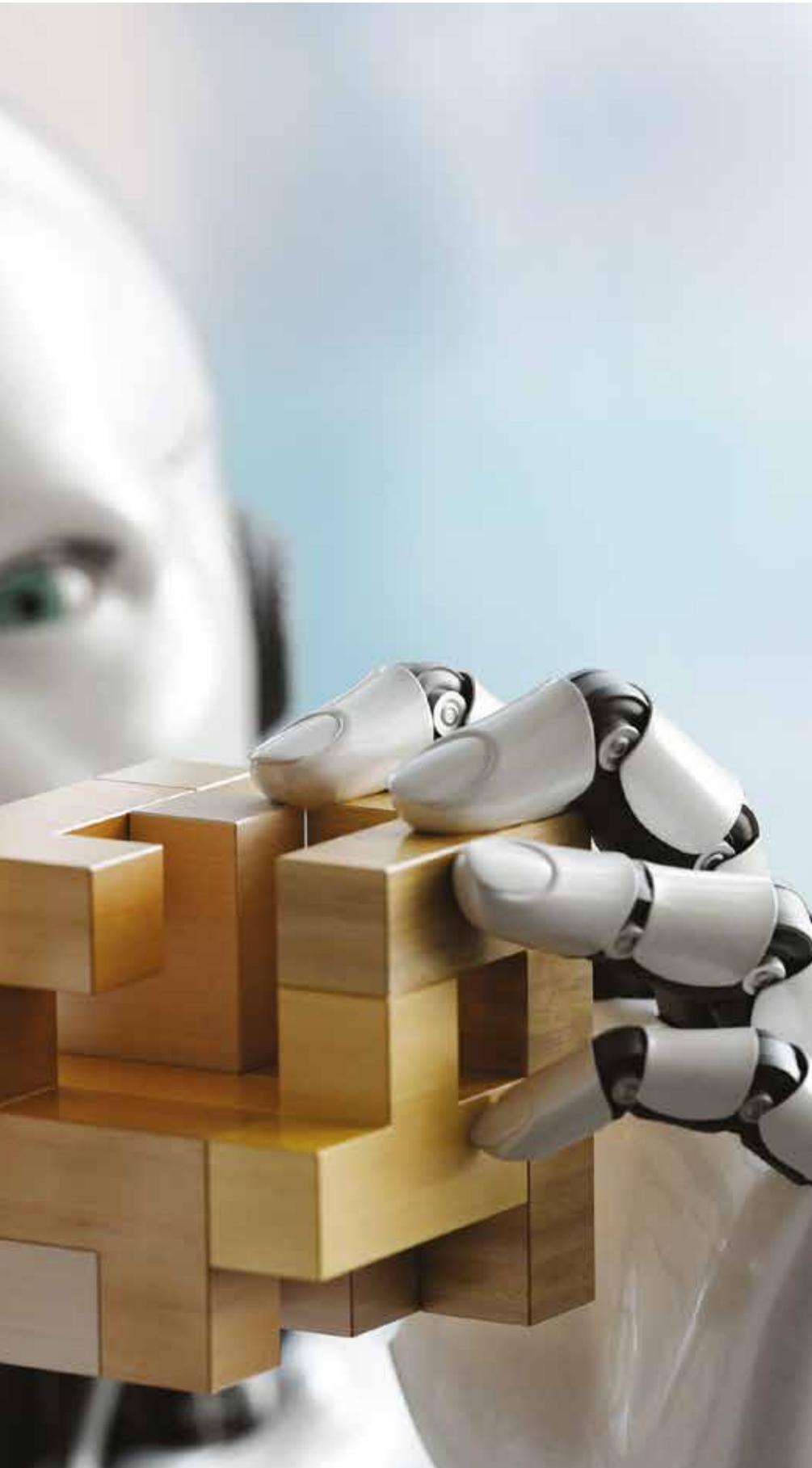


# CAN THE 4TH INDUSTRIAL REVOLUTION MAKE THE WORLD A BETTER PLACE?

BY Professor Tomas Casas i Klett University of St.Gallen and Dr. Lee Howell member of the Managing Board of the World Economic Forum

*"In the context of the 4th Industrial Revolution, digital technology is enabling a range of emerging technologies from the physical and biological worlds to combine, creating innovations at a speed and scale unparalleled in human history"*



Drawing upon the innovative CEMS-HSG course 'Disruption and Innovation in International Business' we explore how disruptive technologies can make the world a better place.

### **A** bigger kind of disruption but undeniably beneficial

As a result of the global financial crisis, younger and older generations alike are confronted by a series of systemic shocks that continue to reverberate politically. Less noticed or understood are profound and disruptive changes to the real economy. These are both similar and dissimilar to those of past industrial revolutions.

Arguably, the fears, the uncertainties and the resistance processes of the 1st industrial revolution are as much a feature of today's landscape as they were some two hundred years ago. Such fears begin with the realization that something big and different is happening, and that the technology it brings is difficult for the majority of people to comprehend. Today the omnipresent concern is that technological changes will result in massive unemployment with artificial intelligence (AI) overtaking humans and a new machine age reshaping society. However, a dystopian future, while possible, is far from preordained. The difference lies in several key characteristics of a 4th industrial revolution that point towards much greater benefits for business and society than the disruptive drawbacks and strain that may initially arise from change.

In order to understand this, it is first important to recognize that digitalization is a 21st century phenomena that differs significantly from digitization in the late last century where data was converted from an analog to a digital format. Moreover, in the context of the 4th Industrial Revolution, digital technology is enabling a range of emerging technologies from the physical and biological worlds to combine, creating innovations at a speed and scale unparalleled in human history. Take, for example, the speed to which we were able to map our genetic code and then move on to editing the genome. These two major advances in life sciences will influence the future of precision medicine – otherwise impossible without the advances in information technology and data science.

Thus, while the speed and scale may prove testing for many, the undeniable benefits of 21st century digitalization outweigh any initial fears or resistance that companies, organizations and people may have.

### Impacting the what, how, and who we are

For business and management, the 4th Industrial Revolution provides a clear set of stakes, primarily those of adopting both digital technologies and the mindset required to change an international business model rapidly in response to shifting trends and so create new value at scale. In any industry, the company that will master digital technologies will gain two distinct advantages over competitors: it will be faster and lighter both in terms of assets and people and its growth potential could be exponential versus linear.

However, those very same elements are also a source of deep societal concern. In his book *The Fourth Industrial Revolution*, Klaus Schwab, Founder and Executive Chairman of the World Economic Forum (WEF), highlights that the velocity of change is distinct from previous industrial revolutions. The speed of this change might leave people with the feeling that they are replaceable, secondary to the pace and efficiency of machinery and digital tools. Be that as it may, it is interesting to note that there are many people in the world that still do not fully benefit from the 1st industrial revolution, a striking example being the one billion plus humans still without access to electricity – two hundred years after its first commercial use.

On the other hand, there are also many other telling examples of successful technology-people combinations. And one of these can be found in the mobile phone. Today, nearly five billion people throughout the world use them – a device that was invented in 1973 – the major difference being, thanks to advances in digital technology, that people now use their mobile telephone for an increasing range of applications such as purchasing goods and services, monitoring their health or entertaining themselves and others.

The 4th industrial revolution is therefore evolving at an exponential rather than linear pace and leverages our multifaceted, deeply interconnected world. Indeed, it is not only changing the 'what' and 'how' we do things but also 'who' we are if we consider how we already interact with digital technology – for example, the influence of social media on daily news and national politics. We can also extrapolate how advances in life sciences will soon allow us to change our own genetic code to prevent illness or to enhance our wellness. Leaders will not be expected to predict the future but will instead have to develop a compelling strategic narrative that invites stakeholders to build a shared future together.



### Digital disruption for the stability of society

The CEMS-HSG course Disruption and Innovation in International Business taught in spring 2017 for the first time was indeed launched with the ambition to bring the multifaceted implications of the 4th Industrial Revolution to the classroom. The course was thus designed to disrupt participating students and project them into scenarios where digital technology would generate beneficial outcomes for humanity. Most importantly, its aim was to develop high-performing teams that would create a strategic narrative that acknowledges disruption and embraces innovation. To that end the St.Gallen Top Team Model (SGTT), a framework to reflect on team work to achieve high-performance, was effectively deployed.

As we enter the 4th Industrial Revolution, opportunity and danger come hand in hand in a world that is increasingly complex, globally connected and uncertain. Many futures are possible in an era where data is the new oil powering the economy, where international business models must disrupt to scale, or where licenses to operate can easily be revoked. To succeed the course created a different and unique learning experience where students were exposed to thematic lectures, expert interviews, visits to international companies and organizations. The capstone project was both an integrative read-thread and a challenging assignment that proposed tangible examples of AI, digital and other technologies leveraged for the future benefit of society.

#### PHOTOS:

*The course closed with a trip to Geneva. On the way, the group visited the Nestlé Research Center in Lausanne and Dr. Bernhard Maier presented the Swiss giant's game-changing efforts to disrupt food, one of the areas where venture funding is at its hottest. Students visited the lab where food products are, yes, prototyped. They then met with the scientists who are re-engineering sugar – that is, a Nestlé sugar boasting more sweetness with 40% less sugar crystals. (On the final day of the course Professor Klaus made a surprise appearance and to the student's delight discussed a variety of topics with them).*





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AUTHOR PHOTOS BELOW:

Lee Howell (left)

Tomas Casas (right)



One student project concluded that manufacturing and low-skilled office professions will especially face rising unemployment as a result of digital disruption, with a -2% and -6% impact respectively. Inversely, two job sectors look likely to enjoy a period of growth – Engineering and IT and Math. On a global scale, nearly one third of the workforce is directly associated with automatable activities with China and India most likely to be impacted. At the same time, digital tools and applications will enable human beings to follow their intrinsic motivation and focus on creativity as a comparative advantage over machines. This in turn can lead to a purpose-driven, entrepreneurial society in which independent and hyper-enabled workers can make meaningful contributions to things that matter to them and shape the future.

Other student research assignments pointed to healthcare, energy, agri-food and legal services. Tomorrow's world will see technology serving people and society in ways we could hardly have imagined barely ten years ago. Affective computing – machines capable of interacting with humans and expressing such human characteristics as empathy – will be a lifesaver for patients and a boon for the mental healthcare industry. Digital disruption will also lead to decentralized energy, giving people the possibility to tap into the grid and cherry pick electricity generated by renewable energies, perhaps even their neighbors'. Legal and financial services, stabilized by blockchain technology, will undoubtedly liberate the customer until now constrained to purchase services via an

intermediary such as a bank or insurance company. And bigger still, digital inroads may also provide the answer to food scarcity, 3-D printers enabling 'meat printing' to feed the world of 2050 in a sustainable way.

As many of the student participants in this unique and highly original course explained, being thrown into the complexity and challenges of technological disruption was tough, eye-opening and demanding. Yet understanding disruption, and learning how to harness it for a better future was "exhilarating" too. What initially began as pessimism when confronted of the immensity and dangers of the challenges to international business, the political economy and humanity, turned in to optimism once the tangible opportunities of it all became, in moments of team insight, very clear.



**ABOUT THE AUTHORS**

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