifested by resistance, against a background provided by expectation.'

RH: Since I last wrote, Martin, I've discovered that on 23 March of last year (2020), at the start of the first Covid Lockdown in England, Ofcom (the UK's media regulator) announced that thenceforth, any media platform that contradicted the Covid narrative being peddled by the government and their scientific advisor-experts would face sanctions (Ofcom, 2020).¹ That this could have happened in what is putatively termed a

‘democracy’ is surely extraordinary; but leaving that issue aside, this extraordinary edict does account for the flagrant bias-verging-on-propaganda to which we’ve been subjected for over a year now, as I write. This in turn raises core questions about the relationship of the citizenry to modern science, which you presciently touch upon in your last answer. Paul Feyerabend had much to say on this question – more on that later, perhaps. But first, to swap some germane ‘paradigm quotations’ with you!

For Thomas Kuhn, paradigm choice ‘can never be unequivocally settled by logic and experiment alone’ (1962: 93); and

The usual prelude to [a scientific revolution] is... the awareness of anomaly, of an occurrence or set of occurrences that does not fit existing ways of ordering phenomena. The changes that result therefore require ‘putting on a different kind of thinking-cap’, one that renders the anomalous lawlike but that, in the process, also transforms the order exhibited by some other phenomena, previously unproblematic. (Kuhn, 1977: xvii)

Thus, for Kuhn, what he calls the ‘mopping-up operations’ of conventional, ‘normal science’ constitute

an attempt *to force nature into the preformed and relatively inflexible box that the paradigm supplies*. No part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box *are often not seen at all*. Nor do scientists normally aim to invent new theories, and *they are often intolerant of those invented by others* (Kuhn, 1962: 23–4, my italics).

Kuhn also provides us with an interesting perspective on the possibility of critical thinking within ‘normal science’; for ‘*critical discourse recurs only at moments of crisis when the bases of the field are again in jeopardy*’ (Kuhn, 1970: 6–7, my italics)! This is scary stuff indeed for anyone with the temerity to challenge the ‘normal-science’ status quo.

Indeed, if Karl Popper is anything like right in the following statement, then it’s difficult to see how the current scientific hold on modern medical science might be shifted. Over 50 years ago, Popper wrote:

‘Normal’ science, in Kuhn’s sense, exists. It is the activity of the non-revolutionary, or more precisely, the *not-too-critical professional*: of the science student *who accepts the ruling dogma of the day*.... [I]n my view *the ‘normal’ scientist*, as Kuhn describes him, is a person one ought to be sorry for.... He *has been taught in a dogmatic spirit: he is a victim of indoctrination*... I can only say that I see a very great danger in it and in the possibility of its becoming normal... *a danger to science and, indeed, to our civilization*.

(Popper, 1970: 52–3, my italics)

A withering indictment indeed. Little wonder that Kuhn himself makes quite a thing of what he calls the ‘dogmatism’ of ‘normal science’ (Kuhn, 1963), whereby research that is successful *within* the paradigm ‘*demand[s] a deep commitment to the status quo*’ (Kuhn, 1972, p. 102, my italics again). And Tarnas (2010) has suggested further impediments to

the possibility of any substantive paradigmatic change, arguing that a radical shift at what he terms the 'cosmological level' (Toulmin, 1992) is required, as a necessary condition for a successful revisioning of science (Tarnas, 2010: 52–3).

So again, in light of what Popper, Kuhn, Tarnas and others have to say, it's difficult to imagine how the current iron grip of cultural scientism can conceivably be loosened – as scientism leaves little if any space for the necessary 'revolutionary' prerequisites for paradigm change to occur – i.e. those at the level of imagination, the psychodynamic Unconscious and/or the symbolic-archetypal (Tarnas, 2010: 49).

Let's return to the issue of science being subject to citizens' possible democratic control later – far too much from me again already, Martin! Do pick up as you wish from the foregoing.

MC: I don't really see science as being better under 'citizen's control', Richard; that seems an odd idea. Isn't the point really that scientists should be 'philosophers' – that is, they should live at the boundaries, seeking new insights and knowledge, and also that they should continually test and retest accepted dogmas? I liked the quotation you mention from Karl Popper as 'normal science' being only suitable for students, and 'real science' being very different, if rather rarer – i.e.:

... in my view the 'normal' scientist, as Kuhn describes him, is a person one ought to be sorry for.... He has been taught in a dogmatic spirit: he is a victim of indoctrination.... I can only say that I see a very great danger in it and in the possibility of its becoming normal... a danger to science and, indeed, to our civilization.

I think this is a very prescient warning. Today, taking up this example of the corona virus 'emergency', we see scientist after scientist (and medical and even media professionals too) all lining up to offer reinforcement of official doctrines on things on which they actually have, at most, a very limited expertise. First of all, as with topics like Climate Change, you might be directly knowledgeable on one, or two or even five relevant research areas, but you won't be on ten, twenty or thirty – and issues like this do stretch across disciplines.

Secondly, even within the areas in which you are 'an expert', you only have a limited and inevitably partisan perspective. In epidemiology, for example, you may not know very much about the effects of injecting people with RNA vaccines, or wearing (or not wearing) masks, or of limiting social interaction to a distance of two metres, or stopping lonely people mixing for long periods.... Yet all these experts assert their superior knowledge, and sneer at those who dare to venture contrary opinions, or just to ask for a discussion!

Anyone who has worked in academia will know this kind of attitude. It is not based on superior knowledge, or even some virtuous intent. It is simply scientists (academics)

behaving as social animals, with their pecking orders and narrow self-interest. Perhaps we ask scientists too much to expect them to be ‘scientific’; I suspect we do. But what would be better would be to change the ‘rules of the game’ so that those who try to stifle debate and twist research find it much harder. At the moment, the big research prizes, the journals, the so-called philanthropic funders, the governments... – all are feeding and contributing to a world in which science is a tool of the elites, both partisan and oppressive.

RH: That’s a brilliant answer, Martin. Re the ‘science being better under citizen’s control’ issue: you do quote Paul Feyerabend at length on the issue of ‘democratically elected *consulting bodies*’ on page x of your book (though of course this is slightly different). I think perhaps the relevant point is that given how often in the past ‘the science’ has made what, subsequently, have turned out to be howlers (e.g. see Scott, 1999), and given the way ordinary folk are just expected to defer completely to scientific and medical ‘expertise’ (as with the Covid ‘vaccine’ treatments), is that a healthy state of affairs? – and if not, what on earth is to be done? – and especially if Feyerabend is anything like right about science’s insipient authoritarian tendencies. Thorpe and Welsh (2008, online) have argued that ‘Feyerabend’s writings prefigured contemporary debates and experiments in citizen science, arguing that “participating in citizens’ initiatives” was the minimum requirement to achieve wisdom and justice in dealings in this area... [*L*]aymen can and must supervise science” (citing Feyerabend, 1982: 107, 96–7)’ (my italics). Food for thought, perhaps.

But if we agree that citizens’ *control* of science is currently an unrealistic aspiration, then your previous answer gives some excellent clues to alternative possibilities – i.e.

- scientists need also to be *philosophers*, ‘living at the boundary’ and ‘continually test[ing] and retest[ing] accepted dogmas’ (for as you say in your book, currently, scientists merely ‘seek the evidence to reinforce [existing] prejudice’ (p. viii);
- somehow making it more difficult ‘to stifle debate and twist research’; and
- removing science from being ‘a tool of the elites’.

To which I would add, the essential inculcation of *modesty and humility* in the scientific attitude – as you again write, ‘acknowledging uncertainty and complexity [as] a positive step towards knowledge (*Paradigm Change*, p. vii); and (ibid., p. ix) *diversity of viewpoint and challenge* being positively welcomed in the academy, rather than silenced.

But as I think we both agree, the whole field is deeply infused with issues of positional power, ego, and economic and professional vested interests. And if the old saying that ‘Turkeys don’t vote for an early Christmas’ is anything like right in this context, then the key question arises, how in practice can the fierce grip that narrow scientism has on the levers of power in relation to ‘the science’, and citizens’ access to it, be loosened, if not completely relinquished? And could this be where *some* kind of bottom-up *democratisation of science* might conceivably have some kind of role? – however we

might fashion that in practice. I'm reminded here of your evocative phrase, 'the extraordinary power and ability of public debate to find wisdom' (*Paradigm Change*, p. x).

And might this also be where a telling *psychological* interpretation and naming of the dynamics involved in how the world of science functions might be useful? – so making it more difficult for those dynamics and practices to continue unchallenged?

Err – I've thankfully been a bit briefer this time! ;-)

MC: Well, I think you've put your finger on the big problem really, Richard – 'the whole field is deeply infused with issues of positional power'. Surely Paul Feyerabend would have said this too, if Thomas Kuhn might have nervously tried to avoid anything too political!

But let's take the Covid virus 'again', as it is an issue to hand, and also very revealing. I read this week (as I write) that the much-respected US virus expert, Dr Fauci, whose warnings about the dangers of Covid have driven US policy even over the considerable political resistance of their Republican Party, has managed to retain credibility despite being on record as having tried to stir up similar fears about the AIDS virus. Okay, it's a long time ago, but in 1983 he offered 'qua scientific expert' a scary warning about AIDS, saying that 'routine close contact, as within a family household, can spread the disease'.

Of course, with AIDS being primarily in the homosexual community, this created problems for gay Americans. And secondly, *it was completely wrong* – if one can be so final in the course of a philosophical discussion about the limits of knowledge! But likewise, as we have already mentioned, Britain's scientific expert on epidemics, Professor Neil Ferguson, also had a track record of woeful error and cynical exaggeration. But now we get to the point: being wrong, being incompetent, whatever, doesn't matter in science any more than it does in politics, or indeed most spheres of life – if you get the institutional forces right. To coin an old phrase: 'history is written by the victors' – and so it is in science. Fauci and Ferguson are at the tops of their trees, and make large amounts of money. They have academic and governmental institutions dependent on their being perceived to be right, and many people with an interest in promoting their expertise. Against this may be rival scientists, investigative journalists, historians – but the structural forces all support and promote the 'ruling' narrative – the *ruling class*, indeed, it might be called.

You *could* ask the public to assess the science, yes, but I don't think it would help. The public are themselves created and moulded by this ruling elite with their institutions and privileges. It is all, as Kuhn did reluctantly concede, very political.

RH: Well with this, you've put your finger on it too, Martin, when you say, 'being wrong, being incompetent, whatever, doesn't matter in science any more than in politics, or indeed most spheres of life'. A veritable bull's eye there. And also, 'governmental institutions [are] dependent on [experts like Fauci and Ferguson] being perceived to be right, and many people [have] an interest in promoting their expertise'. So indeed, here we see the most elaborate of Faustian bargains threading through all this, with massively powerful vectors of self-interest intersecting, and together creating a hegemonic cultural narrative, or web, that conditions vast swathes of the citizenry. What an appalling state of affairs – and especially when 'the science' is so good at exploiting most people's deep need for certainty and reliability by parading itself as the reassuring source of expertise and 'truth' – and with the eager connivance of both the mainstream media and politicians, of course. We have seen so much of this disingenuousness during the unfolding Covid experience.

Indeed, the very word 'science' itself seems to have taken on a kind of hallowed, trance-inducing status, whereby the mere mouthing of the term evokes complete unquestioning deference to the phenomenon by the great majority of the populace – with any and all critical questioning effectively silenced at the mere utterance of the word. In this paradigmatic world of utter unquestioning certainty, one would never dream for one moment that in paradigm theory, as you said earlier in the interview, 'the line between fact and opinion is erased'. And so I keep coming back again and again to the question (tiresome, I know): what on earth can open-minded critical thinkers do about this, when modern culture seems to have been so comprehensively captured by propaganda-buttressed 'normal science'?

In the Afterword to your wonderful book, you tellingly write that 'the prizes all go to those who say they know, who seem to have the answers'; and yet in a sensible world, 'policy should be more tentative and prepared to acknowledge (embrace) uncertainty' (p. 183). This latter injunction is surely especially the case when, as you provocatively write, 'science is merely (but still importantly) a historical, piecemeal, and *fallible* process of gaining *limited* knowledge of the world' (p. 184, my italics). And so we come full circle to the \$64,000 question: 'how, and why, do scientific paradigms ever change?' (Cohen, 2015, p. 184).

Thank you so much for this bold interview, Martin, and for your willingness to *speak fearlessly* (if I can quote Michel Foucault – Foucault, 1991). To say the least, I'm a bit embarrassed that I may have said more than you have in this interview! – for which I must profusely apologise. You're the main man here, and the final words are rightly yours. Please do pick up on anything from what I've written here; and here's also a final opportunity to say anything key that needs saying, or reiterating. Heart-felt thanks again, Martin, for the wise illumination you've provided in this interview.

MC: Well, Richard, you know it is a pleasure to talk about these big – but let us admit, rather esoteric – issues with someone else who shares the same curiosity. And that is, I think, the word that I would like to end on. Science should be about open-ended enquiry, in which competing viewpoints elegantly battle, with research and arguments as the weapons. Indeed, ‘battle’ may not be the right word either, as really it would be nice to see science as a more co-operative enterprise in which people work together.

Put that way, we can see what we are saying *is* idealistic, but nonetheless, there is a place for ideals. Science should be:

- provisional
- open to reconsideration
- democratic
- constrained by consideration of what serves the moral interests of humans – and indeed nature more widely

Today, however, we have science as part of an increasingly authoritarian structure of social inequality and control. I think we agree on the current pseudoscience of corona virus policy: here it is based on myths that are fiercely promoted by powerful elites, and the consequences are appalling transfers of wealth and power from the many to the few.

I'm not optimistic for the future. The philosophers and most scientists are now employed by the same divisive forces. I was recently invited to write an opinion piece on ‘how science works’ by the journal *Nature*, which I took as a welcome sign that indeed ‘science *did* work’. The piece I sent described how some of the great scientific debates in history, from Galileo versus the Church over heliocentricism to Louis Pasteur versus Pouchet over germ theory, were *not* actually conducted on scrupulous scientific principles but were, rather, decided by politics and prejudice. My argument in the piece was that we (and specifically, policy makers) should never assume that ‘we are right’, but should seek out contrary opinions so that a better assessment can be made.

If a government was considering mass vaccination against a virus, for example, they should seek to consider two sides of the issue – the ‘best’ representatives for each side. It is, you will no doubt realise, a nod at the philosophical dialectic, where thesis meets antithesis, the opposed position, but the outcome is a new ‘synthesis’ which is an improvement on both.

Of course, the process is potentially never-ending, so here again, we return to practical life and politics. But back to my scepticism of where we are. My very mild recommendation for the conduct of science was sent out by the *Nature* editor for ‘review’, and the reviewers largely disputed the notion that experts should be challenged. They thought that the consensus view on matters should *not* be confused in the minds of policy makers by minority views – and the *Nature* editors agreed with that, not only

declining to publish the piece they had commissioned, but declining to allow any new version. It was, for me, another taste of what happens when you try to argue something different in today's academic and scientific world: you will be harshly critiqued and driven out.

Now I am not actually part of that world, but a mere onlooker – a writer. But I do feel that the warnings of philosophers of science like Kuhn and Feyerabend are all too true: science is at root about politics, and when it cannot operate freely, as I think it cannot now, nor can any of us be truly free either in what we do – or in what we think.

Note

1 The relevant chilling quotation is as follows:

...we remind all broadcasters of the significant potential harm that can be caused by material relating to the Coronavirus. This could include: • Health claims related to the virus which may be harmful. • Medical advice which may be harmful. • Accuracy or material misleadingness in programmes in relation to the virus or public policy regarding it. We will be prioritising our enforcement of broadcast standards in relation to the above issues. In these cases, it may be necessary for Ofcom to act quickly to determine the outcome in a proportionate and transparent manner, and broadcasters should be prepared to engage with Ofcom on short timescales. Ofcom will consider any breach arising from harmful Coronavirus-related programming to be potentially serious and will consider taking appropriate regulatory action, which could include the imposition of a statutory sanction.

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About the interviewee

Martin Cohen is an author specialising in popular books in philosophy, social science and politics. His writing ranges widely as he likes to make connections between different areas and ideas. As well as *Paradigm Shift*, featured here, recent books include *Critical Thinking Skills for Dummies* and *The Leaders' Bookshelf*. This last is all about ideas and inspirations – and how even quite ordinary books can be ‘intuition pumps’ sending their readers off to achieve extraordinary things. Another book, *I Think Therefore I Eat*, mixes philosophy and food, offering surprising insights into why everything we eat makes us fat, and seems to have more to do with laboratories than farms!