

EconoFact Chats: The Social Bias of Technological Change
Simon Johnson, MIT Sloan School of Management
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I'm Michael Klein, executive editor of EconoFact, a nonpartisan, web-based publication of the Fletcher School at Tufts University. At EconoFact, we bring key facts and incisive analysis to the national debate on economic and social policies, publishing work from leading economists across the country. You can learn more about us and see our work at www.econofact.org.

Michael Klein

In their new book, *Power and Progress*, Simon Johnson and Daron Acemoglu of MIT write, ‘the most important drive of the increase in inequality and the loss of ground for most American workers is the new social bias of technology.’ The role that technology plays and how that role intersects with political power and prevailing ideas of how to attain progress is the central theme of *Power and Progress*. Simon and Daron offer a long historical perspective on the effects of technology and prosperity, inequality, and society – from agricultural advances in ancient societies to today's questions about artificial intelligence. This is a fascinating, wide-ranging book by two prominent and influential economists, and I'm very pleased to welcome Simon Johnson to EconoFact Chats. Simon is the Ronald A. Kurtz Professor of Entrepreneurship at the MIT Sloan School of Management, where he's the head of the Global Economics and Management Group. In 2007 to 2008, he was Chief Economist at the International Monetary Fund. Simon, very good to have you as my guest on this podcast. Welcome.

Simon Johnson

Thanks for having me.

Michael Klein

I really enjoyed *Power and Progress*. You tell these compelling stories about the way in which technology interacts with social and political arrangements and how this leads to winners and losers. Economists tend to think of technical change as a good thing, but your book emphasizes that there are winners and losers, and the changes that come about are themselves influenced by political and social milieu. How did you and Daron come to write this book, and what was its inspiration?

Simon Johnson

Well, Daron and I have been working together for a long time, 25 years, thinking about long-term economic history, and also thinking about policy levers, Michael. What could make a difference? How could poorer countries become rich? How can richer countries stay prosperous, or be more stable, or have less inequality? I think, to me personally, the presidential election of

2016 was a big wake-up call, because it suggested that many of the ideas that I had had, certainly, previously about technological progress being generally good, most people generally benefiting, sure, there are some winners and some losers, but the rising tide lifts all boats. I think that the presidential election, the election of Donald Trump, really called that into question, and of course, at the same time, there were many challenges about globalization, about inequality and our inability to deal with that through the tax system. But when Daron and I sat down and thought about it, and thought about the long-term drivers, sort of tried to connect our various research agendas, it seemed to us that the real common theme over the past at least 1,000 years, and maybe 10,000 years, is what is technology? Where does it come from? Who invents it? What's the driving vision for technology? And then how does that play out in terms of who gets what kind of jobs and other social impact of what you invent?

Michael Klein

In that sentence, I quoted, you mentioned the 'new social bias of technology.' Throughout the book, you distinguish between different types of technological change. One way that you put this is the distinction between technological unemployment and productivity bandwagon. Can you explain that distinction?

Simon Johnson

Well, the productivity bandwagon is a term that we invented, but to try and describe an idea that we think is very long established, which is basically, and as you said, this is a sort of cornerstone of growth economics, which is new things are invented, products and processes, those raise productivity, create new opportunities, maybe also improve health, and everyone benefits eventually. Now, the key word there is eventually, because if you look at the early industrial revolution, for example, yes, that technology of factories and living in cities and mass producing goods; that did eventually help almost everyone, but it took a long time, took more than a century for those benefits to trickle down to the rest of society. So we're really challenging whether there is a productivity bandwagon, whether that exists as something that is automatic or what you necessarily get. We rather think it's something you have to work hard to achieve. Technological unemployment, of course, is an idea from the 1920s and 1930s, when the modern world was really taking shape and prominent economists, including John Maynard Keynes said, maybe we're going to become so productive that we won't have jobs for everyone. And that's not what's happened. We don't have a large scale unemployment caused by technology, but we have experienced a polarization of society, and polarization of jobs, so that in our view, driven by technology, particularly over the past 40 years, the middle class got hollowed out, and a lot of people got pushed down to lower wage jobs. So some people did very well from the digital revolution, some people did much less well. It's not technological unemployment, but it is, we think, an adverse effect, an unnecessary effect of that particular technological advance.

Michael Klein

I interviewed your colleague, David Autor, and as you well know, he has what he calls a barbell effect, where the middle is hollowed out. Simon, can you give a specific example of each type of technological change and how it had a differential or a similar impact across groups of people in the economy?

Simon Johnson

Are you talking about over the thousand years, or do you want me to focus on the more modern 40-year experience?

Michael Klein

Well, I guess you have more examples over a thousand years, but maybe a more modern example would be of interest.

Simon Johnson

Well, I think that the contrast that is worth drawing is between the early 20th century and what happened at the end of the 20th century, Michael. So in the early 20th century, we had the perfection of this American system of manufacturing, and I think the person who best represents that, symbolizes it, but also really changed a lot of the realities, is Henry Ford. So Henry Ford brought car production onto an assembly line, and then he brought electricity and electric motors to the assembly line, and that was really transformational, 100 times productivity before and after Ford. But the really interesting thing, Michael, is that the car industry, when Ford started, was quite small. It was artisans making maybe 20 or 30,000 cars a year in 1900. At the end of the Ford led, he wasn't the only one, but he really led this transformation in the 1920s, the car industry was making between two and three million cars a year employing 400,000 people. So how is it possible that you could have this set of innovations with automation, and the assembly line replaced the artisans who were previously crafting the cars. But what that technology did, and also what the competitive dynamics of building cars, supplying the materials, and how you use cars, the upstream and the downstream, what that did was create a lot of new tasks for workers, 400,000 workers doing things that no humans had ever done before. Now, if you look at the end of the 20th century, we do see replacement of workers, including by digital technologies, but we've never, we didn't, and obviously there are some things that we do now, including having podcasts, that we didn't do before in human history, but then the number of new tasks that have been created, so that's what's going to drive your demand for labor, relative to the tasks or the jobs that have been replaced by digital technology, that proportion has completely changed from 100, 120 years ago, and this is the concern with AI. So with AI, we're obviously going to replace some existing jobs, that's what automation does, but are we going to create enough of these new tasks, enough of the increased demand for labor at high productivity, and therefore create the possibility of higher wages for most people? That, I think, is completely in play right now. It is yet to be decided.

Michael Klein

Well, I'll get you on another podcast in 40 years, and you can tell me what happened with that. And you know, the point you make, you have lots of examples, you have this great example about the railroads and how it created new jobs and new opportunities and new products that didn't exist before that, but there's also a malevolent example, and that's of the cotton gin. Can you explain how the cotton gin affected cotton production and what that meant for slavery in the United States?

Simon Johnson

Yeah, this is a very, I mean, it's more than sad, it's an absolutely tragic story, because one of the characteristics of America, at least since independence, has been a very innovative place, and some of those innovations brought us improvements in railroads, they brought the expansion of industry across the north and the western part of the country. But that same sort of innovation instinct, in fact, some of the same people, Eli Whitney, who was a very important figure in the development of northern manufacturing, he was also involved in inventing a cotton gin, there were other cotton gins that came along, immediately after independence, and the point of the cotton gin was it made it easier to process upland cotton, and the interesting important and tragic thing about upland cotton is that grew really well away from the east coast, so across what we now call the Deep South. Before there was the United States, when the British had their 13 colonies, cotton was a relatively small product. There was slavery, and there was a significant number of enslaved people, mostly on the east coast, they were involved in tobacco and other crops. The cotton gin made it possible to expand cotton production across a large area. There was a demand for cotton from the burgeoning British textile industry, but how are you going to cultivate the cotton? What was going to be the labor basis of that system? The people who were in charge of those states and that expansion were slave owners, and they decided to move the enslaved people from the east coast. They broke up a lot of families, the stories about this are horrendous. The conditions of moving people, the actual transition was awful, and the cotton plantations were some of the worst labor, worst treatment of labor that I think we've seen in the modern world. That combination, I think malevolent is exactly the right word for it, Michael. As far as I've seen, there was no improvement in labor conditions on those cotton plantations between independence and the Civil War. And of course, the whole era of reconstruction and the struggle to create equal rights, and protection of human rights and civil rights in the south came exactly from the power relations of the social structure that was based on cotton plantations. So, if you track it back, you come to an innovation that was made possible by, encouraged by, but also unleashed social dynamics that have remained with us to today.

Michael Klein

Yeah, you know, when I read that portion of the book, I thought about my social studies class in eighth grade and got a picture of a cotton gin and how this is a wonderful invention. And, you know, you don't think of the dark side of it, and it's really good in your book that that's made very

evident. You also use a term in the book that I like called ‘so-so automation’ and use the example of an automatic checkout machine in a grocery store. In a previous EconoFact Chats episode, I spoke with Lant Pritchett, and he mentioned how he saw above an automatic checkout machine that said how the grocery chain valued its workers and yet they had these automatic checkout machines to replace them. What are some other examples of ‘so-so automation?’ Who benefits, and who's hurt by it?

Simon Johnson

So the key, the key point about ‘so-so automation’ is that you are replacing workers. So this is the essence of automation. But compared with my story about Henry Ford, for example, he got very big productivity gains from using electricity on the assembly line. And what that did, of course, was make it possible to make more cars more cheaply, and then you have various kinds of beneficial effects of that innovation on the production side, but also for consumers. The concern with self checkout kiosks is you're transferring the labor from workers to the customer who's not being paid to do the checkout, but also you're not changing productivity of the grocery store. So the amount of groceries you can move through the grocery store is about the same. And the wages of the workers who remain employed do not go up according to the people who've studied this. You've really sort of tilted the power between management and labor. And I think the concern that we have right now, Michael, is that quite a lot of the so-so, quite a lot of the AI innovations have been put forward with great excitement and buzz, are actually, look to us at the moment, to have this so-so characteristic. So the idea that you can use chat GPT to produce, you know, mediocre drafts, the idea that writers guild that's on strike right now have, I think, very legitimate concerns that many of their jobs will be replaced by AI writing first versions of scripts. But are you getting brilliant, creative breakthrough television, things that have never been discussed before, or a massive creation of new tasks in some high productivity sense? No, I think what you're getting from AI is a lot of mediocrity, because the primary way in which these algorithms work to the extent this is understood, is they average out previous human responses. But as AI becomes more dominant, and as we make more decisions based on AI, what we're going to be doing is averaging out AI responses. So we're going to be taking the middle of the road of the middle of the road answers. Well, that's actually kind of the definition of ‘so-so automation’...where we're going to be retreating from the breakthroughs and retreating into mediocrity. That's a problem.

Michael Klein

So Chat GPT would never have created the Sopranos.

Simon Johnson

Well, it's a great question. Not as far as we've seen so far, I mean, people are trying really hard to write content with Chat GPT and similar algorithms. But most of the content that I've seen and other people have looked at and reviewed is not fantastic, and rather mediocre.

Michael Klein

It wouldn't have done it because there's nothing like it before, so had nothing to draw on. So it didn't have that kind of originality.

Simon Johnson

Yes, I think that's exactly the right way to think about it.

Michael Klein

The theme of the book is how the effects of technological change depend upon the social and the political setting. When did the social and political setting foster concentrated gains from technological change that benefited a privileged class? What was the setting that allowed for that?

Simon Johnson

Well, the most notable example in history is, of course, the early industrial revolution. As I said, it did eventually benefit many people, or most people, but that took 120 years. And so if you look at what happened during the 18th century in Britain, during the early 19th century in Britain and other countries, most of the gains were concentrated in the hands of relatively few people. The wages didn't go up much, living conditions became very harsh. If you look at how people lived in the 1830s or even the 1850s in places like Manchester. So Manchester was the center of the textile industry. There was a lot of transformational production. There were more than 1,000 steam engines powering these textile mills. Living in that city was really, by any standards, before or after, an extremely brutal existence with very high mortality, both workplace accidents and from infectious disease in the living conditions. So it's only after the middle of the 19th century with the spread of pressure for democratization, the rise of trade unions, and strong increased demand for labor, as more technology was adopted, that that combination helped to shift us towards rising living standards. But that was a long time. That's 100, 120, some people might say 140 years of struggling to share the benefits of transformational technology.

Michael Klein

Another theme throughout the book is what you call vision. We say that there's this metaphor of a marketplace of ideas where the best ideas rise to the top, but that is actually a flawed metaphor. Instead, it's more appropriate to consider agenda setting, a situation where ideas of those with social status are given prominence. And this can lead to the success of bad but catchy ideas. Could you elaborate on this and offer an example or two?

Simon Johnson

Yes, I think the main concern we have on the bad but catchy ideas is exactly the way in which the digital transformation has been deployed. I think that the specific most unpleasant example could well be social media, where Facebook and the idea that we could share all our data and we

could communicate in unprecedented ways, that was heralded as being some form of progress. But when you actually look at the effect of specifically Facebook, this has been well documented, you can see that while in some situations, some people may have enjoyed using it and maybe we could say there's some positives, it's also encouraged ethnic hatred in other places, including Myanmar, and really been used as a tool for people who want to exacerbate divisions and promote social conflict. And it's operated substantially without regulation because the tech industry was able to persuade people that regulation would hamper innovation and this would be bad for job creation, bad for national competitiveness and bad for national security. By the way, those messages are still very prominent in the AI debate. But I think that, I'm not saying social media should be shut down by any means, but I think the way in which it is operated, particularly with the way in which a few companies have been able to become predominant and then rather abusive with regard to consumers, and very dangerous with regard to how that affected social interactions, I think that's quite prominent and rather in our faces.

Michael Klein

Another point that you make in the book is that in the debate about the sources of rising inequality, there is typically a division, some people say it's globalization, some people say it's automation, but you argue that these two forces are linked and so it's not accurate to consider either one in isolation of the other.

Simon Johnson

Well, certainly they're linked through technology transformation because globalization has been made possible by much cheaper communications. I think that's pretty obvious to everybody now, but also a big fall in transportation costs, which itself was driven by technology change, including the container and the development of container shipping. There's clearly an interaction between, or a parallel common driver for globalization and automation. Exactly how you divvy up and how you label things is an interesting question and obviously academics continue to discuss that. The interpretation that we favor, which comes heavily from Daron's work, particularly with Pascual Restrepo, we find that automation is a bigger part of the driver of inequality, maybe 70 or 80%. But I think the key point is that these forces are pressing in the same dimension and they're quite consistent, and still with us, steady pressure on middle income, middle education jobs.

Michael Klein

The middle part of the dumbbell as David Autor would say.

Simon Johnson

Yeah, exactly. And our work is very consistent and we cite prominently pretty much all of David's papers that the hollowing out of the middle of the polarization of the labor market, is a

major driving force behind the polarization, not just of this society, but almost all industrial societies.

Michael Klein

So Simon, there's this feeling of the inevitability of globalization. Thomas Friedman, the New York Times columnist once wrote that when he was asked about what he thought about expanding globalization, he answered it was like asking what he thought about the sun rising. It was inevitable. And likewise, many people see technological change as an irrepressible force. Do you think these views are correct? And if not, what types of policies can control the paths of technological change and globalization to make their benefits more widely felt?

Simon Johnson

Yeah, I really don't think that the precise path of technology or the precise path of globalization are inevitable. Sure, there are pressures to innovate. People are very creative. We've been creative for 50,000 years. And yes, barriers to trade have come down. And there were various political dynamics behind that. And there are some gains to be had from trade. But which path do you take, Michael? Which way do you go, I think it is absolutely under our control. So a good example would be looking forward now, I think around the increasing global divide about how we use artificial intelligence, and how we think about its impact on surveillance. So in the US, I think we will have more surveillance. We do have more surveillance and AI will facilitate that. But we'll put safeguards on it because we're not comfortable with a high degree of social surveillance. How much workplace surveillance we're willing to tolerate, I think remains an open question and we'll see. China, on the other hand, is going to have, obviously, a much more intrusive view of surveillance and what you can do with surveillance and the way you use surveillance to keep various elements of society from protesting or objecting to anything. And so then the question is going to be, Michael, if we have two blocks, surveillance with safeguards and an unconstrained authoritarian state powered by AI, these technologies will be shared with other countries, and so I think you're going to have two blocks of countries with different attitudes towards surveillance. And a very good question for the US is going to be how much do we want to buy goods and services produced in countries that use the Chinese type surveillance to oppress their workers in ways that we regard as completely unacceptable. Now, I understand that working conditions and obviously wages differ a lot around the world and we have previously been comfortable buying goods from very low wage places with questionable health standards in the factories, for example, but that willingness has eroded over time and we don't buy, we're not supposed to buy, we've agreed not to buy goods produced by slave labor or prison labor. So where are we going to be drawing those lines going forward, Michael? And should we be essentially facilitating and financing authoritarian states that keep, I don't know, one-third, one-half, two-thirds of humanity in a highly oppressed state using technology in a deliberate and overt manner that we regard as anathema for our own societies?

Michael Klein

Well, these are really important questions, Simon, and as I said, I very much enjoyed your book and it really opened my eyes to a lot of issues and the analysis that you and Daron did is incredibly impressive. So I recommend this book to everybody. I hope that our discussion today helped whet people's appetite for the book because it's really something that should have a wide readership, and I bet it would. So thank you very much for joining me today, Simon, and congratulations again on the publication of Power and Progress.

Simon Johnson

Thanks very much.

Michael Klein

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