

Each time that machines yielded gains in efficiency (including when tractors took over from horses), old jobs disappeared, but new jobs were created. Furthermore, economists are number crunchers, and recent data show a slowdown – rather than an acceleration – in productivity gains. When it comes to the actual number of jobs available, there are reasons to question the doomsayers' dire predictions. Yet there are also reasons to think that the nature of work is changing.

To begin with, as noted by the MIT economist David Autor, advances in the automation of labor transform some jobs more than others. Workers carrying out routine tasks like data processing are increasingly likely to be replaced by machines; but those pursuing more creative endeavors are more likely to experience increases in productivity. Meanwhile, workers providing in-person services might not see their jobs change much at all. In other words, robots might put an accountant out of work, boost a surgeon's productivity, and leave a hairdresser's job unaltered.

The resulting upheavals in the structure of the workforce can be at least as important as the actual number of jobs that are affected. Economists call the most likely outcome of this phenomenon “the polarization of employment.” Automation creates service jobs at the bottom end of the wage scale and raises the quantity and profitability of jobs at its top end. But the middle of the labor market becomes hollowed out.

This type of polarization has been going on in the United States for decades, and it is taking place in Europe too – with important consequences for society. Since the end of World War II, the middle class has provided the backbone of democracy, civil engagement, and stability; those who did not belong to the middle class could realistically aspire to join it, or even believe that they were part of it, when that was not the case. As changes in the job market break down the middle class, a new era of class rivalry could be unleashed (if it has not been already).

In addition to the changes being wrought by automation, the job market is being transformed by digital platforms like Uber that facilitate exchanges between consumers and individual suppliers of services. A customer calling an Uber driver is purchasing not one service, but two: one from the company (the connection to a driver whose quality is assured through customer ratings) and the other from the driver (transport from one location to another).

Uber and other digital platforms are redefining the interaction among consumers, workers, and employers. They are also making the celebrated firm of the industrial age – an essential institution, which allowed for specialization and saved on transactions costs – redundant.

Unlike at a firm, Uber's relationship with its drivers does not rely on a traditional employment contract. Instead, the company's software acts as a mediator between the driver and the consumer, in exchange for a fee. This seemingly small change could have far-reaching consequences. Rather than being regulated by a contract, the value of labor

is being subjected to the same market forces buffeting any other commodity, as services vary in price depending on supply and demand. Labor becomes marked to market.

Other, less disruptive changes, such as the rise of human capital, could also be mentioned. An increasing number of young graduates shun seemingly attractive jobs in major companies, preferring to earn much less working for start-ups or creative industries. While this can be explained partly by the appeal of the corresponding lifestyle, it may also be a way to increase their overall lifetime income. Instead of renting their set of skills and competences for a pre-set price, these young graduates prefer to maximize the lifetime income stream they may derive from their human capital. Again, such behavior undermines the employment contract as a basic social institution and makes a number of its associated features, such as annual income taxation, suboptimal.

Whatever we think of the new arrangements, we are unlikely to be able to stop them. Some might be tempted to resist – witness the recent clashes between taxi and Uber drivers in Paris and the lawsuits against the company in many countries. Uber's arrangement may be fraudulent according to the existing legal framework, but that framework will eventually change. The transformative impacts of technology will ultimately make themselves felt.

Rather than try to stop the unstoppable, we should think about how to put this new reality at the service of our values and welfare. In addition to rethinking institutions and practices predicated on traditional employment contracts – such as social security contributions – we will need to begin to invent new institutions that harness this technology-driven transformation for our collective benefit. The backbone of tomorrow's societies, after all, will be built not by robots or digital platforms, but by their citizens.