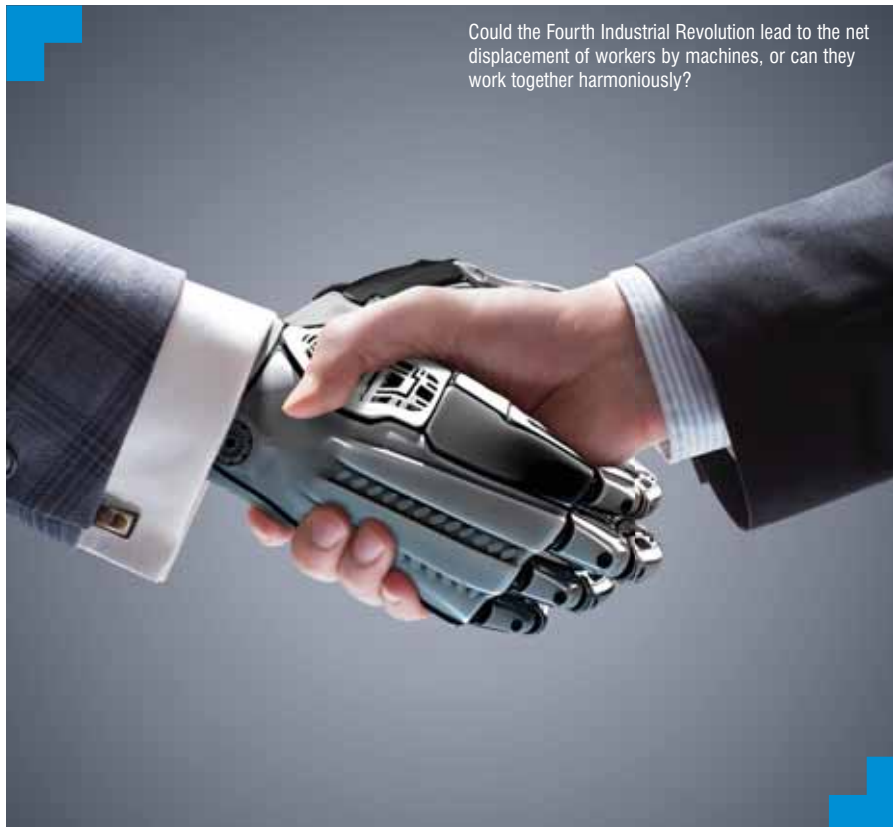


The Fourth Industrial Revolution:

Klaus Schwab



We stand on the brink of a technological revolution characterised by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres.

Like the revolutions that preceded it, this so-called Fourth Industrial Revolution has the potential to raise global income levels and improve the quality of life for populations around the world. To date, those who have gained the most from it have been consumers able to afford and access the digital world; technology has made possible new products and services that increase the efficiency and pleasure of our personal lives.

In the future, technological innovation will also lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and

communication costs will drop, logistics and global supply chains will become more effective and the cost of trade will diminish, all of which will open new markets and drive economic growth.

At the same time, as the economists Erik Brynjolfsson and Andrew McAfee have pointed out, the revolution could yield greater inequality, particularly in its potential to disrupt labour markets. As automation substitutes for labour across the entire economy, the net displacement of workers by machines might exacerbate the gap between returns to capital and returns to labour. On the other hand, it is also possible that the displacement of workers by technology will, on aggregate, result in a net increase in safe and rewarding jobs.

We cannot foresee at this point which scenario is likely to emerge, and history suggests that the outcome is likely to be

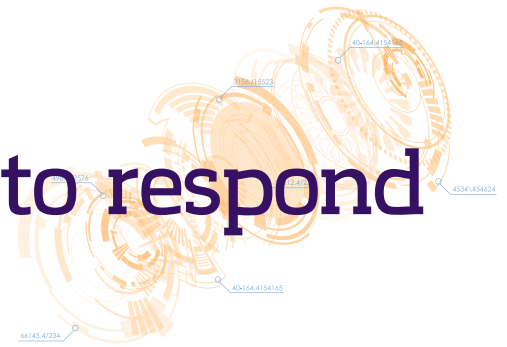
some combination of the two. However, I am convinced of one thing: in the future, talent, more than capital, will represent the critical factor of production. This will give rise to a job market increasingly segregated into low-skill/low-pay and high-skill/high-pay segments, which in turn will lead to an increase in social tensions.

In addition to being a key economic fear, inequality represents the greatest societal concern associated with the Fourth Industrial Revolution. The largest beneficiaries of innovation tend to be the providers of intellectual and physical capital, which explains the rising gap in wealth between those dependent on capital vs labour. Technology is therefore one of the main reasons why incomes have stagnated, or even decreased, for a majority of the population in high-income countries: the demand for highly skilled workers has increased, while the demand for workers with less education and lower skills has decreased. The result is a job market with a strong demand at the high and low ends, but a hollowing out of the middle.

This helps explain why so many workers are disillusioned and fearful that their own real incomes and those of their children will continue to stagnate. It also helps explain why middle classes around the world are increasingly experiencing a pervasive sense of dissatisfaction and unfairness. A winner-takes-all economy that offers only limited access to the middle class is a recipe for democratic malaise and dereliction.

Discontent can also be fuelled by the pervasiveness of digital technologies and the dynamics of information sharing typified by social media. More than 30% of the global population now uses social media platforms to connect, learn and share information. In an ideal world, these interactions would provide an opportunity for cross-cultural understanding and cohesion. However, they can also create and propagate unrealistic expectations as to what constitutes success, as well as offer opportunities for extreme ideas and ideologies to spread.

its meaning and how to respond



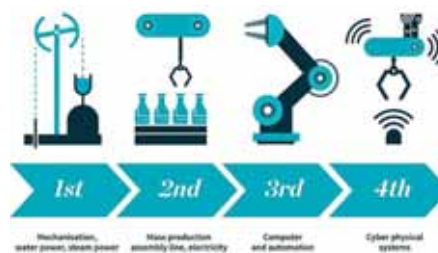
The impact on business

An underlying theme in my conversations with global CEOs and senior business executives is that the acceleration of innovation and the velocity of disruption are hard to comprehend or anticipate and that these drivers constitute a source of constant surprise, even for the best connected and most well informed. Indeed, across all industries, there is clear evidence that the technologies that underpin the Fourth Industrial Revolution are having a major impact on businesses.

On the supply side, many industries are seeing the introduction of new technologies that create entirely new ways of serving existing needs and significantly disrupt existing industry value chains. Disruption is also flowing from agile, innovative competitors who, thanks to access to global digital platforms for research, development, marketing, sales and distribution, can oust well-established incumbents faster than ever by improving the quality, speed, or price at which value is delivered.

Major shifts on the demand side are also occurring, as growing transparency, consumer engagement and new patterns of consumer behaviour (increasingly built upon access to mobile networks and data) force companies to adapt the way they design, market and deliver products and services.

A key trend is the development of technology-enabled platforms that combine demand and supply to disrupt existing industry structures, such as those we see within the sharing or on-demand economy. These technology platforms, rendered easy to use by the smartphone, convene people, assets and data, thus creating entirely new ways of consuming goods and services in the process. In addition, they lower the barriers for businesses and individuals to create wealth, altering the personal and professional environments of workers. These new platform businesses are rapidly multiplying



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into many new services, ranging from laundry to shopping, from chores to parking, from massages to travel.

On the whole, there are four main areas of business on which the Fourth Industrial Revolution has an effect: customer expectations, product enhancement, collaborative innovation and organisational forms. Whether consumers or businesses, customers are increasingly at the epicentre of the economy, which is all about improving how customers are served. Physical products and services, moreover, can now be enhanced with digital capabilities that increase their value. New technologies make assets more durable and resilient, while data and analytics are transforming how they are maintained. A world of customer experiences, data-based services and asset performance through analytics, meanwhile, requires new forms of collaboration, particularly given the speed at which innovation and disruption are taking place. Finally, the emergence of global platforms and other new business models means that talent, culture and organisational forms will have to be rethought.

Overall, the inexorable shift from simple digitisation to innovation based on

combinations of technologies is forcing companies to re-examine the way they do business. The bottom line, however, is the same: business leaders and senior executives need to understand their changing environment, challenge the assumptions of their operating teams and relentlessly innovate.

We must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural and human environments. There has never been a time of greater promise or one of greater potential peril. Today's decision-makers are too often trapped in traditional, linear thinking or too absorbed by the multiple crises demanding their attention to think strategically about the forces of disruption and innovation shaping our future.

In the end, it all comes down to people and values. We need to shape a future that works for all of us by putting people first and empowering them. In its most pessimistic, dehumanised form, the Fourth Industrial Revolution may indeed have the potential to robotise humanity and thus deprive us of our heart and soul; but as a complement to the best parts of human nature – creativity, empathy, stewardship – it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny. It is incumbent on us all to make sure the latter prevails.



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