Understanding The Digital Revolution And What It Means

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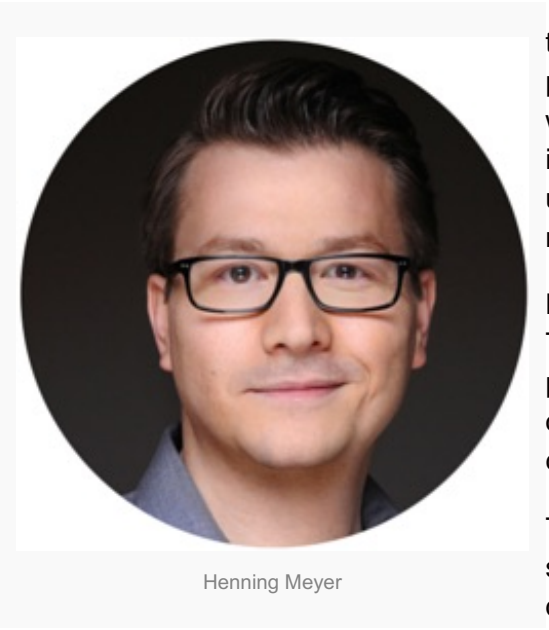

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The digital revolution, used here as shorthand for broader technological change, is one of today's most hotly debated topics in politics, economics and business. It makes politicians wary about which preparatory policies to pursue, economists ponder productivity increases and trade unions think about the future of work. We are undoubtedly faced with large-scale disruptions in many areas that require adjustments.

Most people, however, are struggling to get a firm grip on the subject. They ask: what does this all mean for me and the organisations I am part of? What does technological change mean for my job? What kind of policies could be pursued in order to address these new challenges?

To analyse exposure to the digital revolution and potential policy solutions you need to start breaking it down into manageable dimensions. Three areas in particular warrant special attention: What are the forces shaping the application of new technologies? What does the digital revolution mean for the future of work? And what kind of policies could help to address these issues?

The Five Filters Of The Digital Revolution

Let us start with the first dimension. There is a common fallacy as people too often assume that whatever is technologically possible will also directly impact day-to-day life in the short term and with full force. This is simply not the case if you think carefully about it.

There is a general lack of structured analysis of the ways in which technological progress translates into real life. This is an important shortcoming as it leads to a distorted view of real-time developments. Here we try to structure this process and identify five filters that in effect moderate technology's impact.

First, 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 carried out owing 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, 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 more recent 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 last year the author visited major cities in the US, the UK and Germany and took Ubers. 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 could only get a fully licensed taxi at a regular metered price – although this has changed recently and you can now also get other types of car. But in essence

social conflicts and the ways in which they are resolved have a clear impact onto the application of technology.

Third, 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 financial 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 are examples 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 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 semi-successful 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 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. MIT economist David Autor quoted two interesting examples to show this effect.

Human (and other) bottlenecks

Most people use some form of word processing software. In line with Moore's Law we have seen continuous exponential growth in processing power although most recent developments might suggest the decades-old rule of thumb is finally becoming obsolete. But this vast growth of processing power 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 but your own capacity to write. Your computer can become faster still but you would not be able to write much more or much 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 digital 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? It is crucial to understand these five filters and what they mean for their specific circumstances.

What Is The Future of Work?

Following from this the next question is how these moderated changes do actually affect labour markets. There are

of course many ways in which new technologies change the ways in which we live but the most acute discussion is focused on whether we are at the cusp of large scale job losses. There is a vivid debate amongst experts and the wider public whether we are facing the robotisation of most work and the honest answer to this question is: We simply do not know. It all depends on what kind of assumptions underlie your modelling and how you see different factors interact.

In such a situation, it is advisable to map all potential forces so there is a structured framework that you can use for monitoring and policy development. The three big impacts on labour markets are: substitution, augmentation and creation.

Whatever the full impact of the digital revolution there is no doubt that it will render some jobs obsolete. In the area of substitution there are two sub-trends that need to be considered. First, the clear-cut case where an existing job is simply replaced by a computer or robot and, second, where the reorganisation and outsourcing of the specific tasks of a job leads to a job being lost. The latter area is also often called the 'gig economy'. In the gig economy, specific tasks are still done by humans but outsourced via online platforms. With global connectivity there is no more need for physical proximity for services such as translation, dictation or certain design tasks.

The second area of change is augmentation which basically describes how the relationship between human workers and technology changes. This has a direct impact on required skill sets and on the quantity of human labour needed. Supermarket checkouts are a good example. In many modern supermarkets you will no longer find ten checkouts with ten people sitting behind tills to scan products. You are much more likely to find ten self-checkout machines with only one human supervisor. For the supervisor of the check-out machines, the required skill set has fundamentally changed as he or she needs to be capable of solving technical issues should they occur. The impact on the numbers of human workers required is also obvious: Instead of ten people you only need one person.

Third, the digital revolution will of course also create new jobs. This has always been a feature of technological change and jobs such as 'social media manager' simply did not exist only a few years ago. But in terms of job creation you need to ask a few thorny questions. How quickly will new jobs be created? In what quantity and quality will they be created? And where will they be created? And what does this mean for social mobility?

If you are a truck driver for instance, and in a few years' time your job becomes obsolete as trucks become self-driving, will that mean that you will be upwardly or downwardly mobile? Will you skill up and become a high-skilled worker or is a path towards the low-skill service sector more likely? The danger is that such a transition leads to downward social mobility and in some countries such as the US you already see evidence for the hollowing out of middle class jobs and the polarisation of the labour market at the high and low ends of the spectrum. This in turn is a crucial political issue which leads us to the final part on the politics of the digital revolution.

The Politics Of The Digital Revolution

When following contemporary political debates you quickly notice that it is *en vogue* to talk about the digital economy. The catch-all term 'digital' may have been added to numerous political concepts in recent years but beyond such branding there has been very little debate of substance about what a comprehensive policy response to the threat of technological unemployment could be. As mentioned above, we do not know whether some of the more sombre predictions about large-scale job losses will materialise but we do know that governments need to be prepared if and when substantial labour market shifts occur.

The revived idea of a Universal Basic Income (UBI) is the cornerstone of the limited policy discussion under way. The idea is, of course, not new but has had numerous incarnations over many decades and been presented as a solution for quite different problems. The one that concerns us here is simply whether UBI could be a solution for large-scale technological unemployment or temporary labour market dislocations that could result from accelerated technological change. When examining the issue in detail it becomes clear that a basic income would not solve many of the key issues. Beyond the obvious question of how to finance a UBI that would be high enough to replace

the need to work there are several other reasons for this.

The first is that the UBI in effect reduces the value of work to mere income. Making a living is of course a critical element associated with work but social aspects are also crucial. The social value that work provides is an essential source of self-esteem and gives people a structure to their lives and role in society.

There is also the danger of scarring effects. If people leave the labour market and live on the basic income for a prolonged period their chances of re-entering that market become very slim. Accelerated technological change is likely to make existing skills obsolete ever more quickly so it would be quite easy to lose the ability to work and remain stuck on the basic income quasi-permanently.

This in turn raises the question of inequality. Paying people a basic income would not remove the fundamental problem that, in the digital economy, some people are likely to do extraordinarily well and many others find themselves left behind. One oft-heard argument is that if people want more money than basic income provides they can just work a few days. If the problem is technological unemployment, however, this option is simply removed as the large-scale loss of jobs renders it unviable.

The digital economy would thus produce a new underclass stuck at basic income level and an economic elite that would reap the greatest benefits; this elite would also be largely free of social responsibility for those left behind as ideas for funding basic income usually rest on flat taxes and the abolition of public welfare provisions.

A universal version of the basic income would also represent a bad allocation of scarce resources. Whether it is paid out directly or provided as some form of tax credit, it is very unlikely that all of the funds that would be paid to people who actually do not need it can be claimed back via reformed tax systems if you take the allocation of existing tax systems as a benchmark. And why should a universal payment be a good solution for a specific problem?

Finally, there might be some thorny issues about when immigrants would qualify for the basic income and, in the case of Europe, how such a system would be compatible with the European Union's freedom of movement and non-discrimination rules. In many countries, moreover, it would not be easy to abolish current pension systems – also an effect of basic income – as these embrace strict legal entitlements.

For all these reasons, the basic income does not look like a suitable policy response to the threat of technological unemployment. What could work instead? A policy agenda based on the following five cornerstones could be a more comprehensive and adaptive solution.

Five cornerstones of policy

First, education systems clearly need to adapt more to new economic realities than they have so far. Education should be less about memorising information and more focused on turning that information into knowledge as well as teaching transferable creative, analytical and social skills. Technical skills might become obsolete very quickly but the ability to be creative, adapt and engage in continuous learning will always remain valuable.

Second, if there is large-scale technological unemployment, re-allocating the remaining work should be a first step. It might not be the 15-hour work week that John Maynard Keynes envisaged for his grandchildren but where possible such a policy would make sense and be a first re-balancing tool.

Third, public policy-makers should be thinking about job guarantee schemes that would complement the normal labour market. Guaranteeing paid activity in this way would kick in when traditional jobs are lost; it would keep people active and able to use their skills. If governments acted as an 'employer of last resort' this would avert scarring effects and could actively promote up-skilling if learning new skills were a core element of the guaranteed activity.

As such a scheme would in effect decouple the payment for an activity from its content it creates an additional

public policy tool to incentivise socially beneficial activities. A job guarantee could, for instance, be effectively used to upgrade the health and care sectors, where on current demographic trends more human labour is required in future. It could also be used to fund sports and other cultural activities locally and thus strengthen social cohesion in communities.

Such a job guarantee system would be managed through a variety of different intermediaries and governance institutions. It is not about introducing a planned economy. The idea is premised on the assumption that even if traditional jobs disappear or there are times of transitional unemployment we as human beings will not run out of ideas as to what kind of socially beneficial activity we could actively engage in.

The fourth cornerstone then addresses how to finance such a scheme. It is surely worthwhile to rethink taxation, including how the tax base can be broadened, but in the end this might be either insufficient, distortionary or both. If we really end up in a world in which most of the work is done by robots the fundamental question is: who owns the robots?

This leads us to the fifth and final point: democratising capital ownership. If the robot-owners are the winners in this brave new digital world then as many people as possible should have ownership stakes. This can work at both the individual and the macro level. At company level, models such as the ‘workers share’ could spread ownership amongst employees so workers individually become less reliant on income from wages.

At the macro level special purpose financial vehicles could be created to re-socialise capital returns. These could be sovereign investment funds that would work along the lines of university endowments or sovereign wealth funds and create new public revenue streams that could then be used to help fund the job guarantee.

The core idea of the basic income is based on a libertarian view of society. Implementing it would individualise many aspects of our daily lives that are currently organised collectively. The policy mix proposed above, on the other hand, would not just provide effective protection against the potential downsides of the digital revolution but at the same time create tools to strengthen communities and reduce inequality.

This chapter has provided an overview of three consecutive steps in dealing with technological change. We need to evaluate what the real-life impact of technology is before we can analyse the effects on labour markets and what governments could do if large scale job losses become an issue.

The digital revolution will have quite different effects on different economies so it is important to have a structured approach that can be used to examine all cases. The policy debate has just started and the author has explained why a UBI would be a misguided policy response and what alternative policy mix could provide better protection. The debate about how to respond to the digital revolution in policy terms will, however, be with us for quite some time. It is one of the crucial discussions in the decade to come and the arguments advanced in this chapter are designed to be an interesting contribution.

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