



## **The Economics of Work and Technology**

### **Daniel Susskind, Gresham Professor of Business**

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### **Misplaced anxiety**

Ever since modern economic growth began a few centuries ago, people have suffered from periodic bursts of anxiety that the new technologies of their time would take on the work that they do. This was true during the Industrial Revolution, where this fear led the 'Luddites' to maraud around Britain smashing equipment and damaging factories. And it is true today, where the very same fear has driven protestors to set fire to driverless cars on the streets of San Francisco and to destroy AI-generated art hanging in galleries.

Yet, until now, these persistent worries that new technologies would lead to large pools of unemployed people have turned out to be misplaced. There has always been enough work for people to do. (And when there hasn't been enough work, the culprit has not been technological progress).

And so, an important question follows: *why* have these bouts of automation anxiety turned out to be misplaced, time and again? Why is it that the powerful technologies of the Industrial Revolution – the spinning jenny, the roller spinner, the power loom – did not lead to large pools of unemployed workers? And in the same way, why have the powerful technologies of the last half-century – from the Automatic Teller Machine to AI-enabled medical devices – not lead to widespread worklessness?

In this second lecture, 'The Economics of Work and Technology', I set out to answer this question. By exploring how economists have tried to make sense of the impact of new technologies on work, I want to do two things. To begin with, I want to better understand the mistakes that our anxious ancestors made when thinking about the threat of automation in the past. But at the same time, I also want to present a set of ideas that we can use to think more clearly about the same threat in the future – and whether, given the remarkable technological changes that are now unfolding, this time might in fact be different.

### **A brief history of economic thought**

At the end of the 20<sup>th</sup> century, economists found themselves in possession of a benign view of the impact of technology on work – the 'skill-biased' view of technological progress. On this view of the world, new technologies benefit all workers, but some far more than others – and in particular, skilled workers.

But as the 21<sup>st</sup> century began to unfold the world of work began to change in a way that the skill-biased view of technological progress struggled to explain. That view was entirely focused on low- and high-skilled workers, but the really surprising changes in the labour market were happening to middle-skilled workers about whom it had very little to say at all; that view suggested that real wages would rise for all workers, though some more than others, yet there were large groups who were seeing their real wages decline.

These cracks in the 'skill-biased' view of technological progress sent the economics profession back to the drawing board. It was a time of great intellectual creativity, with lots of new ideas bubbling up for thinking about the impact of technology on work. But two insights were more important than any other.

The first significant idea was to look at the labour market not in terms of entire 'jobs', which we tend to do, but in terms of the individual 'tasks' that make up those jobs. And the second significant idea was to distinguish between two opposing effects that new technologies can have on the work that people do. On

the one hand, they can *substitute* for human beings, displacing them from particular activities and reducing the demand for them to perform specific task. But at the same time, they can also *complement* human beings, increasing the demand for them to perform tasks that have not yet been automated.

These distinctions might sound a little simple, but as we shall see they provide a powerful way of thinking about the way in which technological progress affects the labour market.

## Misplaced anxiety

Distinguishing clearly between the harmful substituting and helpful complementing effects of technology helps to explain why past anxieties about mass pools of unemployed people due were repeatedly misplaced. The former reduces the demand for the work of human beings; the latter increases the demand for the work of human beings. And in the clash between these two fundamental forces, our ancestors tended to pick the wrong winner. Time and again, they either neglected the complementing force altogether, or mistakenly imagined that it would be overwhelmed by the substituting force.

To an extent, the mistake is understandable: the substituting force, when it unfolds, is straightforward to see. It is the one that tends to capture the headlines in commentary on the future of work. But the complementing force is far harder to make out and operates in a variety of different ways on the demand for the work of human beings. But its presence means that, in this ongoing tussle between these two forces, the helpful complementing force has tended to win out, and there has always been a large enough demand for the work that human beings do. We can call this the Age of Labour.

## References and Further Reading

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