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SOCIAL EUROPE
UNDERSTANDING THE DIGITAL REVOLUTION AND WHAT IT MEANS

By Henning Meyer, Editor-in-Chief of Social Europe

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 assump-
tions 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.
Let’s start with a general question. What do you think is the impact of technological changes on the world of work?

Well, I think that the development of artificial intelligence, and more flexible robots, is indeed creating machines that are better substitutes for some of the more skilled things that humans have done.

Traditionally machines could do good things, sort of muscle activities. They can now do things in more subtle activities, including
out-thinking us at various times. That is clearly changing the world of work.

In the discussion about substitution of jobs, the creation of new jobs, and augmentation of jobs in the sense that the profile of jobs will change completely, where do you stand?

Are you one of the pessimists who think that there is an overwhelming case for the likelihood of substitution more than job creation and augmentation? Or do you think there will be a balance, as in previous technical jumps forward?

Well, I would consider myself an optimist, but it’s an optimist in the sense that if we manage this process well it should improve living standards for people and create possibilities for greater leisure, if we want it.

The traditional optimist view is humans would always be able to get better jobs, because the machines were substituting for brawn.

If they substitute for brains it doesn’t mean we necessarily lose work, but it does mean that there’s going to be a rebound on the wages in many occupations that people get. If there’s a machine that can do an accounting job as well as an accountant the accountant’s wage is going to be less than, or equal to, that of the machine.

I think the key thing is whether we citizens of the different countries own the machines, and have a stake in the income that’s going to flow from our substitutes, or not.

If we have a good share of the income that will come from these
machines then I think we’re all going to be better off. If we don’t it’s not going to be just that people will lack jobs, but people’s incomes just simply will stagnate or go down, as the machines provide low-cost substitutes for the best things we can do.

We will come to the “citizens’ share” in a moment, but let’s stay with the labour market, or the likely shape of the future labour market, for a moment.

Do you agree with that the shape of the labour market at least tends to be going towards a polarisation.

So, if you don’t change the ownership share of this capital, or these robots, and these other things, you will see a polarisation in the sense that a few people will reap the digitalisation dividend and move to the top, but a lot of what is now perceived as middle class jobs is prone to substitutions, and might be transformed into rather low-skilled, lower paying, service sector jobs, a trend that we’ve seen also in recent years.

Would you broadly agree with this characterisation, or do you see it differently?

No, I do agree with that characterisation. I can imagine there are very sophisticated machines, and our job is perhaps to make sure the machines are clean and they’re plugged into the electricity.
You agree with this trend? Basically we are potentially faced with the hollowing out of what used to be perceived as middle class jobs?

Well, we see that occurring already. Certainly the robotics, and other more sophisticated machines, many are still in the pipeline. Yes, I think this is not a – what’s the right word? – not a pessimistic view or optimistic view but a realistic view.

If we move on to the potential remedies, you have suggested a “citizen share”. Can you just briefly explain what you mean by this?

Well, if we have machines that are very good substitutes for us, and they’re increasing productivity around the world, which these machines are and will keep doing, then the key issue is not what the machine does for the world of work, but who owns the machines and gets the benefits of the improved technology.

My solution, I think the only reasonable solution, particularly in a capitalist system, is that ownership must be extended to more and more people.

We do not want, certainly, a world in which a small number of medieval style lords own all the capital, and the rest of us are serfs working on their plantations or whatever.

That would be capital ownership by the workers, or
could it be also public ownership by governments and state institutions?

I am actually in favour of ownership by workers. Maybe this is a very American view, but I’m suspicious of governments owning. We’ve had experience with governments trying to own things, under the Communists and so on, and that has not worked out well. It is better that it be decentralised ownership. Basic economics is also very favourable to more decentralised ownership.

Big government owns something, makes a mistake, it can be terrible. I own something, and I make a mistake, it may be bad for me but it doesn’t harm other people who are making better ownership decisions. So I’m for people owning, not for the state owning.

Obviously there are functions for the state – public parks, infrastructure investments that states should do – but the idea that government would step in, and either own things or redistribute income through huge taxes, strikes me as very dangerous.

What I’m referring to is a discussion that we actually had on Social Europe when we looked at inequality.

There was a proposal, for instance, that if you take as a given the structural primary distribution that Thomas Piketty described, even with very, very high marginal tax rates you will not be able to solve the distributional puzzle.

What was proposed by Giacomo Corneo, an Italian economist who teaches in Berlin, was what he called
“Public Capital in the 21st century”. Basically this is a sovereign wealth fund that takes capital positions in a diversified portfolio, and basically reaps the return on this capital.

It’s not the idea that we have old-fashioned statism, in the sense that you own and run a business as yourself, but it’s basically the state being an investor and having the return on this capital re-socialised.

There’s some sense to that, and probably sovereign wealth funds should be part of the solution, because we currently have pension funds. They’re not state, but they are certainly state privileged through tax benefits you have in pension monies, and there are many of them.

I suppose I’m preferable to (the notion), if we’re going to have large pension funds, which I assume that will be part of a solution, or sovereign funds, there should be many of those funds rather than a single such fund.

The Norwegians have been remarkably successful, I think, with their sovereign wealth fund. The State of Alaska has done reasonably well, just declaring dividends for paying money to every citizen.

There are successes, but there are also these great dangers. When you get politicians involved in huge sums of money, without enough controls, the potential for chicanery, for bad behaviour, for taking care of my family and friends, etc., seems to me high.

If this Italian economist working in Berlin proposed sovereign wealth funds that are broken up into competitive funds, that seems to me a correct and probably a necessary part of the solution.
What that doesn’t do though is give incentives to the people at a company to work harder or better. To a person at a company it’s still some outside investor who owns the firm, and, “I’m working for the outside investor.”

The virtue of having workers have a stake in their own company is, I think, that it incentivises a greater productivity and effort as well. So I think that I’m in favour of a mixture of these schemes.

So, on the public side it really depends on how this is set up, and how the checks and balances work. At the same time, if you have individual shares you create an additional incentive in the workplace. Basically a good solution could be a well-balanced mixture of both?

Yes. I think if you look at the actual numbers, certainly for the US, I know it would have to be a mixture.

Although, I’m thinking not of government sovereign wealth funds, because we’ve got the tax privileged pension funds, which are very similar. They own large amounts of companies, and they’ve worked out reasonably well, I think.

If we move on just a bit, from the labour market towards the general shape of the economy, early indications might suggest we are seeing a big diversification in how the economy works.

For instance, the traditional economic distinction
between leisure and work seems to be breaking down with the advent of new business models, such as peer to peer and so on and so forth.

As a result of the discussions we’ve had on this issue so far it seems that the future economy might look a bit like this:

You will have a traditional work sector, propped up in one way or the other, but because of the substitution effect that we have already talked about there might be less work.

We’re basically back to a Keynesian situation, where we will have to think about the re-allocation of the remaining paid work, and that might lead to fewer hours.

Then we will have a new sector, the sort of peer economy, or an economy where basically value is created without actually money changing hands. That will be in the middle somewhere.

Then at the same time, in order to maintain domestic demand, and, as you said, address distribution questions, we will have to make sure that capital ownership is looked at in different ways as well.

What do you make of this kind of interplay between different aspects of the new economy?

Well, there’s one part of this interplay in the new economy that I
think is very bad and that you’ve left out in your discussion of it, and this is this zero time work contracts, which is remarkable, turning workers into the most variable, uncertain, and risky positions.

Obviously if they all own large shares and have income they can decide, “When you call me up I can show up or I say, ‘No, I’m going to go to the beach today’, or, ‘I’m going to the park.”’

Most of these workers are at risk. They need the money, and they have absolutely no certainty, and the employer is clearly not going to be investing in their skills. I think one has to monitor, probably with strong labour laws or employment laws, how these new forms of work arrangements are undertaken.

It’s so easy if you’re a freelance worker, even when you have a contract to produce some work for your employer, to say, “Oh, I really don’t like this. I will give you £1,000 or €1,000 instead of the 1,500 I told you.”

We have to make sure the contracts in these new more flexible, open exchanges are obeyed – the law makes sure people carry out their contractual agreements.

**Within what we now call the traditional labour market there are significant changes as a result of technology as well. You basically say we will have to regulate that in a new way.**

**Also, for instance, these market making platforms need to be regulated so that labour legislation, like minimum wages, safety and health regulations, are actually enforced.**
That might probably also lead to rethinking completely the role of trade unions, because they will have to find new ways to organise these people.

Yes. Well, one of the things I think everybody, including the many people inside the trade unions, understands is that they really have to change dramatically. Unfortunately it’s an old bureaucratic institution that has big trouble in making tremendous changes.

I’ve thought a lot about this and suggested various ways to the unions that they could change. Some of them are, but it’s just a very hard process for the unions to shift to a new world.

There is probably very little alternative for them?

Well, there is an incentive, if they expect to have members in the future and become an important force. In the US they are a very marginal force, because their membership has declined, they are unable to exploit or make use of the new technologies as well as firms do. It’s a real problem in our country.

I think in Britain and some of the European countries they have done a bit better, but I think everybody, all the unions face this giant challenge.

You cannot be an organisation with, let’s say, a tradition, and a history, and a mode of operating that worked 100 years ago, or 70 years ago, in a modern world, with the internet and with these machines that are going to be good substitutes for workers. You have to adopt new strategies, etc.
Younger union people understand this I think better than some of the older leaders, who have built up their skills and their knowledge of the world, and their connections, from a different universe.

So we’re having the dilemma that, given the revolutions on the labour market, we probably need unions more than ever before, but at the same time they’re struggling tremendously to adapt to the new circumstances?

Yes, and I think how we end up in the end will depend, in part, on whether unions are able to reinvent themselves, or rejuvenate their modes of operating, and join the modern world. Instead of, I would say, living in a past that is the past.

Richard, towards the end I would like to put this very easy question to you: if you were a policymaker today what would your top three priorities be? What kind of policy change would you enact in order to prepare for the challenges ahead?

Oh, this sounds like one of the questions they ask Mr Trump, “Here’s an easy one” but the first policy...

I wouldn’t want to ask him this question though...
Who knows what he would say?

I think the first policy change that I strongly favour, and I’ve done some serious policy analysis of, is encouraging firms and workers to have a greater ownership stake going to workers, be that profit sharing inside companies, or I would prefer some stock ownership inside companies. That’s number one.

Number two, and this gets to your sovereign wealth fund kind of phenomenon, but I’m thinking about it as pension funds. There has been very little movement here, but there’s got to be a way in which these pension funds and sovereign wealth funds, that the people, the voters or the members of the fund, have a bigger say in how the fund is invested. It cannot rely on the Wall Street experts to do that. That helped create the 2007/2008 disaster. You need individuals, the real owners of the money, to have a bigger stake, somehow democratising the ownership or the control of these funds.

Then the third policy I think is to do some strengthening of traditional labour law things, so we do not have more and more workers in your polarised world becoming completely variable factors, their employment and wages dependent upon employers.

Obviously many employers will treat workers well, and pay them well, but there’s always going to be a fringe that will try to rip off the workers, and if they make more money that fringe will grow.

So I think we do need some labour laws restricting the zero time contract type phenomenon, and making sure that when there is a contract it is in fact obeyed by the employer.

Thank you very much, Richard, for taking the time to talk with me today. I’ve got a hunch that this topic is
not going to go away any time soon, so this might only be the start of a longer process.

Oh, I hope it is, because otherwise we’re headed in this direction of a small elite of super-wealthy people controlling the capital, ultimately, in the US at least, controlling the politics, and that’s going to end in some sort of a very bad situation for everybody.

Well, let’s hope this dystopia doesn’t come about. Thank you very much again.
Social Europe Editor-in-Chief Henning Meyer interviews David Autor, Professor of Economics at the Massachusetts Institute of Technology (MIT)

David, thank you very much for joining us today to talk about the future of labour markets, the future of work, and what digitisation and technological progress in general mean for it. In your publications you mentioned that there are, as you see it, limits to the polarisation of labour markets that we currently see. What do you mean by that; where are these limits?

Sure. To clarify, I don’t mean that there are limits to technological
progress or what will be accomplished; I just mean that over the last 20 years in particular, maybe even 30 years, one of the very important manifestations of computerisation has been the automation of routine tasks. So, taking things that people did that were cognitively intensive but followed well-understood procedures, like adding and subtracting, and filing and sorting, and processing information, and have mechanised those things in a way that was very, very difficult to do prior to the information era.

Now computers do a lot of the work of clerks, they do a lot of the work of production workers, doing repetitive activities and so on. That has led to a type of polarisation because it has had the effect of displacing labour from many middle-skilled, middle-education, middle-wage jobs in office, clerical, administrative support, production and operative positions.

When I say that that’s fine, what I mean by that is a lot of that has occurred at this point and there are many, many fewer workers who are doing simple, repetitive information processing tasks any longer. To the degree that those occupations still exist, they’ve actually changed quite substantially. There are clerical workers nowadays for sure, but they’re not simply typing and filing; they’re basically problem solvers. They’re people who coordinate events; they’re people who deal with issues of finance, and reimbursement, and complexity.

So, the point that I’m making about the limits of polarisation is simply that much of what can be readily automated as repetitive information and tasks has been done, and the frontiers are elsewhere; the frontiers are now moving into a higher-level abstract reasoning and tasks that require some mixture of creativity, and intuition, and expertise, and also moving downward into jobs that require physical dexterity and some cognitive flexibility.

It’s not that we’ve reached the limits of how computerisation will
change the work that we do; it’s just that that particular strand that has been so important has not completely played out but is not the frontier at this point.

So you reckon, basically, that the computerisation, the worst is behind us, in a sense?

No, I wouldn’t say that; I would just say, “The future is different from the present.” I don’t even say, “Worse,” because I don’t think it’s been bad, but I’m just saying that the shape of it will change. A lot of the computerisation has been most evident in the so-called ‘middle-skill activities’ and that process is to a substantial extent complete, but that means that it will move into other activities. Whether that’s worse or better depends very much on who you are.

In general it’s a good thing; it corresponds to rising productivity and ultimately that’s welfare improving, but of course it has distributional consequences as well. If you’re doing a job and all of a sudden a machine can do it cheaper, that’s almost never going to be a good thing for you. If you’re doing a job and a machine makes you more productive at doing that work, that’s almost always a good thing for you.

In general, technological change like trade is not Pareto improving. It increases the set of possibilities, it increases aggregate wealth, but it does not have the effect of making every single person better off.

Yes, we’ll come to the distribution of this in a
minute, but don’t you think that a lot of other jobs that have so far been largely excluded from these kinds of computerisation processes are susceptible?

This morning, for instance, there was a programme on the BBC where the reporter visited a law firm in London where now, basically, an algorithm is being used to do contract work, which is basically text analysis – effectively replacing, they said, three junior solicitors. Don’t you think that in these sorts of areas there’s much more to come.

Yes, absolutely; that’s exactly what I’m talking about. Previously that type of work was what we would have called ‘abstract intensive’; it was fairly impervious to automation because it required too much... It required a great deal of cognitive flexibility and solving ill-structured problems.

Now we have more machine learning, artificial intelligence type devices that can start to do that type of work. That’s not what you would call ‘polarisation’ in the typical sense, because that’s obviously targeted at a higher segment of the labour market; so, definitely.

We’ll see the opposite as well; we’ll see increasing... We’ll see machines doing things that require the dexterity of not necessarily highly educated or highly paid service workers, but things that were relatively immune to automation because machines were not flexible enough. So, I think the example you gave exactly corroborates the point I’m making.
Okay, but where do you see the balance in terms of substitution and job creation? Basically, there seem to be three categories where technology will have an impact on work. It’s either substitution, it’s augmentation or change of the existing job description, and it’s obviously job creation, but there’s a big discussion, as you know, about the balance between these three, so where do you think the balance lies?

I think that people are extremely unduly pessimistic, bordering on hysterical, both among popular speakers, business people, and even some economists, about the likelihood of vast job destruction. There are three reasons why I say that; one is that machines complement us in many, many ways and augment us.

That has always been true and that has been the source – the technological advancements that have complemented us have been the source – of our improving quality of life, for hundreds of years. One could have made the argument 100 years ago that between electricity, and mass transportation, and telecommunications there just wouldn’t be stuff for people to do, and nothing like that has come to pass. That’s one, we neglect the complementary.

Two, we neglect the fact that as we create wealth, which we certainly do through productivity improvements, we create more consumption. People want more experiences; they want more goods and services. Consequently, as people get wealthier, they tend to consume more, so that also creates demand.

Then the third thing is that we underestimate people’s creativity, and ingenuity, and how marvellous they actually are in thinking of new things. There are so many important businesses and activities now that just were not imagined 50 years ago. We have been
pretty good at keeping ourselves useful and thinking of valuable things to do.

I think that absolutely many types of work will be displaced, many types of work have been displaced, but to look at the economy and say, “47% of jobs are at risk,” that’s silly; that’s thinking like an engineer, not like an economist. The idea that if work can be done by a machine and it is done by a machine, then there’s just less work to do, that’s what we call the ‘lump of labour fallacy’ and it’s not an accurate description of how economic growth actually occurs.

So, you reckon the net balance might be... The overall amount of work might even be growing, rather than shrinking, and people will remain in work? Work might be different, but it will still be usual work?

There are many nuances to this; I don’t want to make it simplistic. For one, we may have more leisure, but we have ways of dealing with that. In fact, we have more leisure now than we did 100 years ago. We work shorter workweeks and we retire earlier relative to death. In other words, we have more years of retirement, not because we retire so much earlier but because we live so much longer. So, we have a lot more leisure than we used to, and that’s a good and a bad. It can be a challenge if people are involuntarily unemployed. On the other hand, it can work fine if their work is shared to some degree.

Take, for example, two countries: Norway and Saudi Arabia. Both of them have huge amounts of sovereign wealth. You could say it’s
like they have a machine that creates wealth for them. It’s not a computer, it’s just oil, but that’s okay; it creates surplus. You could say, “In those countries, maybe no-one needs to do anything, because they just have so much money,” but Norway and Saudi Arabia have handled this completely differently.

In Saudi Arabia only a little bit more than 10% of the private-sector workforce is Saudi, and the rest is guest workers. That is a recipe for long-term economic and social problems. In Norway just about everybody works, men and women, much more than most other European countries, but they don’t work that many hours. They have kept themselves relevant, and engaged, and prosperous, and actually pretty happy if you believe the data.

So, there are ways to deal with the challenge of abundance, but it’s not a bad problem to have on the scale of social problems that one could face. That’s what we’re talking about here, it’s the problem of abundance – in other words, abundant productivity, abundance of capability to do things with machines that we used to require human labour and toil for.

There are challenges that come with that. One is the leisure challenge; the other is, of course, some skills become less relevant faster than others. The people who have clearly been affected by the thrust of technological change, over the last 30 years especially, have been low-educated adults whose skills are more closely replaceable by automation, not actually necessary in the lowest-skilled jobs, but many have been displaced from middle-skilled jobs.

If I’m a clerical worker or a production worker and that type of work no longer exists, I can still do table waiting, I can still do security, I can still do cleaning, and actually I’ll probably displace an even less-educated worker who wanted that job. For example, in the US we see very few teenagers anymore working at so-called ‘teen’ jobs; they’re held by adults.
It does create challenges and they are distributional challenges. They’re not ones of not enough work to do; they’re challenges of not everybody’s skills are valuable or scarce, and so they may not be good jobs and they may not pay well. That’s the situation, so the challenge, in my view, is not about running out of jobs; it’s about the distribution of income and the inequality of opportunity. I think that is a much greater challenge.

You’re touching on two very important points. Some of the people I’ve talked to, and also in the kind of research and publishing I’ve done myself on the subject, part of the polarisation is exactly what you described. For instance, just assume that a truck driver becomes unemployed because the trucks become self-driving. The new job that person might be able to find is probably a lower-value job.

Absolutely.

Therefore, you have a polarisation where either you move socially downwards and a few might be able to move upwards, but the threat seems to be, for most people who get displaced in the short term, that you can’t obviously train them to be a software engineer overnight, so the likelihood that they’re moving downwards on the social ladder is higher than moving upwards.

The second point that you mention as well – and
That’s obviously one of the key problems – is the distribution of the gains from this technological dividend. That is obviously against the backdrop of quite unequal societies we’re already having. So the question is, against the backdrop of these societies we already live in, how will this distributional question be solved?

You mentioned Norway, for instance; Norway has a nice way of dealing with it through its sovereign wealth fund. Some of the arguments we’ve been discussing were also whether capital ownership, given that the dividend is most likely to go towards the people owning these robots and the technology, whether capital ownership should be rethought as well, along the lines either of the public as such, via governments, via sovereign wealth funds, via different investment vehicles owning more of the capital that is reaping the dividends in the future, or maybe even workers themselves. That was what Richard Freeman was arguing.

Sure.

What kind of ideas do you have in this area, how do we rethink this distribution question?

I think these are excellent questions. I’m not ready to declare the current system – income distribution based on capital ownership
plus labour scarcity – I’m not ready to declare that dead. I still think we are very much in the realm where we can tweak without having to rip it out root and branch.

What I mean by that is first of all lots of people are making lots of money from labour, labour income, and most of the growth of inequality is due to labour income inequality, not capital income inequality. That story about “It’s all about ownership of the robots,” the data don’t support that idea. I know it’s intellectually appealing and it’s exciting, but nothing suggests that that’s really what’s going on. It’s really about labour income; that’s where most of the growth of inequality has occurred.

For example, Thomas Piketty’s book *Capital in the Twenty-First Century*, it doesn’t even apply to the US; there hasn’t been much growth of capital inequality, at least by the accounts of the best US data available.

We have ways of moderating the consequences of inequality that have some scope still to work, so there are two... There are really three things; the first is investment – investing in people’s skills. Education is the best long-term tool we have for fighting inequality, by allowing people to be successful by selling their skills, their labour, through the labour market.

That’s how most of us make our incomes: we have skills, we acquire them, we build them, and then we sell them over the course of our career, to add value for our employers or for our customers or whatever. That’s the best way, but of course you can’t do that overnight; you can’t change the educational composition of a population. To someone who’s lost their job at mid-career, you can’t simply say: “Oh, well, guess you should have studied something different.”

The second tool we have is taxation, which gives the government
resources to address these problems. The third, of course, is we have a system of transfers and supports that can on the one hand mitigate the risks that people face through health insurance, or unemployment insurance, or disability insurance, through basic income programmes like food stamps, for example, we have in the US.

The other is that we have transfer programmes that subsidise or support work. In the US, the leading example here is Earned Income Tax Credit, which basically is a wage subsidy to workers who have low earnings potential. That both increases earnings and increases employment; it’s some mix of the two. In fact, we don’t know what exactly the mixture is, unfortunately.

Those programmes can work reasonably well, but they work much, much better if you have a reasonably well-educated population. If you have a lot of people, for example, who are illiterate and innumerate, there’s almost no amount of wage subsidy that’s going to make employers want to hire them in an advanced economy, unless they’re doing maybe agricultural work, for example, or some very low, mostly manual labour.

These policies are complements, not substitutes. It’s easier to use taxes and transfers to ensure the quality of life and maintain employment for low-educated workers if you don’t have too many of them and they aren’t too low skilled.

One problem that we face in the US, more than in Western Europe, is we have really let our educational system fall behind since the 1980s, or really since the mid-1970s, where we’ve had very slow rates of college education growth, especially among men. Our employment problems in the US are concentrated among men. Among women education has risen a lot, earnings have risen a lot, and employment rates rose a lot up until the 2000s.
Something else the US needs to do is get behind some of the family supportive policies that many European countries have done that have made it easier, for both men and women, to work as well as raising families. I hope that wasn’t too much of a digression there.

No, obviously everybody has highlighted the significance of education policy; that’s the best equipment you can basically provide to your population. The question is whether this is a sufficient or just a necessary condition for dealing with the future.

We don’t know, and anyone who tells you for sure that this time is different has a degree of certainty that is, I think, unwarranted. Anyone who tells you that this time can’t be different is equally expressing certainty that they shouldn’t, they don’t have any right to have.

Every time is somewhat different. There’s no question that technologies that we’re adopting now are different from the ones that brought us so much wealth and prosperity through the 19th and 20th centuries, and they have different consequences. They affect different jobs, and they will cause different types of dislocations and different types of growth.

Those who say, “There’s just no way we’ll have enough employment” are basically making a very bold claim, which is that people... They’re basically saying, in two sentences, they’re saying, “One, I can’t imagine what people will do, and two I’m certain that no-one else can either.” Therefore, nothing will happen, because no-one has the creativity to think of new things to do.
Yes, I think what pretty much everybody agrees on is that we simply don’t know what is going to happen, that we have different versions of educated guesses.

I think, actually, where I disagree, I think there’s a lot of arrogance of prediction, a lot of arrogant prediction we won’t solve this problem, that we will not think of things for people to do. That’s certainly what you get from Martin Ford’s book *The Rise of the Robots*. That’s what you get from Frey and Osborne about the 47% of jobs that will be displaced. It’s basically a very bold prediction on the failure of human ingenuity and creativity to think of new things for people to do, and I would never make such a bet against humanity.

On the other hand, it’s also inaccurate to say that “It’s never been a problem before; therefore, it won’t be a problem this time.” Technological change has always been disruptive, it’s always created winners and losers, and this time could be worse or better than other times.

Let me say I’m much less pessimistic than many. I’ll tell you one reason, actually, that I think is underestimated or underemphasised in this discussion is that the rate of change matters as well. It’s not just where we’re going, it’s how fast we get there, because we can only adapt so rapidly.

If we knew, if we read today in *The Guardian* or *The Wall Street Journal* that 15 years from now no-one will be driving vehicles anymore because they’ll all be done by machinery, you’d say, “That’s good, but it’s going to create some challenges. We’d better
stop training people to be lorry drivers and get them ready for other occupations,” but we could deal with that.

If it was announced that coming next Monday no-one will be driving vehicles, that would be a much bigger problem – not that it wouldn’t have the same economic benefits of safer, cheaper transportation, but we would have a lot of displaced workers to contend with.

It matters how fast things are changing, not just where they’re eventually going to go, and the evidence is not strong that they are changing extremely rapidly, in fact. The productivity statistics don’t show it, the investment statistics don’t show it. I think there’s a lot of enthusiasm and certainly there is no question that progress is occurring, but the sort of singularity thinking that we’re approaching this singularity – you can see it where just the rate of change is accelerating; it’s all Moore’s Law and stuff – that’s just not serious. There’s no serious data that support it.

One of the less well-covered aspects, I think, in this discussion is that even though you can say from the technological side Moore’s Law applies and things like that, it doesn’t necessarily mean that the velocity of change is actually equivalent.

Not at all.

Because there are ethical, legal, power obstacles of actually implementing this.
Also, you have to distinguish between qualitative and quantitative change. My computer can run Microsoft Word 1,000 times faster than my computer could 20 years ago, but it doesn’t make it 1,000 times more productive; maybe it’s 20% more productive. The point is there’s this false equivalence drawn between computing processor cycles and productivity or output, and it’s really diminishing marginal returns.

To give you an example of this, I was at a conference and an executive from McKinsey got up and said, “Your washing machine today has more processing power than the entire Apollo moon project.” He meant this to demonstrate the great rate of change and the fantastic progress, and to me that just said, “diminishing marginal returns.” My washing machine is not going to the moon.

**It’s still just washing the laundry, yes.**

Exactly, it just says, “When processing power is practically free at the margin, we use it for things that have very little value at the margin.” No amount of washing machine power is getting us to the moon.

The point I’m making is many of these quantitative increases, these reductions in the cost of computing, they’re great, but at the margin many of them have very, very little value. That’s what they’re going to be used for; those are not qualitative breakthroughs or enormous productivity enhancements.
Towards the end of this discussion, let me put to you another argument that goes in a similar direction that is at the moment being discussed here in the UK under the title ‘Post Capitalism’, by Paul Mason. Paul basically argues that given that, as you said, obviously economies are based on scarcity, the pricing mechanism is based on supply and demand, which is based on scarcity, but if more and more services and products are based on information, and information is abundant, the typical pricing mechanism simply doesn’t work anymore.

What Paul then predicts is that there is, I would say a more complementary new type of economy developing alongside the capitalist economy, he would say a large part of the capitalist economy will be replaced by different types of transactions because the economies are no longer based on scarcity but on abundance.

Yes, I think you see this in certain areas where information goods are very, very cheap, but I think there are many things that we consume that are in fact quite scarce – having to do with food, as an example, or experience goods like being in a beautiful location, with actual transportation and the crowdedness of roads and congestion, the cost of energy, education and healthcare. These things are actually real material goods that are quite scarce and that are costly to produce.

Information is an input into many of these things, just like you could say, “Water is not scarce in many places, so we don’t spend fortunes on water in places that are not arid.” But that doesn’t
mean the economies break down, even though water is used in just about everything, because there are many, many other things that are scarce.

In general, as long as things are complementary, as long as more information then improves the quality of products that I want to purchase, then the falling price of information goods actually makes those products more valuable. Whatever inputs go into them, whether that’s silicone, or electricity, or liquid crystals, or gold, or use of the Sierra Mountains, those things become scarcer, more valuable as the complementary inputs decline in price.

**My personal hunch is also that we’re going to see a much bigger variety of different economic activities.**

Absolutely.

**My hunch is that, as you rightly say, the long-term trend has been that what we call ‘typical working hours’ is likely to decline.**

Absolutely.

**Depending on the distribution of the automation dividend, we will also see the breakdown of what economists used to see as the typical distinction between work and leisure, by new business models:**
peer-to-peer economy, sharing economy, these sorts of things.

There will be an in-between type of economy, if you wish, and the kind of information-abundant economy that basically creates value, without any sort of monetary transaction being attached to it. My hunch is that we’re going to move into a much more colourful economic life.

Yes, I agree with you there. My real concern is I’m much more concerned about the consequence to the developing world, where a lot of the wealth of the developing world comes from two sources – three sources.

One is commodities, which I think will continue to be valuable; two is basically doing labour-intensive work for the rich world – for example, textiles and leather goods and so on, where dexterity, manual flexibility are critical and valuable because they can’t be done by machinery at present.

Then, of course, the third thing is basically domestic trade and domestic labour. There’s a lot of worker flows around the world that are basically people coming and doing domestic work, and some construction work in the rich world.

I’m concerned that automation has the potential to erode the comparative advantage of the developing world in labour-intensive goods and services. That, just like less-educated US adults are increasingly not employable in the advanced economies, I’m concerned that automation, to the degree it substitutes for labour, the labour it’s most likely to directly substitute for in the future are people doing these dexterous tasks.
That’s not a huge problem for the rich world, because we don’t have that many people doing that. If we did, it would in some sense increase our wealth, especially because we would own the technologies themselves, but for the developing world that’s a valuable resource that they supply to us. That’s a greater concern for me.

So, maybe we are looking at the wrong type of inequality if we just look at inequality within countries, rather than global inequality what it means for the international division of labour.

Yes. I would say the last 10 years, last 20 years, have been really, really good for the developing world. The question is whether that could change, and especially how many more countries can do what China has done, which is get rich through manufacturing. Will manufacturing in fact be as important when we can do more desktop printing? Will the assembly of electronics, like what China does a lot of, be important when we have workplace robots that can do more of that assembly?

As I said, I’m not worried nearly so much for the rich world; I think most of the things we do are not that automatable. We own the technology; we’re going to benefit from it vastly. The developing world, there’s more of an imminent degree of challenge.

So, that’s a whole new branch of the discussion that we’ll have to open, but we’ll have to do it at some other point, I’m afraid, David, because we are
running out of time today. Thank you very much for joining this discussion.

Great.

I’m sure this wasn’t the last time that these topics surfaced.

I hope not.

Thank you very much.
Social Europe Editor-in-Chief Henning Meyer interviews Ryan Avent, economics columnist at The Economist.

Ryan Avent, thank you very much for joining us today. You wrote a book entitled *The Wealth of Humans: Work, Power, and Status in the Twenty-first Century*, and it addresses one of the hottest topics around at the moment – the digital revolution, and what it means for the future of work. So, what do you think? What does it mean?

Well, I think it means big change. I think the starting point of the book is that the digital revolution actually is probably going to be
as transformative as the industrial revolution and the big technologies like electricity and steam that we saw then were. I think this transformation has already begun, and ironically, the evidence of that is in the struggles that we’re seeing across lots of countries that workers are facing in terms of limited growth in wages, in terms of rising inequality. These things, as the book argues, are all connected to the growing role of these powerful new digital technologies, and especially of machine intelligence.

How many jobs do you think will actually disappear? Because if you look around in the economics literature, and the policy literature, you see a lot of conflicting studies. Some studies claim that about half of the jobs are susceptible to automation; others say it’s 10%. I personally would argue it always depends on the assumptions, and we actually don’t know. But what is your view? How many jobs are likely to be affected?

Well, I think you’ve got it right in that it really depends on what your assumptions are. If you just look at the task content of jobs, and you assume that jobs are not going to change in the balance of tasks that they consist of, then I think probably a lot are quite vulnerable. There’s the one paper from scholars at Oxford that says 47% are potentially automatable over the next couple of decades. But the thing is, jobs change over time, so as a worker has some of the functions that they do during the day, some of the things they do on a computer or talking to customers, as some of those things are automated, what their responsibilities are end up
shifting. They may find themselves doing a more particular kind of work.

So, I think in practice we won’t see as much automation away as some of the more dire forecasts warn. What my book tries to point out though is that in fact the biggest effect is not going to be mass unemployment. The biggest effect of the digital revolution is not going to be massive numbers of workers who just can’t find any work; it’ll be that the work they find ends up being very low-paying, because the displacement effect of these new technologies is so great, and the economy is asked to absorb so many new workers, that that’s just going to put an incredible amount of downward pressure on wages. That’s the real short-run challenge, I think.

Right, and other than that, it’s the mixture between substitution, augmentation, and creation, isn’t it? So which jobs will disappear altogether, which jobs will have a completely different skill profile which might also have an impact on the quantity of people needed – think checkout tills at supermarkets – and obviously there will also be new jobs... I mean, the job title ‘Social Media Manager’ is a rather recent phenomenon.

But the question is also that you mentioned about inequality, it’s the one about social mobility. The big question here seems to be, and this links back to a discussion we had with David Autor from MIT, just assume, say, the single job in terms of numbers that most people do in the United States seems to be truck driver, and if you just think about self-driving
trucks, what would happen to all these people? They’re unlikely to move up the value chain and become software engineers, and there’s a limit to what kind of retraining you can do to how many people in what kind of timeframe.

So, what do you think all this might mean for social mobility?

I think it’s kind of a grim outlook. We have a sense of what it might look like from the decline in a lot of manufacturing industries over the last 30 years or so. What we’ve seen is that there just hasn’t been nearly as much movement from declining places to growing places, from declining industries to growing industries, as we would have expected. And so, as you start seeing entirely new kinds of job categories being affected, and truck driving, taxi driving, these are things that employ millions of workers across America and Europe, the challenge there is going to become much more significant.

I think we have to be first of all more proactive in our labour market policies. In America particularly, but also to some extent in some European countries, there was the attitude that if you had labour markets that were flexible, a lot of this stuff would take care of itself, and I think we totally have to rethink that.

But I think one of the flash-points over the next few decades is going to be the fact that good jobs for a lot of workers without high levels of skills are going to be available in cities and in countries that are doing well. So if you are a truck driver who has lost your job, you might not be able to retrain as a computer engineer, but you might be able to get a job as a plumber or an electrician. That
job’s only going to pay a lot if you’re in a city like London, or Frankfurt, that is otherwise thriving. The problem is, people in London and Frankfurt don’t want to build enough housing to accommodate everyone, they don’t necessarily want to have people from other countries coming to work in close proximity to them.

And so moving people to these places is going to be hugely important for making sure their standard of living keeps growing, but also very difficult politically and socially.

**So at the same time, when such movement might become an economic necessity, what we might want to call a cultural backlash against globalisation might prevent just that.**

Absolutely. I think that’s one of the big risks... We’re already seeing this play out, aren’t we, within the European context. This is certainly the subtext of the Brexit debate, I think.

Yes, absolutely. There’s clear evidence that there’s a bigger cultural problem against change underway, because it’s now almost completely divorced from underlying factual circumstances. That no longer is one of the key issues, so you also have to address the emotional and feeling level where people just feel disaffected and are rebelling against what is going on.

But what I quite like about your book as well is that you started with a personal anecdote. Obviously jour-
nalism and writing is an industry that is also affected. Maybe as a side note, what do you see going on in your industry and where do you see it headed?

Well, I think it’s a nice sort of microcosm of what’s happening more broadly, in that we’ve... There has been a lot of disruptive change that has made old and established companies uncomfortable. As the industry has adjusted to that, we’ve seen some companies make an awful lot of money, and others go out of business, and that’s an important thing to keep an eye on.

At the same time, you have different effects depending on what kind of workers you’re looking at, what class of skilled labour you’re looking at. And so I think for the people who are really doing amazing storytelling, who have scarce skills in terms of gathering facts and creating something that people want to read, they’re going to be okay for at least the next 30, 40 years. It’ll be a long time before computers can really encroach on that. But the people who are writing beat stories, financial reports that require more modest level of skills, those jobs are very vulnerable. They’re vulnerable because automation is increasingly a threat. They’re vulnerable because they’re kind of the most marginal sorts of work, and so companies that are under financial pressure are going to start trimming those jobs first.

It’s interesting to see what’s happening to the industry as a whole, but the distributional effects are something that are particularly worrisome, especially for people trying to get a foot into the door, who are just starting out in the industry, young people. You have to already have a lot of personal wealth in your bank account to be able to really have a go at the industry, I think.
What I really liked about the argument you constructed is that you tried to tackle one of the big mysteries head-on. We see a lot of writing and policy discussion about a digital revolution and how it’s going to change lives and our economies, but at the same time if you look at productivity figures, they’re stubbornly stuck, and in some areas actually declining. You mentioned that the key point that you would try to achieve is reconciling this kind of technological change with rising global unemployment, and the disappointing growth and productivity figures. So what is your key argument, how do you actually reconcile this?

This is the fundamental question, isn’t it? If technology is so great, and it is accelerating as we think it is, then why is productivity so dismal? I think the key is in looking at what’s happening to labour. What I say is happening is that technology’s creating an abundance of labour; it’s a labour glut. That’s occurring in part because we’re increasingly able to automate lots of different kinds of work; it’s occurring in part because technology has allowed countries like China and India to participate more fully in the global economy, and that’s brought in hundreds of millions of new workers. And it’s also happening because in some industries, and journalism is one of them, the return to being a highly skilled worker is increasing, and those workers are able to capture a lot of value that might normally have been spread over many more workers. And so the upshot of all this is that there’s just a lot of effective labour available to firms, and that reduces labour bargaining power, it places a lot of downward pressure on wages as the way that we find jobs for all these willing workers. And ironically, if
you’re an employer and you’ve got as many workers as you want at a low rate of pay, you don’t feel very much pressure to go out and invest in new labour-saving technologies. So if you are managing a warehouse, you have lots of people willing to work at a low wage, you don’t need to look into hiring robots to automate all the jobs stocking the shelves.

If you are operating a shop and you have cheap cashiers available, you don’t need to automate the tills. So the funny thing that we’ve seen – it’s not actually that funny, it’s upsetting – is that low productivity growth is resulting because employers don’t have to invest in these productivity-enhancing technologies because there are so many cheap workers around.

**Up to the point where the technology price falls that much that it’s actually becoming even cheaper than the cheapest labour.** If you look at instances like, I think it was Foxconn in China now replacing about 20,000 already lowly-paid workers with robots because they work 24/7, and basically repay their cost within a year. No human being would be able to compete with that.

Right. And the robots aren’t going to go on strike, there won’t be a story about the horrible conditions that robots are facing. So I think you’re right that there’s a bit of a race to the bottom that humans are bound to lose, and as this occurs the pressure on labour markets will intensify, and the demands the policymakers face to try to do something about it will grow.
Well, we’ll get to the potential solutions in a minute. But maybe one of the rarely addressed sides of the digital revolution is that it might actually do more to how people live than to their economic lives. One of the arguments, I can’t remember who said it, but somebody said, “We wanted flying cars, and we got 140 characters on Twitter.”

I’m sometimes wondering whether there is a connection between the cultural backlash against globalisation and the way how these technologies just change how people live on a daily basis, especially the flow of information, so that makes people retreat somehow. What do you think is the cultural effect of all this, beyond the economics?

Well, it’s hard to measure, but I think it’s significant. If you think back to the industrial revolution, or if you imagine what it was like then, there was this kind of palpable sense that things were changing rapidly, the world was being turned on its head. You had huge improvements in the speed of personal mobility technologies. You had skyscrapers growing out of nowhere. You had electric light. All these things kind of led to the sense that the world is totally different, and alongside those big changes you had huge cultural change, and you also had a huge cultural backlash against that change, and there was a lot of social unrest at the time.

I think we are coming out of a period where there wasn’t a lot of that sort of dramatic technological change, and emerging into one where there was, and we see it in terms of how people are able to follow events around the world on their phone; the phones them-
selves, which kind of upend all sorts of personal interaction; and then also the way that things are changing in the workplace and the stresses that they’re placing on jobs.

I think we’re only beginning to realise how fundamental our daily lives are changing, and will continue to change. Whenever you’ve got that kind of a shift, there has to be a process through which you come up with new norms, new ideas about what’s acceptable. Is it okay to treat someone online on Twitter with... To hurl nasty expletives at them the way that some people do, or do you need to come up with new norms about online behaviour?

I think there’s the vague sense that things are different and we all kind of feel a little uncomfortable, and that’s a very industrial revolution sort of feeling, and it’s only going to get more intense, I think.

Yes, we are certainly in a transitional phase, and most likely only at the beginning of this. Obviously one dimension that is not very often talked about is the velocity of change rather than the scope of change. If this all accelerates even further, that will only add to the insecurity felt by many people.

Yes. You mentioned driverless trucks – just to start imagining how our daily lives would change if a significant share of the vehicles on the road were driven by computers. The amount of change in terms of norms, in terms of what we expect from personal responsibility, what’s seen as acceptable behaviour. Is it okay to just allow the driverless car to drop your child off at football practice?
I don’t know, it’s mind boggling, and it will be exciting to watch unfold, but there will also be a lot of moments that are really uncomfortable.

People will be very anxious to follow all of this. But let’s move on to the very “easy” part of the conversation: what can we do about it?

We mentioned the cultural dimension, and especially also the economic dimension, what it means for the world of work; what it means macro-economically is also a major issue, because the digital revolution is above all a supply-side revolution, and it might add to existing demand-side problems. So what do you think the key policies are that should be pursued to manage and shape this process?

It’s an incredibly complicated sort of thing to work through, because a lot of the things that seem like good policy ideas, along one dimension can make things worse along others. But I think the fundamental problem that we’re seeing right now is the fact that purchasing power, which we’ve always allocated to people through work, for the most part – you earn your purchasing power by going out and getting a job – that’s no longer functioning the way we need it to, for a lot of people. Most of the income growth is concentrated on people who own companies, or own land, or who are very high skilled workers, and it’s not flowing to the great mass of people as it once did, so we have to fix that.

And we have to fix that because people won’t be satisfied if that sort of division continues. We also have to fix it because, as you
mentioned there, pretty significant macro-economic problems (arise) if that doesn’t get fixed. We end up in a world where we’re constantly facing a demand slump, and that’s a very nasty place to be. So how do you do that? How do you address that need for redistribution?

Well, you can try to boost the bargaining power that workers have with firms. I think that’s a solution that has worked in the past in industrial history. I think the risk you face is that there are trade-offs there that some of that bargaining power is achieved by excluding others. If you don’t have unions that are really encompassing, then you have a lot of people that are left out.

An alternative would be to try and tax the rich and hand the money to the poor. In a lot of ways that would probably be more efficient. But then you have these nasty societal debates about, what do people have to do to earn that redistribution? Do they need to work? Do they need to contribute to society in some other way? Are we only going to redistribute to people who look like us, or are the same nationality or tribe, religion as us?

These are all very difficult questions, and I kind of throw up my hands a little bit in the book. I don’t have the answer. I think it’s an answer that we’re only going to arrive at over time as a result of a long debate between different groups in society.

The project that we run on these issues mentioned these points that you just addressed – the question of taxation – but also, if the value is accrued to the robots or the machines, the question becomes, who actually owns the robots and the machines?

Some of the arguments that we’ve had is that if you
have different forms of ownership of this kind of capital, be it worker’s ownership, or be it some sort of public ownership via special purpose vehicles or something like this, that would allow you to basically re-socialise some of these gains.

I think that’s right. I like that idea, I like it from both an economic and a philosophical point of view. In a way, you can think about advances in technology and human knowledge as sort of like discovering a new natural resource. If you are a country that’s suddenly found a massive amount of oil, you might use that to create a sovereign wealth fund that you would then use to either support the social safety net or make other investments, because it’s held in common, it’s common wealth. And so I think there’s a parallel there with technology.

The difficulty I think, again, comes in deciding who is entitled to a share of that ownership. If you’re socialising the gains, is that limited to citizens of the country, and then are any immigrant workers second-class citizens? If you don’t limit it, then suddenly you probably have social pressure to shut out immigrants, and then that leaves people on the outside of the country all the poorer. I like the idea. I think the challenge is in finding the right balance between redistribution, and in who is allowed to participate in society.

It raises the question on what kind of governance level do you actually put these vehicles. Is it a national vehicle, is it a European one on an EU level?
And what do you do with the people who are not going to benefit from this?

But the involvement of public institutions in this could also incentivise a bit of direction in this. I was struck, for instance, when we talked to Tony Atkinson two weeks ago that he mentioned, “Wouldn’t it be nice if you have chef-less kitchens rather than driver-less cars?” Because that is, to a lot of elderly people in particular, a much bigger social problem than just driving around. So do you see that, without interfering in the technology development itself, but do you see that governments or public institutions in one way or the other could have a hand in directing this kind of technological process towards the most pressing social needs?

I think so. I think we are rediscovering the idea that government can direct technical change, and that it’s not necessarily a bad thing when it does. I think this raises a few questions, a few policy questions, and one is, what really are the most effective ways to do these sorts of things? Chef-less kitchens is an interesting idea, it would help a lot of people in addition to the elderly, but is that the best use of public funds?

Or would it not be better, say, to tax people and to use some of that gain to employ people who would like to work to cook for those who are unable to cook for themselves? Just as a hypothetical. I think that’s one of the tricky things you have to balance.

And then the other is figuring out how to provide the robot chefs,
or whatever, to those who need them. And that, again, gets into the question of, who belongs, who deserves these sorts of things?

I suppose one thing to note is that we’ve gone so little down this pathway, that probably there’s a lot we could do without actually running into too many difficult questions. We’ve so underinvested in a lot of public goods, public research, that perhaps we should just do a lot more of that, and then we’ll cross the bridge of the difficult questions when we come to them.

Yes. I don’t think we as humans will ever run out of ideas about worthwhile things to do. This links to probably the most prominent policy debate in the context of this discussion, which is should we have a basic income or rather something else? I personally favour a job guarantee because it basically decouples the payment of activity from the content of activity. If you look at things like care for the elderly, aging societies, but also things like art and culture, activities in local communities; if you found a way to incentivise that, these are all based on social capital, and they won’t be automated any time soon.

What is your view on this discussion about, what are the basic incomes, or some other form of job currency, that might be one way of addressing this?

Well, I think you’re right that the basic income creates some fundamental problems along those lines. Jobs play several different roles, jobs created by the market have an important role in creating things and allocating purchasing power, but they also help struc-
ture people’s days and provide them with meaning and identity in their lives, and a sense of agency. They also provide workers with a kind of social currency that says that they’re allowed to participate in society because they’re contributing.

So if you use a basic income to solve the first problem, or to take care of the first role, you’re still left with the other two, and I just think that there’s no way that society will, at least not for some time to come, be okay with leaving those other roles unfulfilled. I suspect that the direction we will move in first will be less along the lines of a basic income programme or steps in that direction, and more along the lines of what can we do to make sure that everyone has employment, and how can we make sure that employment pays people enough?

That sounds to me like a job guarantee combined with wage subsidies, and I would expect that to be the direction for the next few decades, until technology perhaps means that that’s no longer something that works as a model.

When some people, they hear the term ‘job guarantee’, some have the wrong conception about this by assuming that this should just maintain the wage labour dependency, or maintain bullshit jobs. But basically what it just does is, it just gets rid of the market mechanism in the way this operates by decoupling the payment from the job with the content. It just basically then is down to local communities to decide what kind of social activity they would like to incentivise.

And of course the basic income, if it’s a universal
basic income rather than a participatory income that people like Tony Atkinson support, you just spend a lot of money on people who effectively don’t need it, and just hope that you get some of it back via the tax system. But the tax system, if you look at recent performance, I think you will be forgiven for thinking that you won’t see much of that initial spending back.

Yes. There are a lot of issues there. I think the more generous you make it, the more taxation you have to do, especially if it’s universal, and that begins to be a very big lift, and you start chasing, especially in a world of mobile capital, you start chasing a lot of the money out of the system entirely.

It’s an interesting philosophical question: what should we want people to do? I think different societies will be more comfortable or less comfortable with what they feel should be asked of others in terms of what kinds of jobs they ought to do, what level of involvement – time spent on the job – ought to be, and how exactly those things should be incentivised, whether through something like social pressure, or through financial incentives, or through something like a mandate.

The only thing we can be sure of is that different countries are going to come up with different approaches to this, and I suppose we’ll see what works, and not everything will work in every context. I don’t know. In a way, if you’re a social scientist, it’s fascinating and it’s exciting, as times of great change usually are.

And of course there are lots of knock-on effects. If
this kind of transformation hits the world of work, if you look at the welfare system for instance and how they’re financed. You have taxpayer systems like the one in the UK that might be less vulnerable; but if you look at insurance-based systems, like the one in Germany for instance, where there’s parity financing by employers and employees, and this is all dependent on what is traditionally conceived of as a normal job. But if normal jobs are becoming more scarce, you have a serious knock-on effect on how you finance your welfare system.

That’s right, that’s absolutely right. And you see this in the US as well, so much of what the welfare state provides is tied up with the idea that people, most people will have a full-time contract job, and increasingly that’s not the case. Countries are struggling to rebuild the welfare state. I think one of the difficult things, and one of the things I try to point out in the book is that there’s a limit to how forward-looking people can be in reforming the social safety nets. There’s almost inevitably a backward-looking, or a lag involved, that the problems have to be so well-established as to enable the creation of powerful interest groups in order to get something done, in order to get change made.

I think, unfortunately, we’re at the stage of the process where the strains are beginning to come clear, but we’re only starting to see mobilisation of the political forces that might eventually yield change. So I think we’re a long way away from the kinds of social reforms we really would want to see to make societies equitable and well-off in this new digital world.
Yes, and Ryan, final question: if you were a policy-maker, what would be your top two or three priorities? What would you try to look at and try to shape in the short-term?

Well, do I have a magic wand? Am I able to do whatever I like?

Just assume you can do whatever you want.

Okay. I think there’s a lot of low-hanging fruit, actually, in terms of dealing with the challenges we’re facing, and so I’d probably begin with increasing wage subsidies and taking demand much more seriously than rich countries have. There are an awful lot of ills that could be fixed by tight labour markets.

And then I would focus very heavily on public investment, and seeing how far that could take us. If we were to fund infrastructure, if we were to fund investment in industries that would create good jobs while also boosting economic growth, and funding basic research. Those aren’t radical policy ideas, but we have a pretty good sense that they would have some good effects. If you can kick the can down the road a bit, that’s maybe not such a bad thing.

Right, Ryan Avent, I’ve got a suspicion that this might not be the last book you will write on this subject.
I hope not.

Okay, thank you very much for talking to us today.

Thanks for having me, it was great.