Five filters moderate the technological revolution

blogs.lse.ac.uk/businessreview/2016/07/05/five-filters-moderate-the-technological-revolution/

7/5/2016

The technological revolution is one of today's most hotly debated topics in politics, economics and business. It makes politicians wary about which preparatory policies to pursue, economists ponder vast productivity increases and the future of labor and business leaders think about how to make use of the new possibilities in their organisational environments. We are undoubtedly experiencing large-scale disruption in many areas that requires adjustments of strategies.

Over the last two years I have worked extensively on this subject both in the area of policy research as well as in the realm of practical application. After reviewing the literature and countless conversations with researchers and practitioners I came across a surprising observation: Too often it is just assumed that whatever is technologically possible will also directly impact day-to-day life in the short term and with full force.

At the very least there is a lack of structured analysis of the ways in which technological progress actually translates into real life. This is an important shortcoming because before beginning to reassess your own organisation's position in the brave new digital world it is crucial to understand how technological possibilities actually impact your organisation and its environment. In my own work I have set out to structure this process and identified five filters that moderate the impact of technology.

First of all there is an **ethical filter**. This filter restricts research itself as it sets a permission framework for what can be done. This does not affect digital technology very much but other areas such as biotechnology. The implication here is that not everything that is possible will actually be done due to ethical considerations. The discussion about the ethical limits of embryonic and stem cell research as well as broader genetic engineering are areas that exemplify the ethical limits of new technologies. It is down to the political process to determine the exact delineation of these ethical limits and different countries construct different regulatory environments as a result.

Second, there is a **social filter**. Social resistance against technological change is not new and it is likely to be more intense in areas where there is a perceived threat to people's jobs. From the Luddites in 19th century England to current protests, this social filter leads to either delayed implementation or different forms of regulation. Resistance against Uber is one such current example. It is a very interesting case that shows how social resistance can lead to

different regulatory environments. At the beginning of the year I visited major cities in the US, the UK and Germany and took Ubers myself. The finding: If you call an Uber in Miami, you get a private driver; if you call an Uber in London you get a private-hire licensed driver and if you call an Uber in Berlin you can only get a fully licensed taxi at a regular metered price. So social conflicts and the ways in which they are resolved have a clear impact onto the application of technology.

Third, there is a **corporate governance filter**. You can find a lot of research and analysis about the workings of different corporate governance models. This work often contrasts the Anglo-American model focussed on shareholder value with European models that are more focussed on a wider group of stakeholders. The former has a tendency to prioritise short-term finical aims whereas the latter generally has a more medium- to long-term view incorporating a broader set of interests in decision-making. Co-determination through supervisory boards and works councils in Germany is an example for different decision-making procedures that are likely to lead to different outcomes in the application of technology. If technological change of the scale we are likely to see in the near future challenges companies it is not hard to see how these different decision-making models are likely to produce different end results due to the different focuses and the variety of interests that are reflected in the process.

Fourth, a **legal filter** also moderates what is possible and what is applied in the real world. Just consider self-driving cars. From a purely technical point of view most of the issues have been resolved. We are now even seeing trials of self-driving cars built by Google and others on public roads. But we are unlikely to witness self-driving cars taking over the bulk of our traffic any time soon, not least because there is no legal framework in place that clarifies core issues such as liability. And if technology affects an area that had not seen any regulation a new legal framework might also determine the way in which new tech can be used. Recent endeavours to regulate the use of private drones is an example for this.

Last but not least there is a **productivity filter**. This filter means in principle that the application of new technology does not have a dramatic effect on productivity because either the productivity bottleneck lies elsewhere or diminishing marginal returns mean that there is little real improvement in products or services. In a podcast conversation with me, MIT economist David Autor provided two interesting examples to show this effect.

You are most likely reading this article on a device that can also run a word processor. In line with Moore's Law we have seen continuous exponential growth in processing power. But this vast growth has not been matched by your writing becoming equally faster. This shows that the obstacle to productivity increases in word processing is not the speed of your computer or smart device but your own capacity to write. Your computer can become faster still but you would not be able to write more or better. You are the bottleneck, not the machine.

The second effect is when, chiefly because of falling prices, you build processing power into devices that only have limited use for it and hence you can clearly identify what economists call diminishing marginal returns. To illustrate this case Autor provided the example of a washing machine that now has more processing power than the Apollo moon programme. What does that actually mean in reality? The conclusion is simple: whatever the processing power of the Apollo programme was it managed to get people onto the moon. Your washing machine however will, no matter how much processing power it possesses, only continue to clean your dirty laundry. You might be able to use a smartphone to control it and save some energy and water but the washing machine and what it does is not fundamentally transformed. It will not go to the moon any time soon.

The analytical framework provided by these five filters leads to an important conclusion: The technological revolution surely provides vast opportunities but it is crucial to understand in detail the forces that determine the ways in which technological possibilities will actually affect us. Does a new technology really have a major effect on productivity? Will there be social conflict in the adoption process? And what kind of regulatory framework will govern the new technology? For businesses in particular it is crucial to understand these five filters and what they mean for their specific circumstances to avoid taking wrong strategic decisions based on false assumptions.

♣♣♣

Notes:

- *This post gives the views of its authors, not the position of LSE Business Review or the London School of Economics.*
- *Featured image credit: Tesla Autobots, by Steve Jurvetson, Wikimedia Commons*
- *Before commenting, please read our Comment Policy*

Henning Meyer is Research Associate at the Public Policy Group of the LSE and Director of New Global Strategy Ltd. He holds an MA and PhD in Politics, MSC in Financial Economics and an Executive MBA.