THE POLITICAL ECONOMY OF UNCERTAINTY

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The economic outcomes we experience have never been wholly the consequence of markets efficiently allocating resources to their optimal uses. On the contrary, how the costs and benefits of technological progress are distributed is a matter of social choice – even if it does not always seem so.

CAMBRIDGE – Daron Acemoglu and Simon Johnson's new book, Power and Progress, joins a number of other grand narratives that address a key question for the world economy today: How did the United States – and, somewhat in parallel, the United Kingdom – get into their current mess? Other worthwhile contributions include Jonathan Ira Levy's Ages of American Capitalism, J. Bradford DeLong's Slouching Towards Utopia, Gary Gerstle's The Rise and Fall of the Neoliberal Order, Helen Thompson's Disorder: Hard Times in the 21st Century, and Martin Wolf's The Crisis of Democratic Capitalism.

All these works address a fundamental tension between the industrialized Western world's two systems for distributing and exercising power: political democracy and the market economy. Each, in its own way, documents how the dynamics of capitalism have concentrated economic and financial power, which then is used to influence and even dominate the political process.

What distinguishes Power and Progress is the authors' own professional habitat. Both are MIT economists – Acemoglu with the Department of Economics, and Johnson with the Sloan School of Management. Acemoglu is one of his generation's leading economists. The sheer breadth, diversity, and quality of his contributions to economic theory and empirical analysis are extraordinary, and he has done important work on the differential impact of technology as it liquidates existing jobs and generates new ones. Johnson is a former chief economist of the International Monetary Fund, well known for his analysis of how the financialization of the US economy set the stage for the 2008 global financial crisis.

Both are also distinguished by their evident willingness to publish books for a non-academic audience. Their previous work on the political economy of development (Acemoglu) and on the political economy of fiscal policy and the national debt (Johnson) were steps on the path to Power and Progress, and representative examples of the evolution of economics since 2008.

Now, from a citadel of neoclassical economics, they have taken up the task of showing that the economic outcomes we experience have never been wholly the consequence of markets efficiently allocating resources to their optimal uses. On the contrary, they argue, how the costs and benefits of technological progress are distributed is a matter of social choice – even if it does not always seem so. Hence, the title of their book has a second meaning: the power to address this subject is an encouraging measure of the progress that economics has made.

NOT NEUTRAL

The late historian Melvin Kranzberg's "First Law of Technology," which states that "technology is neither good nor bad; nor is it neutral," could well be the epigraph for *Power and Progress*. It neatly abstracts from the authors' focus on "the balance between automation technologies and the creation of new tasks, and the institutional foundations of rent sharing." It is this framework that structures Acemoglu and Johnson's exploration of economic and political history from the Middle Ages to the present.

The successive technologies that have driven economic growth serve both to "displace" labor from existing tasks and to "reinstate" labor in new tasks. Here, the authors build on numerous papers (many of which Acemoglu has co-authored) that both theorize this process and empirically validate the theory. To the extent that new technologies increase productivity, they augment the surplus available for appropriation. But the sharing of that surplus is determined by the balance of power in markets and in the political process, which always has the potential to mitigate or even reverse market outcomes.

Acemoglu and Johnson reach back to the thirteenth century for examples of productivity gains from innovative technologies – windmills and water mills – that were entirely appropriated by elites, secular and religious. The resources devoted to building Europe's cathedrals came straight from the hides of the peasants. The authors strike a false note when they assert that "the peasantry was *persuaded* to acquiesce" (emphasis added), but they swiftly correct that impression by emphasizing the role of coercion. The leaders of the 1381 English Peasants' Revolt, after all, were summarily executed.

Acemoglu and Johnson then move to the Industrial Revolution, focusing on its distributional consequences to illustrate the non-neutrality of technology. Its first effect, they show, was the immiseration of the English working class for a long generation. From the point of view of the handloom weaver, the technology of the textile mill was unequivocally bad. But the authors might also have noted that the exploitation of labor was reinforced by the "Bloody Code," which made machine breaking and more than 100 other acts felonies punishable by death or transportation to Australia.

The second quarter of the nineteenth century then brought profound shifts in the balance of political power in Britain, initially reflected in the Reform Act of 1832 and, 14 years later, in the Repeal of the Corn Laws, which had imposed tariffs on imported grain to protect landlords' rents. But progressive reform was not some gift from the rich to the middle classes, let alone to the poor; it was won through aggressive public pressure, expressed both in peaceful assemblies and petitions and in insurgent riots. And with political reform came a substantially broader distribution of the gains from higher productivity.

The authors extend their examination through the first half of the twentieth century, providing evidence of the evolving interplay between the balance of forces within the labor market and in politics as new technologies of mass production and electrification were developed and deployed. Through two world wars and the Great Depression, what the economist John Kenneth Galbraith called "countervailing power" emerged in the form of trade unions and social legislation to constrain capital and empower labor. The result was a radical, though only transient, reduction of inequality across the developed world.

We should pause, here, to recognize just how far Acemoglu and Johnson have departed from a central proposition of neoclassical economics. The neoclassical production function holds that under competitive conditions, the returns earned by the factors of production – labor and capital – are determined by their respective marginal contributions to output. Thus, a worker's wage is set by the incremental contribution of labor to production, and similarly with respect to the return to capital. What, one might ask, could be fairer than that?

In fact, through that casual phrase "under competitive conditions," the neoclassical production function explicitly excludes the role of power in determining income distribution. As Acemoglu and Johnson show in exhaustive detail, the distribution of returns in real-world markets has never been the result of the technical conditions of production alone. The ability to project countervailing power to balance the power that capital ownership confers on managers is central. This is the "contested path" through which modern political economy has evolved.

VISIONS THAT MOTIVATE AND ENTRAP

Power and Progress assigns a special, shaping role to the "vision" of the entrepreneurs who have led successive waves of technological innovation, and who constitute a "vision oligarchy." Today's "vision oligarchy" is

"… a coterie of tech leaders with similar backgrounds, similar worldviews, similar passions and unfortunately similar blind spots. … The group's sway comes not from tanks and rockets but because it has access to the corridors of power and can influence public opinion. … The vision oligarchy is so persuasive because it has had brilliant commercial success."

This profoundly relevant concern explains what might appear to be a barely relevant diversion in the book. The authors offer up the "cautionary tale" of Ferdinand de Lesseps, the French entrepreneur who drove the construction of the Suez Canal, but then failed catastrophically in his attempt to build a canal in Panama. De Lesseps's success in Suez had locked him into a plan that was utterly inappropriate for the vastly different geographical, geological, and environmental conditions of Panama. In the end, de Lesseps was trapped by his own vision, and the Lesseps Panama Canal was never completed.

Acemoglu and Johnson might have further enriched their account of de Lesseps's folly by linking it more explicitly to other such examples through successive technological epochs. One striking example is Henry Ford, the heroic pioneer of mass production. Ford appears in the book principally as a boss who is forced to improve his workers' welfare to retain them. Owing to the inhumane rigor of the assembly line, turnover at Ford's Highland Park plant reached 380% in 1913, leading the company to respond with major pay increases that reached the then-unprecedented level of $5 per day.

The authors neglect to mention that as a condition for receiving the premium wage, Ford workers were subjected to comprehensive, rigorous oversight by the firm's Sociological Department, which tracked everything from their personal behavior to their family lives. Generations before the digital age, "surveillance capitalism" was already in operation in Detroit.

More directly relevant to de Lesseps's failure was the way that Ford's own vision first drove and then trapped him and his enterprise, as David Hounshell describes exhaustively in his canonical 1985 book, *From the American System to Mass Production, 1800-1932*. Ford focused monomaniacally on producing the cheapest possible automobile, and for half a generation, his Model T was dominant. But affordability was achieved through an equally extreme focus on standardization – "Any customer can have a car painted any color that he wants, so long as it is black" – and specialization of the production process. The machine tools that the Ford production line used were custom-designed for turning out Model Ts, and nothing else.

When Alfred P. Sloan of General Motors demonstrated the competitive success of product differentiation in the vastly expanded automobile market, Ford was forced to abandon his vision. In 1926, GM's Chevrolet outsold the Model T in the US, implying that marketing mastery had prevailed over mastery of production technology. As Ford followed GM in introducing different models for different economic and social strata, it had to close its factories for half a year to make the switch to Model A production.

A more recent demonstration of how a triumphant technical vision can trap a market leader comes from IBM in the last decade of the twentieth century. IBM owed its dominance in the global computer industry to the development and deployment of centralized data processing: mainframe computers interacting with users through "dumb" terminals. As mainframe computing matured, it delivered all the "-itys" (reliability, scalability, security) that corporate and government customers wanted.

IBM had pulled off a heroic corporate transformation with the creation of System/360 – a technical achievement on par with de Lesseps's in Suez. Acemoglu and Johnson acknowledge the maverick technologists who challenged IBM's vision and pressed for an alternative model of decentralized computing (which initially came to fruition with the personal computer). However, they miss the deeper story of IBM's later fall, which reflected a short-term tactical move and a longer-term strategic error.

As Apple and others demonstrated the appeal of low-cost, single-user machines, IBM abandoned its tightly integrated, proprietary technical legacy. It established a stand-apart PC unit in Boca Raton, Florida – more than 1,200 miles from its corporate headquarters in Armonk, New York – and authorized it to outsource two critical components: the central processor to Intel, and the operating system to Microsoft. This gave rise to the "Wintel" duopoly that later undermined IBM's own dominance, even as the computing market expanded massively.

Prior to the PC, IBM had made a strategic commitment that proved to be even more damaging – echoing de Lesseps's failure more directly. In an attempt to replicate the triumph of System/360, IBM had launched its Future System project in 1971 to render obsolete all existing computing systems, including its own. A central tenet was to maximize integration between hardware and software, in order to benefit from declining hardware costs and to lock customers' applications to the only hardware that could support them.

The project was killed only four years later, owing to bitter internal arguments and rivalries, as well as the continued evolution of computing technology. But the vision lived on and reached the market in the late 1980s in the form of the AS/400. For a brief moment, the product was hugely successful, generating some $14 billion in annual revenue and $10 billion in free cash flow. But, critically and in direct contrast with the tactical success of the IBM PC, its completely closed architecture isolated IBM from the revolution that was reshaping the rest of the industry: the shift from vertically integrated hardware to horizontal, decentralized, networked computing, with value migrating in parallel from hardware to software as the former was commoditized. By the year 2000, IBM was essentially irrelevant as a contributor to the continuing evolution of computing.

Acemoglu and Johnson worry that the vision of today's Big Tech entrepreneurs will dominate how today's new technologies are applied. With good reason, they fear that Big Tech's use of machine learning to create a business model based on micro-tagged advertising will morph into even more socially destructive applications of emergent generative artificial intelligence. They also emphasize the potential for automation to eliminate tasks and jobs, further shifting the balance of power against workers and increasing inequalities of income and wealth. The long, painful history of the first 50 years of the Industrial Revolution looms large. But the authors do not stop there.

REDIRECTING TECHNOLOGY THEN

In their discussion of the consequences for Britain's workers during the First Industrial Revolution, Acemoglu and Johnson summarize the positive message of their book: "Technology's bias against working people is always a choice, not an inevitable side effect of 'progress.' To reverse this bias, different choices need to be made."

In describing the post-World War II era of inclusive prosperity, they appropriately account for the constructive role played by trade unions, which in turn had been empowered by the New Deal's National Labor Relations Act (the "Wagner Act") of 1935. Both the United Auto Workers in Detroit and the International Longshore and Warehouse Union on the West Coast helped shape how automation was deployed and how its benefits were shared. The Depression-driven shift in the balance of political power thus had generated a shift in the balance of power in the labor market, too.

When a newly Republican-controlled Congress tried to repeal much of the New Deal, one of its few signal successes was the Labor Management Relations Act of 1947 (the "Taft-Hartley Act"), which included two provisions to undermine the economic power of unions. One provision empowered individual states to enact so-called "Right to Work Laws," ending the closed shop where a majority vote for the union imposed the requirement on all workers to pay union dues. It took the better part of a generation for such laws to be broadly enacted across the American South; but once done, American manufacturing – including, notably, auto plants – migrated there from the unionized, industrial Midwest.

The second provision was subtler, but Acemoglu and Johnson see it as especially instructive. In Germany and the Nordic countries, bargaining takes place at the industry level, and a union agreement plays no direct role in competition between the companies that make up the industry. But Taft-Hartley required that all union negotiations with management take place at the level of the business unit, which means that every negotiation plays into the corporate competition for market share. Union-busting thus became an instrument of competitive advantage, if not corporate survival.

The macroeconomic significance of this policy is evident in the inverse correlation between "union density" – the percentage of households with at least one union member – and income inequality. Acemoglu and Johnson are keenly aware of this historical pattern, and they identify the broad development of "worker organizations" as the necessary first step toward rebuilding countervailing power and redirecting technology.

Before they reach their recommendations for action, the authors provide an informed and nuanced reading of how the technology of machine learning and large language models (generative AI) is poised to reshape the world of work. They explore at length the methods, applications, and limitations of AI, especially the danger of "overfitting" the statistical models that are generated from the vast arrays of training data. They emphasize how this danger becomes especially salient when AI is being deployed in social situations, where human reactions to AI output reflexively change the data from those on which the AI was trained.

In their critique of the digital management of workers and tasks, Acemoglu and Johnson build on a substantial and rapidly growing literature. They also make a creative contribution by revisiting the work of three technological pioneers: Norbert Wiener, J.C.R. Licklider, and Douglas Engelbart.

Wiener, who coined the term "cybernetics" to capture human-machine interaction, focused on productive collaboration with computers. Licklider played a leadership role at the Defense Advanced Research Projects Agency (DARPA) in the early 1960s, setting the stage for the interactive personal computer and the internet itself. And Engelbart, inspired by Licklider's vision, is remembered for presenting the "Mother of All Demos" in 1968, when he showcased the future of computing over the next 50 years.

Under the rubric of "Machine Usefulness," the authors call on these three visionaries to identify an alternative "road not taken," where the top priority is to develop ways for computers to augment, not replace, human beings. The first, and most immediate, opportunity is to extend the long line of successful computing applications to increase workers' productivity in completing existing tasks. Second, digital technologies have already created a host of new tasks even as they have automated old ones (at the macroeconomic level, this is most visible in the broad transition from manufacturing to service jobs of all sorts). Third, if properly trained on curated data, AI can deliver relevant information to human decision-makers far more efficiently than the typical Google search (especially as the latter is increasingly tainted by advertisements).

Finally, the new digital tools are creating new platforms and markets, most strikingly in developing countries, where legacy institutions do not block innovation. The authors cite two among an increasing number of examples: the creation of a unified fish market through mobile phones in the southern Indian state of Kerala, and Kenya's hugely successful mobile currency and money-transfer system, M-Pesa.

Yet, as Acemoglu and Johnson admit, these successes are marginal compared to the massive investment of money and brainpower aimed at reaching "human parity" through AI. Far from empowering workers, AI is threatening to serve as "the mother of all inappropriate technologies," owing to companies' overwhelming focus on automation, rather than augmentation. The question, then, is what to do about it.

REDIRECTING TECHNOLOGY NOW

Acemoglu and Johnson propose a varied, complementary set of pathways to constrain and shape the impact of the new technologies. They begin with the need for workers organizations adapted to today's labor market, which is far more decentralized than the one in which mid-twentieth-century industrial unions thrived.

One hope is that the same technologies that enable the algorithmic management of work in Walmart can be used by workers to construct a new kind of solidarity. Acemoglu and Johnson point to successful, if limited, union drives in some Amazon and Starbucks locations. And though their book was written before the Teamsters negotiated a new contract with UPS that could have substantial spillover effects on unorganized FedEx drivers, it offers ample evidence that seemingly isolated events often have systemic importance.

To be sure, they recognize that identifying the actual distributional effects of a technology's deployment is extremely challenging, and that formulating interventions to move deployment toward machine-useful applications is even more so. After all, the unintended consequences of interventions in this domain can hardly be known in advance. Nonetheless, Acemoglu and Johnson point out that observable shifts in labor's share of value added can be reliably measured at the firm, industry, and national levels, offering a barometer of technology's impact.

In this regard, they recommend "a plurality" of experiments in how technology is used, with rewards on offer for the most promising applications. But they reject pre-emptive taxes on certain uses, given the climate of uncertainty in which policy must be made. Their approach thus aligns with the strategy of President Joe Biden's administration for directing the US economy toward green technologies; it is based almost entirely on carrots, rather than sticks.

One area where Acemoglu and Johnson's proposals are especially cleared-eyed and incisive is antitrust regulation. They would supplement antitrust enforcement with a variety of complementary initiatives, including a repeal of Section 230 – the notorious law that shields Big Tech companies from any liability for what users post on their platforms – and new taxes on digital advertising.

In a similarly progressive vein, they call for reforms to rebalance the incidence of federal taxation, which very substantially favors returns on capital over wages from labor. After taking account of Social Security taxes, they note that an incremental $100,000 spent by a firm on hiring labor incurs a 25% tax bill jointly for the employer and employee, whereas taxes on new equipment for the same tasks amount to less than 5%.

To shift the balance of labor-market interventions, they favor subsidies for worker training both in the firm and outside. But they steadfastly reject appeals for a universal basic income ("UBI"), which they see as a profoundly wrong-headed concession to some techno-visionaries' dream of automating human work out of existence. In addition to depriving people of a sense of earned reward for effort, a UBI, they might have added, would also redirect society's resources away from the provision of public goods like roads and libraries. Indeed, it represents another expression of the "methodological individualism" that animated British Prime Minister Margaret Thatcher's famous assertion that "there is no such thing [as society]."

THE NEED FOR NEW THINKING

Finally, two other separate proposals can productively be brought together. First, Acemoglu and Johnson call for an active government role in supporting innovative technologies. By this, they do not mean "picking winners." Rather, they have in mind the role that the US military played as the first, collaborative customer for the output of scientific advances ranging from penicillin to microelectronics. And, separately, they call attention to the kind of corporate funding that threatens to distort academic incentives, in recognition of academia's "central role in the cultivation and exercise of … social power."

Two recent positive signals indicate that the authors' arguments should be well-received. First, major legislation passed by the Biden administration over the past two years – the Bipartisan Infrastructure Law, the CHIPS and Science Act, and the Inflation Reduction Act (IRA) – shows that America is already embracing a more active role for government in the development and deployment of frontier technologies.

Second, innovative legislation has been accompanied by intellectual innovation, with the reconstruction of academic economics helping to redefine and broaden the options for policymaking. To take just one example, the Nobel laurate economist Michael Kremer has set up a Development Innovation Lab with a "Market Shaping Accelerator" in, of all places, the Becker Friedman Institute of the University of Chicago, the erstwhile mother church of market fundamentalism. And this initiative builds on Kremer's successes in designing "advanced market commitments" to pull resources into vaccine development and distribution worldwide, not least during the COVID-19 pandemic.

All the books mentioned at the start of this essay detail the failures of the neoliberal order and its consequent demise. But they leave readers wondering what will come next. In *Power and Progress*, Acemoglu and Johnson begin the task of building a new framework for creating a more inclusive future. To that end, they identify "three prongs" of effective action: changing the narrative and, with it, cultural norms; building countervailing power; and generating relevant policy solutions.

As the authors make clear, we have done this before. From Britain's transformation in the mid-nineteenth century through the Progressive movement in the early twentieth century and Franklin Roosevelt's subsequent New Deal, popular mobilization has reshaped the structures of power and the content of policy. The challenge today appears daunting, given the degree of partisan polarization and the outright assault on democratic institutions from the right. Yet real progress is visible if we look.

Acemoglu and Johnson make no reference to the signature legislation passed by the Biden administration: the CHIPS and Science Act and the IRA. Both have been criticized for complicating their primary purposes – to revitalize the domestic semiconductor industry and to incentivize investment in green technologies – by including an array of requirements for union labor, living wages, childcare facilities, and the like. But these "everything bagel" provisions, as detractors call them, are exactly how political leaders can implement the central argument of this outstanding book: make the distributional impact of technology a social choice.