

How science has been corrupted

The pandemic has revealed a darkly authoritarian side to expertise

BY [Matthew Crawford](#)



Matthew B Crawford has degrees in physics and political philosophy. He is a senior fellow at the University of Virginia's Institute for Advanced Studies in Culture.

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When I was small, my father would conduct experiments around the house. When you blow across the top of a wine bottle, how many modes of vibration are there? How do you get the higher notes?

Another time, the matter under investigation might be the "angle of repose" of a pile of sand, as in an hour-glass. Does it depend on the particle size? On their shape? Do these factors determine the rate at which an hour-glass empties?

My favorite was the question of what technique will empty a jug of water fastest. Should you simply turn it upside down and let the air rush in (as it must, to replace the water) in that halting, glug-glug-glug fashion, or hold it at a gentler angle so the pour is unbroken? Answer: turn the jug upside down and swirl it vigorously to set up a whirlpool effect. This creates a hollow space at the centre of the flow, where air is free to enter. The jug will empty very quickly.

My father became famous for these "kitchen physics" experiments after he included assignments based on them in a textbook he wrote, published in 1968 and beloved by generations of physics students: [Waves \(Berkeley Physics Course, Vol. 3\)](#). My sister and I, aged two and five, are thanked in the acknowledgments for having surrendered our Slinkies to the cause.

He pursued such investigations, not simply as a pedagogical exercise, but to satisfy his own curiosity. And he made time for this even while working at the frontier of particle physics, in the lab of Louis Alvarez at Lawrence Berkeley Laboratory. This was fairly early on in the transition of the practice of science into "big science".

Alvarez won the Nobel Prize in 1968 for his invention and use of the bubble chamber, an instrument for detecting particle decays. It was a device that would comfortably fit on a table top. Today you can build one yourself, if you like. But over the next few decades particle accelerators became enormous installations (CERN, SLAC) requiring the kind of real estate only governments and major institutions, indeed consortiums of institutions, can secure. Scientific papers came to have, not a handful of authors, but hundreds. Scientists became scientist-bureaucrats: savvy institutional players adept at getting government grants, managing sprawling workforces, and building research empires.

Inevitably, such an environment selected for certain human types, the kind who would find such a life appealing. A healthy dose of careerism and political talent was required. Such qualities are orthogonal, let us say, to the underlying truth-motive of science.

You can well imagine the appeal of getting back to basics for someone who was drawn to a scientific career when the prospect had a more intimate scale to it. Kitchen physics is about the pure intellectual refreshment of wondering about something that you observe in the world with your own unaided powers, and then investigating it. This is the basic image we have of what science is, immortalised in the anecdote of Galileo going up into the leaning tower of Pisa and dropping various objects to see how fast they fall.

Science as authority

In 1633, Galileo was brought before the Inquisition for his demonstration that the earth is not fixed but revolves around the sun. This was a problem, obviously, because the ecclesiastical authorities believed their legitimacy rested on a claim to have an adequate grasp of reality, as indeed it did. Galileo had no interest in being a martyr, and recanted to save his skin. But in the lore of Enlightenment, he is said to have muttered under his breath, "but it does move!"

This anecdote has a prominent place in the story we tell about what it means to be modern. On one side, science with its devotion to truth. On the other side, authority, whether ecclesiastical or political. In this tale, "science" stands for a freedom of the mind that is inherently at odds with the idea of authority.

The pandemic has brought into relief a dissonance between our idealised image of science, on the one hand, and the work "science" is called upon to do in our society, on the other. I think the dissonance can be traced to this mismatch between science as an activity of the solitary mind, and the institutional reality of it. Big science is fundamentally social in its practice, and with this comes certain entailments.

As a practical matter, "politicised science" is the only kind there is (or rather, the only kind you are likely to hear about). But it is precisely the apolitical image of science, as disinterested arbiter of reality, that makes it such a powerful instrument of politics. This contradiction is now out in the open. The "anti-science" tendencies of populism are in significant measure a response to the gap that has opened up between the practice of science and the ideal that underwrites its authority. As a way of generating knowledge, it is the pride of science to be falsifiable (unlike religion).

Yet what sort of authority would it be that insists its own grasp of reality is merely provisional? Presumably, the whole point of authority is to explain reality and provide certainty in an uncertain world, for the sake of social coordination, even at the price of simplification. To serve the role assigned it, science must become something more like religion.

The chorus of complaints about a declining "faith in science" states the problem almost too frankly. The most reprobate among us are climate sceptics, unless those be the Covid deniers, who are charged with not obeying the science. If all this has a medieval sound, it ought to give us pause.

We live in a mixed regime, an unstable hybrid of democratic and technocratic forms of authority. Science and popular opinion must be made to speak with one voice as far as possible, or there is conflict. According to the official story, we try to harmonise scientific knowledge and opinion through education. But in reality, science is hard, and there is a lot of it. We have to take it mostly on faith. That goes for most journalists and professors, as well as plumbers. The work of reconciling science and public opinion is carried out, not through education, but through a kind of distributed demagoguery, or Scientism. We are learning that this is not a stable solution to the perennial problem of authority that every society must solve.

The phrase "follow the science" has a false ring to it. That is because science doesn't *lead* anywhere. It can illuminate various courses of action, by quantifying the risks and specifying the tradeoffs. But it can't make the necessary choices for us. By pretending otherwise, decision-makers can avoid taking responsibility for the choices they make on our behalf.

Increasingly, science is pressed into duty as authority. It is invoked to legitimise the transfer of sovereignty from democratic to technocratic bodies, and as a device for insulating such moves from the realm of political contest.

Over the past year, a fearful public has acquiesced to an extraordinary extension of expert jurisdiction over every domain of life. A pattern of "government by emergency" has become prominent, in which resistance to such incursions are characterised as "anti-science".

But the question of political legitimacy hanging over rule by experts is not likely to go away. If anything, it will be more fiercely fought in coming years as leaders of governing bodies invoke a climate emergency that is said to require a wholesale transformation of society. We need to know how we arrived here.

In [The Revolt of the Public](#), former intelligence analyst Martin Gurri traces the roots of a "politics of negation" that has engulfed Western societies, tied to a wholesale collapse of authority across all domains — politics, journalism, finance, religion, science. He blames it on the internet. Authority has always been located in

hierarchical structures of expertise, guarded by accreditation and long apprenticeship, whose members develop a “reflexive loathing of the amateur trespasser”.

For authority to be really authoritative, it must claim an epistemic monopoly of some kind, whether of priestly or scientific knowledge. In the 20th century, especially after the spectacular successes of the Manhattan Project and the Apollo moon landing, there developed a spiral wherein the public came to expect miracles of technical expertise (flying cars and moon colonies were thought to be imminent). Reciprocally, stoking expectations of social utility is normalised in the processes of grant-seeking and institutional competition that are now inseparable from scientific practice.

The system was sustainable, if uneasily so, as long as inevitable failures could be kept offstage. This required robust gatekeeping, such that the assessment of institutional performance was an intra-elite affair (the blue-ribbon commission; peer review), allowing for the development of “informal pacts of mutual protection”, as Gurri puts it. The internet, and the social media which disseminate instances of failure with relish, have made such gatekeeping impossible. That is the core of the very parsimonious and illuminating argument by which Gurri accounts for the revolt of the public.

In recent years, [a replication crisis](#) in science has swept aside a disturbing number of the findings once thought robust in many fields. This has included findings that lie at the foundation of whole research programs and scientific empires, now crumbled. The reasons for these failures are fascinating, and provide a glimpse into the human element of scientific practice.

[Suggested reading](#)

[Why we stopped trusting 'experts'](#)

By [Oliver Traldi](#)

Henry H. Bauer, chemistry professor and former dean of arts and sciences at Virginia Tech, [published a paper in 2004](#) in which he undertook to describe how science is actually conducted in the 21st century: it is, he says, fundamentally corporate (in the sense of being collective). “It remains to be appreciated that 21st-century science is a different kind of thing than the ‘modern science’ of the 17th through 20th centuries....”

Now, science is primarily organised around “knowledge monopolies” that exclude dissident views. They do so not as a matter of piecemeal failures of open-mindedness by individuals jealous of their turf, but systemically.

The all-important process of peer review depends on disinterestedness, as well as competence. “Since about the middle of the 20th century, however, the costs of research and the need for teams of cooperating specialists have made it increasingly difficult to find reviewers who are both directly knowledgeable and also disinterested; truly informed people are effectively either colleagues or competitors.”

Bauer writes that “journeymen peer-reviewers tend to stifle rather than encourage creativity and genuine innovation. Centralized funding and centralized decision-making make science more bureaucratic and less an activity of independent, self-motivated truth-seekers.” In universities, “the measure of scientific achievement becomes the amount of ‘research support’ brought in, not the production of useful knowledge”. (University administrations skim a standard 50% off the top of any grant to cover the “indirect costs” of supporting the research.)

Given the resources required to conduct big science, it needs to serve some institutional master, whether that be commercial or governmental. In the last 12 months we have seen the pharmaceutical industry and its underlying capacity for scientific accomplishment at its best. The development of mRNA vaccines represents a breakthrough of real consequence. This has occurred in commercial laboratories that were temporarily relieved of the need to impress financial markets or stoke consumer demand by large infusions of government support. This ought to give pause to the political reflex to demonise pharmaceutical companies that is prevalent on both the Left and the Right.

But it cannot be assumed that “the bottom line” exerts a disciplining function on scientific research that automatically aligns it with the truth motive. Notoriously, pharmaceutical companies have, on a significant scale, paid physicians to praise, recommend and prescribe their products, and recruited researchers to put their names to articles ghost-written by the firms which are then placed in scientific and professional journals. Worse, the clinical trials whose results are relied upon by federal agencies in deciding whether to approve drugs as safe and effective are generally conducted or commissioned by the pharmaceutical companies themselves.

The bigness of big science — both the corporate form of the activity, and its need for large resources generated otherwise than by science itself — places science squarely in the world of extra-scientific concerns, then. Including those concerns taken up by political lobbies. If the concern has a high profile, any dissent from the official consensus may be hazardous to an investigator’s career.

Public opinion polls generally indicate that what “everybody knows” about some scientific matter, and its bearing on public interests, will be identical to the well-institutionalized view. This is unsurprising, given the role the media plays in creating consensus. Journalists, rarely competent to assess scientific statements critically, cooperate in propagating the pronouncements of self-protecting “research cartels” as science.

Bauer’s concept of a research cartel came into public awareness in an episode that occurred five years after his article appeared. In 2009, someone hacked the emails of the Climate Research Unit at the University of East Anglia in Britain and released them, prompting the “climategate” scandal in which the scientists who sat atop the climate bureaucracy were revealed to be stonewalling against requests for their data from outsiders. This was at a time when many fields, in response to their own replication crises, were adopting data sharing as a norm in their research communities, as well as other practices such as reporting null findings and the pre-registration of hypotheses in shared forums.

The climate research cartel staked its authority on the peer review process of journals deemed legitimate, which meddling challengers had not undergone. But, as Gurri notes in his treatment of climategate, “since the group largely controlled peer review for their field, and a consuming subject of the emails was how to keep dissenting voices out of the journals and the media, the claim rested on a circular logic”.

One can be fully convinced of the reality and dire consequences of climate change while also permitting oneself some curiosity about the political pressures that bear on the science, I hope. Try to imagine the larger setting when the IPCC convenes. Powerful organisations are staffed up, with resolutions prepared, communications strategies in place, corporate “global partners” secured, interagency task forces standing by and diplomatic channels open, waiting to receive the good word from an empaneled group of scientists working in committee.

This is not a setting conducive to reservations, qualifications, or second thoughts. The function of the body is to produce a product: political legitimacy.

The third leg: moralism

The climategate scandal delivered a blow to the IPCC, and therefore to the networked centres of power for which it serves as science-settler. This perhaps led to a heightened receptivity in those centres for the arrival of a figure such as Greta Thunberg who escalates the moral urgency of the cause (“How dare you!”), giving it an impressive human face that can galvanise mass energy. She is notable both for being knowledgeable and for being a child, even younger and more fragile-looking than her age, and therefore an ideal victim-sage.

There appears to be a pattern, not limited to climate science-politics, in which the mass energy galvanised by celebrities (who always speak with certainty) strengthens the hand of activists to organise campaigns in which any research institution that fails to discipline a dissident investigator is said to be serving as a channel of “disinformation”. The institution is placed under a kind of moral receivership, to be lifted when the heads of the institution denounce the offending investigator and distance themselves from his or her findings. They then seek to repair the damage by affirming the ends of the activists in terms that out-do the affirmations of rival institutions.

As this iterates across different areas of establishment thinking, especially those that touch on ideological taboos, it follows a logic of escalation that restricts the types of inquiry that are acceptable for research supported by institutions, and shifts them in the direction dictated by political lobbies.

Needless to say, all this takes place far from the field of scientific argument, but the drama is presented as one of restoring scientific integrity. In the internet era of relatively open information flows, a cartel of expertise can be maintained only if it is part of a larger body of organised opinion and interests that, together, are able to run a sort of moral-epistemic protection racket. Reciprocally, political lobbies depend on scientific bodies that are willing to play their part.

This could be viewed as part of a larger shift within institutions from a culture of persuasion to one in which coercive moral decrees emanate from somewhere above, hard to locate precisely, but conveyed in the ethical style of HR. Weakened by the uncontrolled dissemination of information and attendant fracturing of authority, the institutions that ratify particular pictures of what is going on in the world must not merely assert a monopoly of knowledge, but place a moratorium on the asking of questions and noticing of patterns.

Research cartels mobilise the denunciatory energies of political activists to run interference and, reciprocally, the priorities of activist NGOs and foundations meter the flow of funding and political support to research bodies, in a circle of mutual support.

One of the most striking features of the present, for anyone alert to politics, is that we are increasingly governed through the device of panics that give every appearance of being contrived to generate acquiescence in a public that has grown skeptical of institutions built on claims of expertise. And this is happening across many domains. Policy challenges from outsiders presented through fact and argument, offering some picture of what is going on in the world that is rival to the prevailing one, are not answered in kind, but are met rather with denunciation. In this way, epistemic threats to institutional authority are resolved into moral conflicts between good people and bad people.

[Further reading](#)

[How race politics liberated the elites](#)

By [Matthew Crawford](#)

The ramped-up moral content of pronouncements that are ostensibly expert-technical needs to be explained. I suggested there are two rival sources of political legitimacy, science and popular opinion, that are imperfectly reconciled through a kind of distributed demagoguery, which we may call scientism. This demagoguery is distributed in the sense that interlocked centers of power rely on it to mutually prop one another up.

But as this arrangement has begun to totter, with popular opinion coming untethered from expert authority and newly assertive against it, a third leg has been added to the structure in an effort to stabilise it: the moral splendor of the Victim. To stand with the Victim, as every major institution now appears to do, is to arrest criticism. Such is the hope, at any rate.

In the unforgettable Summer of 2020, the moral energy of anti-racism was harnessed to the scientific authority of public health, and vice versa. Thus “white supremacy” was a public health emergency — one urgent enough to dictate the suspension of social distancing mandates for the sake of protests. So how did the description of America as white supremacist get converted into a scientific-sounding claim?

[Michael Lind](#) has argued that covid laid bare a class war, not between labor and capital, but between two groups that could both be called “elites”: on one side, small business owners who opposed lockdowns and, on the other, professionals who enjoyed greater job security, were able to work from home, and typically took a maximalist position on hygiene politics. We can add that, being in the “knowledge economy,” professionals naturally show more deference to experts, since the basic currency of the knowledge economy is epistemic prestige.

This divide got mapped onto the pre-existing schism that had organized itself around President Trump, with the population sorted into good people and bad people. For professionals, not just the status of one’s soul, but one’s standing and viability in the institutional economy, depended on getting conspicuously on the right side of that divide. According to the Manichaean binary established in 2016, the fundamental question mark over one’s head is that of the strength and sincerity of one’s anti-racism. For white people who worked in technical bodies connected to public health, the confluence of the George Floyd protests and the pandemic seemed to have presented an opportunity to convert their moral precarity on the issue of race into its opposite: moral authority.

Over 1,200 health experts, speaking as health experts, signed an open letter encouraging mass protests as necessary to address the “pervasive lethal force of white supremacy”. This pervasive force is something they are specially qualified to detect by their scientific knowledge. Editorials in journals such as *The Lancet*, *The New England Journal of Medicine*, *Scientific American* and even *Nature* now speak the language of Critical Race Theory, invoking the invisible miasma of “whiteness” as explanatory device, controlling variable and justification for whatever pandemic policy prescription it seems good to align themselves with.

[Suggested reading](#)

[How Critical Race Theory captured the Church](#)

By [Giles Udy](#)

The science is remarkably clear. It has also been bent to expansive purposes. In February 2021, the medical journal *The Lancet* convened a Commission on Public Policy and Health in the Trump Era to deplore the president’s politicisation of science – while urging “science-led proposals” that would address public health through reparations for descendants of slaves and other victims of historical oppression, the enhancement of affirmative action, and the adoption of the Green New Deal, among other measures. One can certainly make a case for such policies sincerely, freely, and with due consideration. Many people have. But perhaps it is also the case that the moral sorting and resulting insecurity among technocratic professionals has made them quick to defer to activists and sign on to grander visions of a transformed society.

The spectacular success of “public health” in generating fearful acquiescence in the population during the pandemic has created a rush to take every technocratic-progressive project that would have poor chances if pursued democratically, and cast it as a response to some existential threat. In the first week of the Biden administration, the Senate majority leader urged the president to declare a “climate emergency” and assume powers that would authorise him to sidestep Congress and rule by executive fiat. Ominously, we are being prepared for “climate lockdowns”.

The wisdom of the East

Western nations have long had contingency plans for dealing with pandemics, in which quarantine measures were delimited by liberal principles – respecting individual autonomy and avoiding coercion as much as possible. Thus, it was the already-infected and the especially vulnerable who should be isolated, as opposed to locking healthy people in their homes. China, on the other hand, is an authoritarian regime that solves collective problems through rigorous control of its population and pervasive surveillance. Accordingly, when the COVID pandemic began in earnest, China locked down all activities in Wuhan and other affected areas. In the West, it was simply assumed that such a course of action was not an available option.

As UK epidemiologist Neil Ferguson said to [the Times](#) last December: “It’s a communist one-party state, we said. We couldn’t get away with [lockdowns] in Europe, we thought... and then Italy did it. And we realised we could.” He added that “These days, lockdown feels inevitable.”

Thus, what had seemed impossible due to the bedrock principles of Western society now feels not merely possible but inevitable. And this complete inversion happened over the course of a few months.

Acceptance of such a bargain would seem to depend entirely on the gravity of the threat. There is surely some point of hazard beyond which liberal principles become an unaffordable luxury. Covid is indeed a very serious illness, with an infection fatality rate about ten times higher than that of the flu: roughly one percent of all those who are infected die. Also, however, unlike the flu this mortality rate is so skewed by age and other risk factors, varying by more than a thousand-fold from the very young to the very old, that the aggregate figure of one percent can be misleading. As of November 2020, the average age of those killed by Covid in Britain was [82.4 years old](#).

In July of 2020, [29 % of British citizens believed that “6-10 percent or higher” of the population had already been killed by Covid](#). About 50% of those polled had a more realistic estimate of 1%. The actual figure was about one tenth of one percent. So the public’s perception of the risk of dying of Covid was inflated by one to two orders of magnitude. This is highly significant.

Public opinion matters in the West far more than in China. Only if people are sufficiently scared will they give up basic liberties for the sake of security – this is the basic formula of Hobbes’s Leviathan. Stoking fear has long been an essential element of the business model of mass media, and this appears to be on a trajectory of integration with state functions in the West, in a tightening symbiosis. While the Chinese government resorts to external coercion, in the West coercion must come from inside; from a mental state in the individual. The state is nominally in the hands of people elected to serve as representatives of the people, so it cannot be an object of fear. Something else must be the source of fear, so the state may play the role of saving us. But playing this role requires that state power be directed by experts.

Early in 2020, public opinion accepted the necessity of a short-term suspension of basic liberties on the supposition that, once the emergency had passed, we could go back to being not-China. But this is to assume a robustness of liberal political culture that may not be warranted. Lord Sumption, a jurist and retired member of the UK’s Supreme Court, makes a case for regarding lockdowns in the West as the crossing of a line that is not likely to get uncrossed. In an interview with Freddie Sayers at [UnHerd](#), he points out that, by law, the government has broad powers to act under emergency. “There are many things governments can do, which it is generally accepted they should not do. And one of them, until last March, was to lock up healthy people in their homes.”

Suggested reading

Lord Sumption: civil disobedience has begun

By Jonathan Sumption

He makes the Burkean observation that our status as a free society rests, not on laws, but on convention, a “collective instinct” about what we ought to do, rooted in habits of thinking and feeling that develop slowly over decades and centuries. These are fragile. It is far easier to destroy a convention than to establish one. This suggests going back to being not-China may be quite difficult.

As Lord Sumption says, “When you depend for your basic freedoms on convention, rather than law, once the convention is broken, the spell is broken. Once you get to a position where it is unthinkable to lock people up, nationally, except when somebody thinks it’s a good idea, then frankly there is no longer any barrier at

all. We have crossed that threshold. And governments do not forget these things. I think this is a model that will come to be accepted, if we are not very careful, as a way of dealing with all manner of collective problems." In the US as in the UK, the government has immense powers. "The only thing that protects us from the despotic use of that power is a convention that we have decided to discard."

Clearly, an admiration for Chinese-style governance has been blossoming in what we call centrist opinion, in large part as a response to the populist upsets of the Trump and Brexit era. It is also clear that "Science" (as opposed to actual science) is playing an important role in this. Like other forms of demagoguery, scientism presents stylised facts and a curated picture of reality. In doing so, it may generate fears strong enough to render democratic principles moot.

The pandemic is now in retreat and the vaccines are available to all who want them in most parts of the United States. But many people refuse to give up their masks, as though they had joined some new religious order. The wide deployment of fear as an instrument of state propaganda has had a disorienting effect, such that our perception of risk has come detached from reality.

We accept all manner of risks in the course of life, without thinking about it. To pick one out and make it an object of intense focus is to adopt a distorted outlook that has real costs, paid somewhere beyond the rim of one's tunnel vision. To see our way out of this — to place risks in their proper context — requires an affirmation of life, refocusing on all those worthwhile activities that elevate existence beyond the merely vegetative.

Losing face

Perhaps the pandemic has merely accelerated, and given official warrant to, our long slide toward atomisation. By the nakedness of our faces we encounter one another as individuals, and in doing so we experience fleeting moments of grace and trust. To hide our faces behind masks is to withdraw this invitation. This has to be politically significant.

Perhaps it is through such microscopic moments that we become aware of ourselves as a people, bound up in a shared fate. That's what solidarity is. Solidarity, in turn, is the best bulwark against despotism, as Hannah Arendt noted in *On The Origins of Totalitarianism*. Withdrawal from such encounter now has the stamp of good citizenship, i.e., good hygiene. But what sort of regime are we to be citizens of?

"Following the science" to minimise certain risks while ignoring others absolves us of exercising our own judgment, anchored in some sense of what makes life worthwhile. It also relieves us of the existential challenge of throwing ourselves into an uncertain world with hope and confidence. A society incapable of affirming life and accepting death will be populated by the walking dead, adherents of a cult of the demi-life who clamour for ever more guidance from experts.

It has been said, a people gets the government it deserves.

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Join the discussion



 **Neil McAlester**

I think that the real joke, as you put it, is that those that have given up their freedoms willingly did so out of fear and they still cannot admit to themselves that that is why they did it.

 **Dougie Undersub**

Er, vaccination programmes always involve healthy people. That's the point.

 **Geoff H**

My experience exactly; I have long since given up trying and so just nod and smile and go 'mmm really, mmm, how awful!' Stress levels have gone way down, very liberating really.

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