# S|S|S

# No funeral bells: Public reason in a 'post-truth' age

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## Abstract

The label 'post-truth' signals for many a troubling turn away from principles of enlightened government. The word 'post', moreover, implies a past when things were radically different and whose loss should be universally mourned. In this paper, we argue that this framing of 'post-truth' is flawed because it is ahistorical and ignores the co-production of knowledge and norms in political contexts. Debates about public facts are necessarily debates about social meanings, rooted in realities that are subjectively experienced as all-encompassing and complete, even when they are partial and contingent. Facts used in policy are normative in four ways: They are embedded in prior choices of which experiential realities matter, produced through processes that reflect institutionalized public values, arbiters of which issues are open to democratic contestation and deliberation, and vehicles through which polities imagine their collective futures. To restore truth to its rightful place in democracy, governments should be held accountable for explaining who generated public facts, in response to which sets of concerns, and with what opportunities for deliberation and closure.

## Keywords

co-production, expertise, law and science, post-truth, public reason

When Oxford Dictionaries in 2016 announced 'post-truth' as the word of the year, modernity seemed to have written its own epitaph.[1] Our confidence that 'the truth will set you free' – the New Testament creed appropriated by the Enlightenment – was shaken, and with it the smooth, straight road of progress built by scientific discovery and technological invention.

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Giving up on truth, moreover, felt to many like giving up on democracy, for how could people possibly reason together if they could not agree on a common factual basis for deliberation? Scientists and liberal media united in deploring the abandonment of Enlightenment rationality. Yet, against the despair that many experienced after Brexit and the 2016 US presidential election, alternative narratives about truth and politics continued to circulate, narratives that found traction with a large percentage of the American electorate in spite of the documented lies flooding from the White House (Leonhardt and Thompson, 2017). How could this be?

Perhaps the notion that truth has been cast aside in the public sphere is itself at fault. The very idea of a 'post' implies a past where things were radically different, a past whose loss we should universally mourn. But for conservative critics of the global economic and political order, it was not truth *per se* that needed to be challenged. Instead, their quarrel was with particular truths that liberals and experts accept as self-evident, especially the devastating reality of climate change and the economic merits of global free trade. Those truths did not resonate so well with the realities of life as lived in the West's decaying industrial heartlands. At best, they were irrelevant, diverting attention from more immediate problems; at worst, far-right commentators claimed, they were fabricated to serve the deep state's interests. Besides, as Brown (2016) warned in *The Guardian* even before the U.S. election, the term 'post-truth' overlooks people's manifest respect for evidence that matters to *their* condition. She cited a 2016 Institute for Government poll suggesting that, in Britain, '85% of people want politicians to consult professionals and experts when making difficult decisions', and trust in experts has risen since 2014. The term post-truth, then, constructs a false view of public opinion that Brown dismissed as 'elitist and obnoxious'.

If public truth of the kind for which so many experts yearn has died, then maybe progressives bear some responsibility for killing it. Science and Technology Studies (STS) has been blamed for contributing to the decline in trust, by painting a picture in which all facts become claims and all claims are seen as merely political. Those accusations reached fever pitch with the Science Wars of the 1990s (see, e.g., Gross and Levitt, 1994; Sokal and Bricmont, 1998), and have been resurrected since then even by STS scholars to explain the persistence of so-called climate denial and other antiscientific beliefs (Collins et al., 2017; Latour, 2004). That account, however, neither does justice to the field of STS nor reflects our cumulative understanding of how public reason works (Hurlbut, 2017; Jasanoff, 2012; Sismondo, 2017a, 2017b). Certainly STS has work to do to explain why the Enlightenment project has taken a hit in recent years; and like any social science discipline with a stake in progress, STS should consider how its perspectives can lead us forward from this moment of anxiety and popular disenchantment, not least by helping to better diagnose our present predicament. But self-examination reveals a more complex story of how we got here – and it was not from a past where politics was governed by pure *veritas*.

The story we tell begins with the recognition that debates about public facts have always also been debates about social meanings, rooted in realities that are subjectively experienced as all-encompassing and complete, even when they are partial and contingent (Irwin and Wynne, 1996). Facts that are designed to persuade publics are co-produced along with the forms of politics that people desire and practice (Jasanoff, 2004). Hence they are shot through with values in at least four ways. First, and perhaps most obviously, the choice of which realities one takes as consequential for political behavior, and therefore which facts one sees as important or controlling, is normative. Second, the ways in which facts are produced to serve governing interests incorporate prior value

judgments about the right ways to deploy expertise in society. That becomes clear the moment one looks across social groups, nations, or historical periods and notices that the apparatuses for making and contesting truth vary, consistent with situated and particular histories and emancipatory promises that are associated with specific assertions of truth. Third, truth claims in the public sphere are normative because they reduce the space for democratic engagement by appealing to exogenous standards of rightness, even though these have proved, on inspection, to be deeply value-laden (e.g., Jasanoff, 1990, 2004). This move treats truth asymmetrically, as if it stands outside the messy dynamics of society, while locating only challenges to truth in the (fallen) social world. Lastly, by suggesting that there was a prelapsarian past in which truth legitimately preceded and guided politics, the term post-truth denies the historically intimate connections between public fact-making and the rise of modern democracy (Ezrahi, 1990). It thus denigrates the very centrality of truth-seeking in contemporary constitutional orders (Jasanoff, 2012).

To make these points clearer, let us turn to an example from the history of art which illustrates how the project of public truth-seeking can be at once normative and 'factual'. In his fictional biography of Michelangelo, the novelist Irving Stone wrote of the sculptor's fateful encounter with the block of marble that was to become his peerless statue of David. This was a time when artists depended on patrons to commission and pay for art, and individual vision had to accommodate itself to public tastes and purposes – much as public science, too, is commissioned to serve governments and the polities that elected them. The 'Duccio block' was lying unused because its long, thin shape challenged the sculptor's skill, but it inspired Michelangelo:

> One darkness before dawn he rose, dressed hurriedly, ran through the empty Via del Proconsolo to the Duomo workshop, and stood at the corner of the column. The diagonal beams of first sunlight streamed across the marble, projecting his shadow upward the full seventeen-foot length of the column, magnifying his silhouette and turning him into a giant. He caught his breath, thought of David as he knew his story from the Bible. 'This is how David must have felt,' he told himself, 'on that morning when he stepped forth to meet Goliath' (Stone, 1961: 365).

Potentially, the Duccio block could have yielded many things, or indeed nothing that posterity would have treasured. Michelangelo saw a particular possibility within that inanimate stone; he was able to persuade others of the rightness of his vision, and in his hands the inanimate stone became a global icon of heroism and male perfection, winning undying renown (for one recent reaction, see Anderson, 2016). David became to Florence what the moon shots have been to late twentieth century American democracy: a symbol of political and cultural prowess, and a material figuration of a political community's spirit.

Stone's account clearly resonated with the philosopher Philip Kitcher when he set out to describe how scientists make truths about nature. Unlike Stone, however, Kitcher located the multiplicity of possible visions more in the marble than in the artist. Seeking to restore 'a place for human values and human interests in the constitution of the goals of the sciences', Kitcher (2001) writes:

> Imagine a block of marble, one large enough to set a sculptor salivating. How many things are there here? One large block of marble, of course, but the question is notoriously ill posed. For there are many different lumps of marble inside the big block, many potential statues waiting to be released. Let's restrict our attention to statuesque representations of David (p. 44).

Stone, the novelist, and Kitcher, the philosopher, agree on one fundamental point: if the world is like a block of marble, the realities we choose to make out of it (here, the possible Davids) are potentially infinite in number. Yet, once carved, there is a naturalness to the creation that makes it seem as if right and whole, even intended. It becomes difficult to see the virtue in all those other ways of cutting the stone that might have existed. And, as in the case of Michelangelo's glorious giant, smaller truths (e.g., revenue flows from tourism, derivative art works and tchotchkes, viewer reactions, public debates) begin to accumulate around the carved reality, making it all the more undeniably real, as actor-network theorists in STS would find entirely predictable. To borrow a description applied to Apple founder Steve Jobs, a forceful shaping of the world, whether a statue or a moon shot, becomes its own 'reality distortion field'.

But the act of extracting any single reality from the welter of possibilities is not simply due to the largeness of the block or the infinity of smaller blocks residing therein. Rather, that act can be seen in effect as a moment of coproduction (Jasanoff, 2004), in which a commitment to seeing the world in a particular way (how things *are*) gets coupled to commitments to particular norms and values (how things *ought* to be). In Michelangelo's case, as narrated by Stone, the David carved out of the Duccio block was meant to be at once a fulfillment of Michelangelo's sculptural vision, a demonstration of his technical virtuosity, a source of income, and an embodiment of Florence through the appropriation of a well-loved Biblical myth. The 'reality' of the David statue was and is much larger and more encompassing than simply its physical state. As we suggest below, today's debates over facts and truth often neglect to query the nature and limits of these kinds of wider realities in which contested public facts are embedded, and which – for all the reasons detailed above – give facts their normative force. Yet, many of those realities touch upon constitutional choices of how people wish to live with one another and with their ruling institutions.

Independent of which realities one chooses to take as relevant to or controlling of political behavior, it is imperative in democracies that deep normative disagreements about collective purposes be aired and not swept under a carpet of 'facts' that has become threadbare through misdirected contestation.[2]

## Chance or choice: Who killed truthfulness?

Some ancient Romans attributed unexpected turns in the road of life – such as  the dawning of an alleged post-truth era in twenty-first century politics – to heedless fortune:

> Dame Fortune, some philosophers maintain,
> Is witless, sightless, brutish; …
> That on a rolling ball of stone she stands;
> For whither that same stone a hazard tilts.
> Thither, they say, falls Fortune;
> That she is witless for that she is cruel,
> Untrustworthy, unstaid … and brutish too
> Because she cannot tell between the man
> That's worthy and the unworthy (Pacuvius quoted in Warmington, 1979: 319).

If Fortune it was that turned the tables on truth to foist an unworthy man to power in 2016, it wouldn't be the first time she had taken revenge on unfounded expectations. History is littered with power shifts that came as if from nowhere; only in hindsight did earlier cracks become plain and causes traceable. These days, language itself is a prime example of sudden reversal. The Oxford English Dictionary once sat in libraries with the leather-bound heft and gravitas of Gutenberg's Bible, its content adjudicated by experts since Dr. Samuel Johnson compiled its first predecessor in 1755. Today the thousand-year history of the English language on the dictionary's website invites one to click on 'What's New'. Here, in the wild digital world, popular usage, not prim lexicography, rules. The once obscure 'Internet' (now simply 'internet') has brought sudden respectability to street argot that used to keep its distance from polished speech. The OED's efforts to render English as a 'living' language now record the moods of the 'adulting' youth caught up with being 'woke' and the 'glass cliff' fears of 'Latinxs' pitted against the Paleolithic masculinity of the 'alt-right'. However much enlightened moderns may deplore the pluralization of language, knowledge or perception on the internet, the digital medium teems with people every bit as intent on communicating their versions of truth as Oxford dons or Washington economists.

There are hints in the written records of this moment that the turmoil we are witnessing has a profoundly moral valence, even connotations of temptation and sin. *The Economist's* (2016) special issue on 'post-truth' politics shows on its cover the forked tongue of the lying serpent, alluding to a loss of Edenic purity (though one may note that the sin here was precisely the flouting of a moral limit on the acquisition of knowledge!). In the *New York Times*, Professor William Davies (2016) of Goldsmith's writes, 'Facts hold a *sacred* place in Western liberal democracies … when voters are manipulated or politicians are ducking questions, we turn to fact for *salvation*' (our emphasis). To many, like Davies, it feels as if we have 'entered an age of post-truth politics', where even numbers will be viewed less as 'statements about reality' than as 'indicators of current sentiment'. Yet, as references to sin and sacrality may remind us, the road to knowledge was never so straight nor straightforward.

It may be counterintuitive to turn to the field of Science and Technology Studies (or, alternatively, Science, Technology and Society) for explanation – let alone for the salvation Davies expects from facts. STS scholarship, after all, is best known for destabilizing easy demarcations of facts into black and white binaries of true or false; nor is STS inclined to mark progress by dividing history into periods rated by their relative commitment to truth. Instead, STS inquiry has more in common with work that problematizes the presumed inevitability of progress and the 'illusion of control' created by technoscience, which so often restricts reality 'to that which can be measured and managed' (Dark Mountain Project, 2017). We believe, however, that STS has special contributions to make in this supposedly new era – precisely because the field never bought into the account of an inevitable or linear enlightenment, and equally not into the judgment that the Enlightenment has been abruptly overthrown (Latour, 1993). Indeed, STS scholars assert that moral panics about the status of knowledge in the public sphere are as old as knowledge itself. The challenge of the present crisis, then, is to discern what makes this panic seem so special, and what that in turn might mean for the future of democracy and social progress.

Here, we are confronted with two tasks: first, to trace the patterns of social response to the malaise of the moment; second, to propose a pathway *back* to reason as an alternative to 'witless, sightless' rejections of truth. This forward path, we suggest, calls on us first and foremost to distinguish (as Roman Fortune witlessly could not) between the 'worthy' and 'unworthy': in choosing approaches to truth-seeking as much as in deciding who should be the American president. The act of diagnosis, a prerequisite for knowing how to proceed, requires us to fully embrace the discussion of values and purposes as integral to the project of making epistemic truth. If enlightened modernity as the twentieth century knew it is dead, then our aim is not to join a blind rush to announce its funeral. Instead, we offer a more generative vision of how truth-seeking can, and, more importantly, should continue to play a defining role in democratic life and public reason.

## Making public facts

We begin by remarking that truth in the public square has always been *demonstrable* truth (Shapin, 1994; Shapin and Schaffer, 1985). It is the insight that truth needs to be performed and accepted that marks STS from other disciplines that would separate truth, with its own norms, understandings and aspirations, from a politics and ethics that march to entirely different drummers. One of the hallmarks of modernity was to make truth and knowledge the foundations for exercising political power, as if fact-finding had to precede and direct political choice (Ezrahi, 1990; Shapin and Schaffer, 1985; Skowronek et al., 2016). That move had broad appeal because it seemed to take arbitrariness out of rulership. In the United States, a bastion of modern democracy, publics at opposing ends of the political spectrum could all agree on the importance of science for policy or, more simply, on the need for public facts. Yet, just as power is continually contested and forced to justify itself to democratic publics, so power's knowledge came under continual questioning. Arguably, that long record of attack and counter-attack, and the associated appeals to truth as the ultimate arbiter, weakened the American state's moral authority to produce 'serviceable truths' – that is, robust statements about the condition of the world, with adequate buy-in from both science and society to serve as a basis for collective decisions (Jasanoff, 2015). Moreover, it helped create an increasingly polarized republic in which defeats were felt as crushingly as King Lear – no stranger to Fortune's reversals – felt his 'wheel of fire', intolerable and irredeemable for whichever party fell outside of Fortune's favor in the struggle for epistemic and political domination.

At stake in these quarrels were not just facts, such as the degree of lead contamination of water in Flint, Michigan, nor even regulatory policies, such as whether the Environmental Protection Agency should or should not ban chlorpyrifos, a chemical thought to harm babies' brains (Lipton and Rabin, 2017). As noted earlier, in our co-produced worlds, questions of what and how we should know go hand in hand with questions of how we should govern. These, therefore, were profoundly ideological, indeed constitutional, battles over the role of the state, the freedom of the market, people's right to health, and the sorts of information and processes needed to ensure meaningful democratic participation. No wonder, then, that so many knowledge controversies

of the past few decades have been both vicious and intractable. They are stand-ins for recurring, open-ended questions about the kinds of democratic futures Americans should aspire to. The rising stakes of defeat, coupled with intensifying demands for expertise and loss of trust in the institutions responsible for making public knowledge, provide needed context for understanding the current crisis of public credibility.

The roots of discontent over public facts in the United States stretch back at least to the New Deal, an era of nation rebuilding marked by the rapid rise of expert agencies. In that period, federal involvement to secure the economy against another Great Depression, along with lingering Progressive Era ideals of informed and reasoned government, led to an enormous expansion of the regulatory state. Those developments drew calls for greater openness and accountability in the state's ways of knowing. Business and industry worried that the government's claims of superior expertise together with its monopoly on information would hurt their interests and curtail their liberty, and they sought to ensure by law that they would have access to the expert practices of executive bodies. Their activism led to the passage of the Administrative Procedure Act (APA) of 1946, to remedy what the US Congress saw as 'an important and far-reaching defect in the field of administrative law', namely, 'a simple lack of adequate public information concerning its substance and procedure' (Senate Judiciary Committee, 1945). Designed to open up the administrative process, the act also created – through its provision for judicial review – a potent instrument for contesting public facts, an instrument that political interests of all stripes enthusiastically exploited in the decades following the law's adoption. A pattern developed that many have noted (Brickman et al., 1985; Nelkin, 1979; Vogel, 1986): modern American politics played out not only in the realm of law, as a fascinated Alexis de Tocqueville had observed in 1831, but also in recurrent disputes over scientific claims relevant to policy.

The rise of social regulation in the 1970s gave new impetus to the private sector's disenchantment with public fact-making, eliciting charges of 'bad' and even 'junk' science. Again demonstrating that the real target was the state itself, public authorities bore the brunt of these attacks, although a political majority supported the production of public facts as a worthy national undertaking. Put in economic terms, knowledge needed for governance was seen as a public good, and hence a commodity the state could reasonably be expected to generate. This was the period in which an electorate newly sensitized to health, safety and environmental hazards demanded, and received, protection from unseen and understudied threats: radiation, airborne toxic emissions, chemicals in food and water, untested drugs, workplace hazards and leaking landfills. Individual safety and liberty seemed to demand more regulation of corporate activities. A barrage of progressive legislation, enacted with broad public support, sought to protect the subjects of a post-industrial, post-material society still exposed to the all-too-material hazards of older, dirtier forms of industrialization. These laws changed the American social contract for science, demanding expensive information from the private sector as a precondition for doing many kinds of business, and also allowing regulatory agencies to fill gaps in public knowledge as needed. Above all, agencies gained authority to interpret existing information for policy purposes with the aid of a growing 'fifth branch' of scientific advisers (Jasanoff, 1990). These advisory bodies, convened for the express purpose of helping agencies to carry out their statutory mandates,

often found themselves on the front line of political wrangling, either for having over-read the evidence in favor of regulation or, less frequently, for granting too much latitude to industry's anti-regulatory claims.

Starting in the late 1970s, US industries repeatedly accused federal agencies and their expert advisers of allowing politics to contaminate science, and with the election of Ronald Reagan in 1980 they found a powerful ally in the White House. Once again fundamentally different visions of governance were pitted against each other, though framed as disputes over technical claims. It was not the production of information per se that the Reaganites attacked, but rather the virtue of the producers, who were deemed to be too politically motivated to be honest scientists. In the early years of the Reagan administration, charges of 'bad science' crystallized into a bid for a single, central agency to carry out risk assessments for all federal regulatory agencies, as well as a more general call for peer review of the government's scientific findings by scientists not too closely associated with the state's purposes. A seminal report from the National Research Council in 1983 beat back the demand for political centralization by carving out an autonomous (and by implication apolitical) space for science. The report did this influential boundary work by labeling risk assessment a 'science' (National Research Council, 1983). Despite decades of research demonstrating that risk assessment not only is, but must be, a complex exercise, blending accepted and plausibly surmised facts with judgments conditioned by public values, including those enshrined in law, the label 'scientific risk assessment' endured. That label, however, left decision-makers, whose real job was to make sound policy judgments based on imperfect knowledge, vulnerable on grounds of having deviated from a baseline of imagined scientific purity. White House attempts to take control of regulatory peer review continued into the administration of George W. Bush (Jasanoff, 2016), even as that administration was attacked by the Democratic opposition for repudiating science (Mooney, 2005).

By the 1990s, the uproar surrounding public knowledge-making reached a new crescendo around the use of science in courts. In another turn of Fortune's wheel, prominent scientists (often associated with the political 'left') united with industry (typically considered the political 'right') to decry the courts' alleged receptivity to 'junk science' (Huber, 1991) and they lobbied to introduce more 'independent' expertise (i.e., experts nominated by the courts rather than selected by the parties) into a process traditionally dominated by adversarial interests. Both parties perceived legal fact-finding as a threat to their own autonomy. For scientists, the issue was largely one of authority: Who gets to declare what counts as right scientific knowledge and who sets the standards for those judgments? For industry, the issues were money and certainty: Introducing a higher bar against plaintiff-generated knowledge would reduce the probability of getting sued and the threat of large, jury-mandated compensation payments.

The Supreme Court took note and in 1993 issued a ruling (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 1993) that asked judges to think like scientists and to play a more proactive role in pre-screening expert testimony. *Daubert* stopped short of accepting the petitioning drug company's demand for peer review and publication as preconditions for introducing scientific testimony. But, contrary to findings from STS (Edmond and Mercer, 2000; Jasanoff, 1995; Lynch and Cole, 2005; Lynch et al., 2008), the decision reaffirmed and wrote into legal practice the notion that criteria for determining the

scientific reliability of proffered evidence exist outside and independent of case-specific proceedings involving particular claims from particular domains of science and technology. Juries, traditionally more sympathetic to plaintiffs in civil litigation, also were bypassed in a new regime of *Daubert* hearings. By increasing judges' power to screen scientific evidence, *Daubert* in this sense undercut earlier sensitivity in the courts to the value-laden contexts in which evidence is generated[3] – or *not* generated, often to the detriment of economically and socially disadvantaged plaintiffs. And academic liberals (though notably neither STS scholars nor lawyers primarily representing plaintiffs) generally applauded this move toward judicializing the admission of expert testimony, even though it concentrated power in the essentially unreviewable discretion of trial judges.

## A struggle for purity

A rhetorical constant through these years of contestation over public knowledge has been the invocation of *science*, along with its satellite of facts, to both legitimate and delegitimate public action. Appeals to an exogenous science have cut across the traditional right-left divide, agreeing only on the principle that the thing called science must be insulated from the political process, but not on what counts as science or as politics in specific instances. The result is that much of US regulatory discourse is focused on filtering good (objective) from bad (biased, distorted, corrupt) science, instead of on the question what is to be done in cases of uncertainty and ignorance.

Strikingly absent from US policy discourse has been an espousal of the 'precautionary principle', a cornerstone of European regulatory policy designed to deal with situations in which science and values must be considered together because policies demand to be undertaken without firm foundation in fact. A European Union communication issued in 2000 explained that 'the precautionary principle is neither a politicisation of science or the acceptance of zero-risk but … it provides a basis for action when science is unable to give a clear answer' (European Commission, 2000). This articulation of the precautionary principle closely converges with the concept of 'serviceable truth', observed in the practices of US expert advisers, and defined in 1990 as 'a state of knowledge that satisfies tests of scientific acceptability and supports reasoned decision-making, but also assures those exposed to risk that their interests have not been sacrificed on the altar of an impossible scientific certainty' (Jasanoff, 1990: 250). While often practicing precaution, however, especially in Democratic administrations, US elites in science and politics have typically shied away from endorsing it as a valid policy discourse.

The important point for this discussion is not whether the precautionary principle can be easily implemented, nor whether European policymakers are sincere or consistent in applying it, nor whether Europe's precaution-based policy produces more or less stringent regulation than America's risk-based choices. These matters have long been debated in the policy literature, without conclusive findings (Tickner, 2003; Vogel, 2012; Wiener et al., 2011). Rather, the relevant point for our purposes is the very recognition that there might be an intermediate analytic and discursive position between 'politicization' and 'zero risk' – a position comfortably occupied by the notion of precaution. That position demands a consideration of alternatives, usually carried out in consultation with publics.

Endorsing the 'precautionary principle' can thus be seen as a first-order attempt to distinguish between worthy and unworthy objectives through politics, when facts are not available to resolve a dispute to everyone's satisfaction.

The 'post-truth' moment can be seen against this historical backdrop as a failure of collective political judgment in situations of epistemic ambiguity and deep political cleavage. With only binaries to choose between – my science versus yours or my politics versus yours – the public truths offered by liberals, left-leaning intellectuals, and Democrats have failed to gain social traction against their opponents' misleading statements, outright lies, and in presidential spokeswoman Kellyanne Conway's unforgettable phrase 'alternative facts'. Commentators from the United States and Britain cite a troubling (though, as polls suggest, hard to document) loss of trust in science, the fragmenting effects of technology, and the imagined unraveling of social ties. Few political leaders, however, seem willing to take on the underlying institutional causes for these breakdowns, preferring to represent the conflict in starker terms, as a struggle between truth and lies rather than a struggle between alternative imaginations of democracy.

In a thoughtful, wide-ranging interview with political analyst David Axelrod, for example, President Barack Obama, just weeks before his departure from the White House, dismissed British Labour for disintegrating under 'Corbynisation' and moving too far to the left, possibly because its leader, Jeremy Corbyn, had not stood firmly enough against Brexit.[4] Asked about the risk of his own party meeting a similar fate, Obama added, 'I don't worry about that, partly because I think the Democratic Party has stayed pretty grounded in fact and reality' (Axelrod, 2016: around minute 49). The Republicans, he said, had moved further and further from the basic consensus. If so, however, Fortune's wheel has blindly turned, and liberal knowledge has faced crushing defeat for reasons that seem impenetrable, and beyond remedy, to the losing side. There is little indication that by holding on to *their* truths, Democrats will regain the political ground lost to those who wanted to break out of the iron cages of expert rationality at any cost, including even through the election of a president manifestly unqualified to govern.

For some, the only imaginable corrective is to get more science and truth back into the public's uneducated, misled or distracted minds (e.g. Andersen, 2017; Johnson, 2015; Oreskes, 2011) – a job for scientists who are prepared to march for that cause. Others call attention to a liberal ideology that has, in the wake of the election, focused on how it failed to communicate the facts properly, when the problem may instead have been a failure to frame the issues in ways that meaningfully connect to people (Chira, 2016; Douthat, 2016; Lilla, 2016).[5] Many claim liberal railing against the 'failure of half the country to know what's good for them' is too smug (Rensin, 2016): it assumes an uncontroversial 'factiness' broadcast as truth through National Public Radio podcasts, and even nightly news packaged as comedy (Banks, 2016). 'Post-truth', the term Brown decried as elitist and obnoxious, implies to some discerning critics a downright falsehood: that liberal rectitude in wielding power chiefly rests on uncontestable truths. Bue Rübner Hansen and Rune Møller Stahl (2016) wrote in *Jacobin Magazine*: 'Liberals' belief in their superior ability to govern never had the facts on its side.' 'Change strategist' Joe Brewer (2016) insists: 'The deep truth about "fake news" is that no one has direct access to reality.'

In view of these conflicting interpretations of the state we are in, there is a more basic question for STS to address. How did 'truth', especially in the US, become the property of liberals, and how are today's cries of outrage at governmental deviation from science, expertise and facts different from the 'bad science' charges of the political right in earlier decades? It is not completely far-fetched to suggest that it is liberals, accustomed to governing by the power of facts, who now have lost sight of the value-laden social contexts of truth claims. The great gains made by science and technology in recent decades have led to complacency about science getting the right answers to big social problems. The demonstration of climate change with its urgent messages for humankind is perhaps the paradigm example, but scientists insist equally on the primacy of facts in any number of other situations where science has supported increased state intervention for the sake of a higher public good, such as regulating nuclear waste disposal, vaccination against childhood disease, genetic modification of plants and standardized educational testing. In time, we are told, even gene editing of future humans will become risk-free, just as autonomous vehicles will move safely on America's roadways. Lost from view is the fact that people bring *other* senses of what is worthy and unworthy to each and every one of these politically inflected developments, such as whose purposes defined the search for new knowledge, who gains and who loses through the introduction of technology, and whose definition of risk or benefit should frame the public discourse.

Conservatives, some point out, have long refused to take facts seriously when they know that those making the facts (e.g., about illness, poverty, inequality) espouse policy priorities that are not consistent with their own. But many so-called 'millennials' on the left, whom some deride as 'social justice warriors' (a 2011 OED addition), also learned early on in their digital upbringing: that truth is not one thing but many, that standpoint matters to one's perception of which truths are worthy of notice, and that the internet is a means of bringing to light those 'alt-truths', grounded in alternate lived realities, that power has pushed aside as not worth noticing. Millennials have renounced the traditional media and the State – not to mention the Church – in favor of 'alternative' ways to advance their truths, whether by following favorite journalists and politically active friends on Twitter and Facebook, getting their information from Vice or Vox, or turning to Reddit and other online discussion forums. The #BlackLivesMatter movement has called for an end to the selective targeting of blacks by whites in a system that often turned a blind eye to the facts of mass incarceration, unpaid prison labor and racially charged police shootings. Others, like the British writer Paul Kingsnorth, use the internet to launch movements of artistic reflection on the end of modernity – as a 'form of cultural engagement … not taken in by ephemeral promises of growth, progress and human glory' (Dark Mountain Project, 2017). These actors, surely to be counted among contemporary progressives, espouse imaginaries of freedom that rest upon very different truths from those propagated by the world's regulatory elites.

## Hijacking democracy

It is sobering, then, to see that this alleged post-truth moment is proving to be neither a democratic renaissance for left alternatives nor a digital breakthrough for oppressed groups who now have an outlet for asserting their political voice. To the contrary, the

reactionary powers of tradition and nationalism have used new media to conjure false memories of great and glorious pasts, as Trump and the UK Brexiteers channel what their opponents see as nightmarish apparitions of market fundamentalism and white male supremacy. Those now in power are doing even less than their neoliberal, globalist predecessors to address the problems of climate change, uncontrolled consumerism, gender inequality or aggressive policing of black males. Instead, they are promising to restore economic prosperity and law and order in a 'correction' (one might say in defiance) of longstanding, evidence-based ideas held by both major American political parties. As Trump's chief campaign strategist and erstwhile adviser Stephen Bannon said to the *New York Times* in the spring of 2017:

> I think the Democrats are fundamentally afflicted with the inability to discuss and have an adult conversation about economics and jobs, because they're too consumed by identity politics. And then the Republicans, it's all this theoretical Cato Institute, Austrian economics, limited government – which just doesn't have any depth to it. They're not living in the *real* world (Draper, 2017).

In keeping with his idiosyncratic beliefs, particularly in cycles of crisis, Bannon welcomed the possibility of an 'insane and blind' fate to disrupt our complacent politics. The chief architect of Breitbart used digital wizardry and the ideology of the alt-fact, alt-right to promote his own desired unraveling and restructuring of society (Cadwalladr, 2016). Corporate Republican interests, Democratic political correctness, and Chinese shrewdness have all consorted together to shortchange the American worker, in Bannon's view, and it is the *working man's* truths, he claimed, that in 2016 succeeded in rudely asserting themselves. The rise of Trumpism can be seen in the light of these beliefs as a forceful, if dark, salvo against a reason that, by taking refuge in the discourse of facts, had abandoned the obligation to justify its moral worth to a significant subset of those it sought to govern.

As of mid-August 2017, Bannon too had been ousted from the White House inner circle, opening the possibility of a new public discourse. To address the challenge of this administration's earlier retreat from reason – and indeed to restore confidence that 'facts' and 'truth' *can* be reclaimed in the public sphere – we need a discourse less Manichean than Bannon's, but also less simplistic, judgmental and unreflexive than elite invocations of good science. We need to rethink and complicate the stark binaries of good/bad, true/false, or science/antiscience. Unexamined use of those binaries, we have seen, only augments political polarization, and yields unjust advantage to those in possession of the political megaphones of the moment. We need a discourse more attuned to asking how and for what purposes such categories were constructed in the first place, and more respectful of longstanding STS findings that truth in the public sphere is not simply out there somewhere, to be conjured up at need like the magician's rabbit from a hat (Jasanoff, 1990, 2012; Shapin, 1994). We need above all to resist the unthinking reduction of lived realities to technical facts, assuming that both are singular and both can be ascertained through apolitical delegation to scientific consensus.

On the contrary, we should recognize that the sufficiency of truth claims has been accepted in the Western public sphere only when associated issues of public value and purpose were addressed in tandem. Crucial to good processes of public fact-making is

that judgment cannot be set side, nor facts wholly disentangled from values. Of course, the processes of disentangling knotted realities must themselves remain politically accountable. In democratic societies, public truths are precious collective commodities, arrived at, just as good laws are, through painstaking deliberation on values and slow sifting of alternative interpretations based on relevant observations and arguments. Such deliberation includes questions of what is worthy or unworthy of collective attention, and which realities should or should not be fought for, as much as what is true or false in the view of qualified experts. Such deliberation does not take progress in science or society for granted, and – *contra* Bannon – it is not resigned to 'witless' cycles of chaos or imposing absolute penalties on the losers in political debates.

The durability of public facts, accepted by citizens as 'self-evident' truths, depends on the procedural values of fairness, transparency, criticism, and appeal. These virtues, moreover, as the sociologist Robert K. Merton (1973) noted many decades ago, are built into the ethos of science. How else, after all, did modern Western societies repudiate earlier structures of class, race, gender, religious or ethnic inequality than by letting in the questioning voices of the underrepresented? It is when those virtues of openness and critique are bypassed – in the interests of the right *or* the left – that public truthfulness suffers, yielding to what the comedian Stephen Colbert labeled 'truthiness', or the shallow pretense of truth by an unquestioned few. That short-circuiting of democratic process is what happened when Prime Minister Tony Blair's and President George W. Bush's governments disastrously claimed to have evidence of weapons of mass destruction in Iraq. A cavalier disregard for process, over and above mere assertions of lying, may be what deals the fatal blow to the Trump administration.

As the post-truth moment puts on tragic display, a center achieved through exclusion of dissent cannot hold, even if embraced in the name of demonstrably good science. It is partly the fault of our practices of public deliberation that so many feel themselves disenfranchised and disillusioned by those practices of fact-finding, enough to reject them wholesale. A more inclusive culture of deliberation leaves the door open for those who are not satisfied with the facts of the day to return with more persuasive arguments some other time. This ongoing dialectic would strengthen both science and democracy.

The international #MarchForScience on April 22, 2017 discerned in this respect only half of the problem: It rightly affirmed the value of science without paying corresponding attention to the worth of democracy, without thinking through and addressing some of the issues raised above. Some marchers affirmed with handmade signs that 'reality is not up for debate', that the malaise of the current political moment is a simple fact, like '2+2=4', and that 'science is real'. These reassertions of singular reality and plain fact miss the deeper truth that the moment requires more a robust engagement with competing political visions than a facile call for trusting 'the science'. To say that facts speak for themselves is to live in a 'post-value' world that ignores contention and questioning as the very stuff of a democracy that has always connected public facts with public values. Reality, indeed, *should* be up for debate, if that debate is about whose reality counts and by what measures. Avoiding negotiation between facts and values will only result in the blind subjugation of some values over others, with those whose values are left out rejecting the other side's 'truth' as merely politics by another name.

Public truths cannot be dictated – neither by the authority of an all-knowing science and its assumptions of unending social progress nor unilaterally from the throne of power and its will to bend truth to its purposes. Science and democracy, at their best, are modest enterprises because both are continually mistrustful of their own authority and prefer to hold their claims open to transparency and critique. This does not mean that the search for stability in either science or politics must be dismissed as quixotic or purely a product of blind chance. It does mean that we must remember to ask, and insist on good answers to, questions about what underpins both sets of authority claims in the first place. For assertions of public knowledge, then, it seems indispensable to pose the following questions:

Who made the claim?

In answer to whose questions or purposes?

On what authority?

With what evidence?

Subject to what oversight or opportunity for criticism?

With what opening for countervailing views to express themselves?

And with what mechanisms of closure in cases of disagreement?

If those questions can at least be raised, even if not answered to everyone's satisfaction, then factual disagreements cease to be seen as intractable, and confidence builds that ours is a government of shared moral worth as well as sound reason.

## How democracies should know

In the light of these questions, the 'post-truth' moment can be reframed as a moment of revelation that neither facts nor values can stand alone in a government founded on the principles of truthfulness and inclusive public debate. For STS scholars familiar with the dynamics of coproduction (Jasanoff, 2004), it will come as no surprise that building strong truth regimes requires equal attention to the building of institutions and norms. As yet, however, neither right nor left in American politics seems prepared to concede the need for closer integration.

The failures of openness, inclusivity, and simple respect for expert opinion on the side of the administration now in power are already too numerous to list. The assault on climate science and environmental standards more broadly is a blatant example. On June 1, 2017, Donald Trump announced, against advice from many quarters, that the United States would withdraw from the Paris Climate Accord. That very public announcement drew media attention away from the slow dismantling of the Environmental Protection Agency (EPA) by Scott Pruitt, a man 'whose LinkedIn profile describes him as "a leading advocate against the EPA's activist agenda"' (Davenport and Lipton, 2017). Accompanied by armed guards and round-the-clock security at the agency he heads, Pruitt is reportedly dismissing scientists, rolling back regulations, and closing offices without any signs of being answerable to the public or oversight from lawmakers on

Capitol Hill. William D. Ruckelshaus, EPA's enormously respected founding administrator, accused Pruitt of taking a 'meat ax' to protections on public health and environment and decried the secrecy of the process as antithetical to the agency's mission. For those who care about environmental protection in America, the chaotic and ungoverned changes made during the first few months of the Trump administration come about as close to a crushing defeat as is imaginable – an unexpected election outcome putting the fate of the planet into the hands of blind fortune.

By contrast, Bill McKibben, author, founder of 350.org, and one of America's most eloquent environmental activists, writes that there's not the 'slightest evidence that Americans want laxer environmental laws' (McKibben, 2017). He points to polls showing that 'two-thirds of Americans would prefer that the EPA's powers be preserved or strengthened.' 'Solar power, meanwhile, polls somewhere in the neighborhood of ice cream among Democrats, Independents, and Republicans alike.' McKibben attributes the opposition to a 'whole league of cartoonish villains' and moguls in the 'right-wing funding network'; and 'against them stands reality'. He concludes:

> Reality gets plainer every day on a planet that just saw the hottest year ever recorded, where sea ice is at an all-time low, and where California's epic drought has suddenly given way to epic flooding. History will judge the timing of Trump's crusade with special harshness. (McKibben, 2017).

Trump and Pruitt wrap themselves in the values of regulation and free-enterprise, without paying any heed to 'fact'. McKibben bludgeons them with the hard truth of an unquestionable 'reality'. Both sides seem to place what they hold to be self-evident ahead of the need to arrive at more inclusive closure in disagreements over environmental and human futures. While Pruitt's approach appears blind to decades of scientific fact-finding, McKibben's arguably leaves insufficient space for debating the worthy and the unworthy, settling instead for majoritarian rule by numbers ('two-thirds of Americans'). But in a republic that is more diverse in its experiences and aspirations than it may appear from the liberal enclaves of Vermont or California, what do hot days or declining sea ice actually mean for how lower-income people would like to live in Michigan or Mississippi? Whose task is it to bring those implications into view in ways that allow people to feel some control over their own and their children's lives?

Against both Pruitt and McKibben, STS scholars may see the questions posed earlier as more productive starting points for asking how democracies should know their own condition, so as to govern themselves better. Addressing those questions responsibly would lead away from simplistic accusations of 'out of control' environmentalists or 'cartoonish villains' in an effort to configure a more just and stable environment for all. Doing so, in turn, will require institutional structures more conducive to deliberation than either election cycles paid for by right-wing moguls that give the advantage to powerful corporations or distanced, elite consensus on abstractions such as 350 parts per million or sea level rise or even 'climate justice'.

STS scholars might characterize the needs of the moment as partly an effort to reestablish greater parity across competing realities: between, on the one hand, the truths of hot years, sea ice, and epic flooding foreseen by climate science and, on the other, the experience of hardscrabble working lives with legitimate worries,

grievances and desires divergent from those of a state perceived as unduly intrusive or an educated, expert elite. At present, Americans' ignorance of each other across economic and class divides has created a world of blanket accusations about being on the 'wrong side of history'. This leads to a climate in which fundamental disagreements over values are treated as if they can be simply overridden and destroyed by facts rather than listened to and reasoned with to create a knowledge base that feels truly shared. Yet, what calls for attention in our present crisis – a crisis of democracy as well as a 'climate crisis' – is precisely this *lack* of shared imaginations about the future of American, and indeed global, society.

Short of more substantive encounters among diverse groups, willing to talk about the facts and values that make up their respective realities, violence against scientific truth will only continue, with demagogic populism rejecting outright the futures, emancipatory or unforgiving, imagined by science. In response to the arrogance of a detached, all-knowing science and the radical right's dismissal of truth as 'politics all the way down', we might conclude with a call from an unexpected source: Pope Francis, who may understand the logic of STS better than some representatives of the field itself. He asks for a 'big politics' and a 'culture of encounter' that will craft unity out of diversity – a politics that integrates everyone, not as in some 'throwaway culture' where the poor and defeated are cast off with each new turn of the wheel (Ivereigh, 2017). Francis recognizes the need for divergent spiritual values to find a place in political deliberation. Similarly, opening more space for deliberation on epistemic divergences would bring a profound, and we believe positive, shift in our public discourse.

That even the head of the Catholic Church, speaking from the traditionally private sphere of religion, can find a place of relevance in our present discontents about public reason brings Fortune's wheel back full-circle. What assures a polity that knowledge has been rightfully coupled to power is the conviction that knowledge itself remains subject to tests of virtue. Without renewed attention to the norms that shape the practices of public science and public reason it will not be possible to guide Fortune's wheel expertly along the arc of justice. By engaging more energetically with the *aims* of truth-making, and by separating the worthy ends from the unworthy, we may even join King Lear's messenger Kent, who found it in him to welcome the future from his 'shameful lodging' in the stocks: '*Fortune, good night. Smile once more. Turn thy wheel!*'

## Acknowledgements

## Notes

1. At a workshop organized by the Program on Science, Technology and Society at Harvard in December, 2016, we decided collectively that this was a moment for understanding our own roles better, as actors engaged in and responsible for research and education. One project we undertook was a set of commentaries brought together in the First 100 Days blog, organized by STS graduate students Jacob Moses and Gili Vidan (see http://first100days.stsprogram. org/). A second was a collection that the authors of this article made of writings in the popular press and elsewhere attempting to make sense of this historical moment and the abrupt turns taken by American democracy. To introduce this 'post-truth reader', we started writing a short blog post that gradually morphed into this longer essay.

2. One can discern such threadbareness in the long-running US debates about Creationism, anthropogenic climate change, and where human life begins. The facts in each of these controversies, and in a host of others of lesser consequence, are tied up with profoundly normative understandings about humanity's relations with nature. Yet, the debates remain stubbornly technical, side-stepping normative engagement. Not surprisingly, efforts to resolve those differences on epistemic grounds alone have failed.

3. See, for instance, the opinion of the US Circuit Court for the District of Columbia in *Ethyl Corp. v. EPA*, 541 F.2d 1 (D.C. Cir. 1976), holding that conclusive evidence is not needed to satisfy the Clean Air Act's definition of endangering public health.

4. The British national election on June 8, 2017, in which Labour performed surprisingly well and the Tories lost their parliamentary majority, showed that Obama had misjudged the strength of Corbyn's campaign narrative, perhaps by insisting too much on 'facts' and failing to give adequate weight to UK political realities.

5. These authors join with those pointing out the limits of the frames of identity politics and feminism to capture the results of the November election. Days before his resignation, Steve Bannon stated to Robert Cuttner of *American Prospect* that 'the longer [the Democrats] talk about identity politics, I got 'em' (Hartmann, 2017). Responses to such criticisms of identity politics include Dyson (2016), Coates (2016), and Gage (2017).

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