The Democratic Shaping of Technology:
Its Rise, Fall and Possible Rebirth

LANGDON WINNER
RENSSELAER POLYTECHNIC INSTITUTE
UNITED STATES

Abstract

In the 2020 Prague Virtual Conference of the Society for Social Studies of Science (4S), Langdon Winner was awarded the society's John D. Bernal Prize jointly with Sharon Traweek. The Bernal Prize is awarded annually to individuals who have made distinguished contributions to the field of STS. Prize recipients include founders of the field of STS, along with outstanding scholars who have devoted their careers to the understanding of the social dimensions of science and technology. This essay comprises Winner's acceptance speech and is followed by a short postscript written in 2021. The postscript captures a brief reflection on the upheavals of the COVID-19 pandemic and the US election results which shifted the US to a Biden administration.

In their award statement, the Bernal Prize committee noted: "Winner's most cited article "Do Artifacts Have Politics?" of 1980 has inspired a wide spectrum of critique and analysis of technological arrangements as, among other things, political orderings of our society. Since then, his career has focused on the political dimensions of science and technology, technology policy and the politics of technology. Winner has addressed key intellectual questions of classical and modern political theory in order to debate how order, power, freedom, authority and justice had resonance within technological devices. More specifically, he has brought a new dimension into the field by addressing how these classic questions in political theory are often deeply embedded in technical and material frameworks. His work emphasizes that "because technological innovation is inextricably linked to processes of social reconstruction, any society that hopes to control its own structural evolution must confront each significant set of technological possibilities with scrupulous care.""

Keywords
bernal prize; 4S society; technology assessment; Covid-19

Bernal Prize Speech, July 2020
WINNER. I want to offer my sincere thanks to the Bernal Prize committee and to the 4S Society as a whole for the expression of recognition and support the award conveys.

I'm especially pleased to be honored along with Sharon Traweek whose contributions I greatly admire.

What I'd like to do today is to trace a shadow from the past, a shadow that falls upon troubles of today, notably in my own country. It's a long story that I'll have to compact into a short space.

The starting point is the late 1960s and the rise of a new political movement with some interesting features.

Of course, that decade was famous for the rise of movements of many kinds—the civil rights movement, environmental movement, anti-Vietnam war movement, the counterculture, and others.

But there was another movement, a kind of insurgency, less disruptive in the streets, less prominent in the headlines, but one that promised to be highly consequential in the long run. Its most common name was "Technology Assessment."

Among the locations in which the project took shape were two American organizations not usually thought of as hotbeds of radicalism—the National Academy of Sciences and National Academy of Engineering.

Ambitious reports scoping out the need for and possible methods of "Technology Assessment" were published by the two academies in 1969.

Both argued that there was an urgent need to recognize that new science-based technologies would have profound influence upon the shape of society's future—its basic institutions and practices. Changes of this kind involved both the promise of positive change but also occasional prospects of risk and danger.

For that reason, it made sense to study such projects and prospects thoroughly and perhaps to steer the trajectories of social change—the institutions, practices and basic principles that their formidable presence would involve.

Both Academies went further to argue for the need to create institutions and practices to study and scope out the various prospects, making well-informed recommendations about how sweeping socio-technical change should be shaped and managed.

In fact, by the late 1960s interest in projects of this kind was also a living concern in the US Congress, then largely controlled by the Democratic Party.

A key player was Representative Eugene Deddario, Democrat from Connecticut. Among academics, physicist Harvey Brooks of Harvard University was a prominent mover and shaker.

Finally, in 1972 the House of Representatives created a new policy unit, the Office of Technology Assessment (OTA) whose purpose was to engage in research, analysis, and scoping of alternatives about emerging science-based technology, work that would help advise Congress on matters of funding, new regulation and the like.

In my view, the creation of the OTA was a logical step in the unfolding of New Deal social and political liberalism that had emerged in the 1930s as shaped by President Franklin Delano Roosevelt.

This approach to public priorities can be regarded as a softer, more modest version of the institutions of social democracy taking shape in Europe during the mid-20ᵗʰ century. Obviously, its ambitions were far less radical than the programs of New Left politics erupting in the US during roughly same period. Nevertheless, the basic focus of technology assessment expressed a truly urgent, enduring question. Could emerging science-based technologies be shaped and steered in ways that enhanced future social, economic and political patterns compatible with the common good, while avoiding the risks and dangers that science-based technologies sometimes involve?

After its founding, the OTA went to work with a small staff and modest budget. Its primary mission was to provide advice to Congress on policy issues that involved science-based technologies broadly considered.

Over the next two decades the OTA sponsored and helped organize research and deliberation across a wide range of topics. It supported hundreds of studies, some conducted by its rather small staff, others by academics in universities and research organizations.

During roughly the same period of time one sees the continuing rise of academic research, thinking and teaching in the social sciences and humanities—the various fields of STS.

Of course, that is a long and fascinating story in itself with the founding of 4S as a major focus of interaction within new hybrid disciplines.

In that light the existence of the OTA and its widespread projects served as evidence that the rise of science and technology studies was not merely of academic significance. Many believed that the institutions of American government—federal, state and local—would be responsive to the new agendas of research and practice in STS.

As a scholar moving out from political science and interested in the political features of technologies of various kinds, I watched the rise of technology assessment as an intellectual and policy movement and its occasional connection to the growing field of STS. These were truly exciting developments!

As a political radical I took note of the rather conventional, technocratic disposition of technology assessment and wondered how it might be shaped in ways more open to democratic voices and proposals. On occasion I also suggested that the writings of thoughtful critics of contemporary technological societies—Herbert Marcuse, Jacques Ellul, Lewis Mumford, and others—ought to be prominently featured in the conversation.

Rather than leave the study, speculation and proposal making to Congress people and technical professionals, why not open it up more broadly? Why not open it to a democratic citizenry as a whole?

A good many others shared these concerns.

But over the years of its existence the OTA remained a modest enterprise, conducting research and sponsoring inquiries on a wide range of subject areas—computing, energy, transportation, technologies of industrial production and the like—while publishing a steady stream of studies that were basically intended as information and advice for policy making in Congress. One can say the horizons of the OTA were ultimately constrained by its attachment to its legislatively determined role.

In that light, proposals from friendly outsiders that the OTA open itself to the participation of non-experts, to the views and voices of ordinary citizens never made much headway. The goal of moving from representative democracy to genuinely participatory democracy in this arena was forever frustrated.

Over the years of its existence, the OTA sponsored a continuing sequence of meetings in which scholars in relevant fields of research and thinking would come together to speculate about the dimensions of problems and possibilities in emerging technologies.

I attended a couple of such gatherings and took note of their basic format and dynamics. Looking back on it now, there was a feature of these meetings that seemed rather insignificant at the time but which foreshadowed major, unfortunate changes on the longer term horizon.

Sitting within an inner rectangle of tables were well-known researchers, often university scholars or think tank experts who would take turns discussing the significant topics at hand. At one meeting I attended in Washington we spent the day discussing the privacy of data collected by increasingly powerful computers and the extent to which everyday people would have control over the information stored in government and corporate mainframes.

At symposia of this sort there was also a large surrounding rectangle of observers in chairs who'd listen in and occasionally join the conversation. These were often people from business firms or other organizations with a financial or particular policy interest in the topics under discussion. Their presence strongly suggested that research and deliberation in technology assessment needed to be carefully watched and probably constrained by the priorities of real world business operations.

The attitude of people in the outer rectangle was consistently that, yes, technology assessment is all well and good, but the Congress should not seek to contradict or limit the emerging plans and projects of money-making enterprises. At least that is my recollection of the general mood of the discussions from the outer ring at these OTA gatherings.

Well, within its modest resources and limited framework for participation, the OTA survived into the early 1990s. Over the years the organization published hundreds of technology assessment reports, many of which are still available online and well worth reading today.

Some of us who were sympathetic with the basic purposes and methods of the organization continued arguing that its mission ought to be expanded to include the involvement of ordinary citizens in activities of research, debate and advice giving.

For example, the creation of the Loka Institute by Richard Sclove, a small organization of which I was a member, sought to supplement the OTA with independent forums for citizen participation. Efforts in much the same vein took shape in numerous conferences on Participation in Design over the years. Even today we find concerns of this sort expressed in Doug Schuler's efforts to organize in experiments in Civic Intelligence.

Alas, powerful influences of a much different complexion took shape in the late 1970s and 1980s with the rise of Reaganism and neoliberalism, approaches to economics, society and politics that promoted the dominance of markets and so called "free enterprise" in technology-centered developments.

In that vision, of course, the idea that an open, democratic politics of technology assessment—within the Congress or among everyday citizens more broadly—was often dismissed as an unwelcome intrusion upon the workings of American capitalism.

"Let the market work," was the general norm. The idea of markets was (and is), of course, effectively embodied in the machinations of large corporations, global banks, brokerage houses, and hedge funds.

The conservative radicalism of this position was finally realized as one of the measures advanced by the Republican Party following its Congressional sweep in the election of 1994. As Newt Gingrich took power as Speaker of the House, literally one of his very first steps was to end funding for the OTA altogether, a step that brought its final and perhaps permanent abolition in the US.

This turn of events is regrettable not because the OTA was hugely powerful and influential during its years of operation. In fact, the organization was never especially consequential.

The significance of the little organization lies in the kinds of horizons for engagement in public affairs its very existence brought to light. It was those horizons that Newt Gingrich and his Republican constituency were eager to snuff out before they spread any further.

It's worth noting that several kindred organizations for technology assessment have survived and flourished in several European countries. My hypothesis would be that nations grounded in more robust, responsive frameworks of social democracy are, as a general matter, ones that afford the kinds of civic engagement technology assessment requires.

In contrast, attempts to expand the American framework of New Deal liberalism proved to be too weak for bold new initiatives to succeed. Much of the same limitations are obvious in the failure of the Democratic Party to create a system of single payer health insurance for all Americans while most other developed nations offer healthcare of that kind as a routine matter.

One significance of the utter destruction of the OTA was that it prefigured the economic and political forces characteristic of the toxic American technological, economic, social, and political configurations that have taken shape during the past three decades.

These patterns include ghastly concentrations of wealth in the hands of a very small portion of the nation's populace along with staggering levels of economic, social and political inequality in the populace characterized by stagnant wage levels and the effective cessation of earlier patterns of upward social mobility.

In my view, such tendencies are glaringly evident in the forms of monopoly power that have taken shape in today's technology centered industries, notable in the rise of the great digital platforms of Google, Amazon and Facebook.

To this I would add, although you may disagree, that to a great extent these trends are promoted, praised and justified by what has become a dominant ideology among much of the populace, including much of the scholarly community, an ideology that I like to call "The Cult of Innovation."

Within that mentality innovation has become the central goal and obsession, something that our students revere and that we in fields of STS often reinforce in our writings and teaching. Thus, we often describe and interpret the cultural features of innovative technoscience, but less frequently criticize its basic rationale.

By the same token, it's worth remembering perhaps as a lovely moment of nostalgia, that many STS programs in higher education were originally justified for the ways they upheld the teaching of professional ethics and the cultivation of a sense of public responsibility among science and engineering students.

Along with the promise of their programs of research, that was often how programs of STS were originally promoted in American colleges and universities.

To a considerable extent, in my view, such ideas have recently faded, replaced by educational objectives more compatible with the conservative, neoliberal, high tech persuasions that have risen to widespread prominence with Silicon Valley luminaries as cherished models to emulate.

To a great extent that project of teaching professional ethics and commitment to the common good has been supplanted by the promotion of visions of excitement, wealth and glory centering upon notions of "innovation."

During the first session in one of my classes a couple of years back we went around the room to get a sense of how the students, mainly engineering majors saw their education. One of them proudly announced, "I want to be the world's first trillionaire."

I thought to myself, "Oh, God, I'm in the wrong business!"

At the level of scholarly research and publishing in STS and adjacent fields it seems to me that much of the work in recent years has focused upon uncovering what are ultimately oppressive patterns within today's high tech giants.

The result is a growing mountain of books and articles that explain what has happened, but which leave the human community powerless to do much of anything about it.

An example is Shoshana Zuboff's book "Surveillance Capitalism" (2019), an excellent description and analysis of the kinds of oppressive power resident in today's enormous digital platforms.

While I recognize the brilliance and relevance of studies of this kind, I wonder about the underlying mood of passivity they sometimes express. Zuboff, for example, worked for well over a decade studying the emergence of the kinds of surveillance she strongly denounces at her book's conclusion.

It's worth asking: why didn't we hear any warnings from her while there might still have been opportunities to challenge and seek to limit these ghastly aggregations of power?

My fantasy is that years ago Zuboff might have rented one of those sound trucks with loudspeakers in the roof and begun driving through the streets of Boston and Cambridge warning the citizenry: "Listen people! The digital networks you're using are stealing and marketing the most intimate details of your life. Rise up now! Organize to stop them!"

Of course, that was not going to happen.

The dominant strategy in discourse of this kind is to warn the public of significant dangers and problems after they've become firmly rooted, patterns likely beyond any conceivable remedy. As Hegel observed in *Elements of the Philosophy of Right*, "The owl of Minerva, takes its flight only when the shades of night are gathering. . ." ([1820] 1991). In our time the old bird would probably be shot on sight.

I mentioned at the beginning of this talk that I'd be tracing a dark shadow that falls on the present moment.

Within the narrow historical perspective sketched here, the shadow involves the eventual elimination of the vision, possibilities and practices clustered under the term technology assessment.

In the larger view, however, what matters now are tendencies in the American Republic to set aside activities and institutions of systematic, intelligent science-based public policy making in favor of the perspectives concerned with money-making and very little beyond.

Of course, this is fully evident in the response of Donald Trump and his inner circle during the crisis presented by Covid-19. Faced with that terrible situation, Trump staunchly refused to consider the alternatives proposed by experts in public health and relevant domains of scientific knowledge about micro-organisms, vaccines, and social policies that might be used to quell the spread of the pandemic.

Trump's focus and that of his favored advisors were strictly attuned to quack remedies and to prospects for reviving the economy by reopening crucial money-making sectors.

The shocking consequences of this rejection of policy wisdom in domains of contemporary science and technology can now be measured in hundreds of thousands of deaths, tens of millions jobs lost and the destruction of countless domains of social and economic vitality.

These consequences do not stem solely from Trump's ignorant, obstinate personality, but also from a view of alternatives that emerge from the distinctive goals of neoliberal capitalism, ones that set aside attempts to fashion well-grounded public policies in favor of money seeking schemes.

That is why I regard the abrupt destruction of the modest little OTA in 1995 as a precursor of policy maladies and social disasters evident in the Covid-19 emergency and the nation's inability to chart an intelligent, coherent response. The demise of the OTA was a little tremor that foreshadowed the massive political earthquakes that rock America today.

I regret that my description of what was originally a highly promising development—technology assessment—has taken such a dreary turn. Hence, I feel obligated to conclude with a suggestion for a more hopeful path.

Looking forward to election 2020 one modest but promising, practical proposal would be for the Democratic Party to revive and strengthen the OTA. In its new life this might include not just elected Congress persons and their professional staff, but also participatory citizens councils for each of the 435 Congressional districts, venues where everyday folks—perhaps selected at random—could engage in research and organize public debates about the horizons of present and future technological and social change.

While activity of this kind would not by itself eliminate the kinds of oligarchy and distain for democratically responsible policy making characteristic of Trump and his gang, it might help awaken a sense that there are fruitful alternatives to the dreary forms of public life we experience in America today.

I realize that my observations today will probably provoke a good number of questions.

Alas, as far as I know, these pre-recorded remarks do not enable such interaction.

But I want to thank you for listening and look forward to our future conversations.

Postscript, July 2021

It has been almost a year since I sketched the scholarly political view offered above. Alas, my hopes for the rebirth of a more sane, fruitful blend of democratic deliberation and technology shaping now seems more remote than ever.

True, the Democratic challenger, Joe Biden, did succeed in winning the presidency with slim margins of support in the US House and Senate. He and his colleagues are now crafting a set of sensible proposals, including ones that involve ingenious technology choices in matters of energy, climate, economic growth, education, and other domains.

Unfortunately the opposition party—including its flamboyant "businessman" leader, elected national officials, and massive base of voters—has drifted into an openly deranged zone of imaginings and policies that forbids conventional principles and all forms of traditional give-and-take negotiation. Much of the trouble here stems from psychological obsessions cultivated within expansive domains of the internet—today's social media—that foster conspiracy theories and toxic, anti-science forms of political mobilization.

Among political scientists this situation is now routinely described as the American version of "a crisis of democracy," one that now afflicts several nations around the globe. Rather than draw upon standard, disciplinary models of pluralist accommodation, today's observers have turned to models of authoritarianism and fascism from the 1920s and 1930s to explain where the country might well be headed.

In light of these developments, I wonder how the increasingly sophisticated, subtle perspectives within STS will respond to the distressing nightmares of technology and politics brewing on the horizon.

Author Biography

Langdon Winner is an American political theorist and an accomplished and recognized scholar in the field of Science and Technology Studies. He is Thomas Phelan Chair of Humanities and Social Sciences in the Department of Science and Technology Studies at Rensselear Polytechnic Institute in Troy, New York. In 1990, he was a research fellow at the Center for Technology and Culture at the University of Oslo, Norway. In 2010 he was Fulbright Scholar at the Complutense University in Madrid. He is also Visiting Professor of Informatics and Society at the Pontifical University of Salamanca in Madrid and Visiting Professor at the Department of Philosophy of Technology, Northeastern University in Shenyang, China.

References

Hegel, Georg William Friedrich. [1820] 1991. *Elements of the Philosophy of Right.* Translated by H. B. Nisbet. Cambridge: Cambridge University Press.

Winner, Langdon. 1980. "Do Artifacts Have Politics?" *Daedalus* 109(1): 121–36.

Zuboff, Shoshana. 2019. *Surveillance Capitalism.* London: Profile Books.