Focus

19 december

'Robots move from Star Wars to Wall Street'

'The amazing evolution of robotics, in which Star Wars looks less and less like science fiction…'

A bit of history

Robots may be about to revolutionize our lives, but people have been talking about them for almost 100 years now. The word 'robot' was coined in 1920 by the Czech writer Karel Capek for his play 'Rossum's Universal Robots', in which it describes an android built by a scientist and capable of carrying out all the work normally done by a man. It is based on the Czech word 'robota', meaning 'forced labour' or 'chore'.

The term 'robotics', meanwhile, was introduced to literature by the famous writer Isaac Asimov, in his short story 'Runaround', in which he also formulated his 'Three Laws of Robotics'.

The first robots that actually formed part of our daily lives appeared in the 1960s in the shape of household appliances and in industry. 'Unimate', the first industrial robot, was created for the General Motors assembly line in 1961. It might have been in literature then that we first discovered robots, but it was movies that have done most to popularise these substitute humans, most notably through the planet-wide success of the first Star Wars film in 1977, with its famous R2-D2 and C-3PO robots. But what seemed like pure science fiction back then is looking more and more real…

What does robotics represent today?

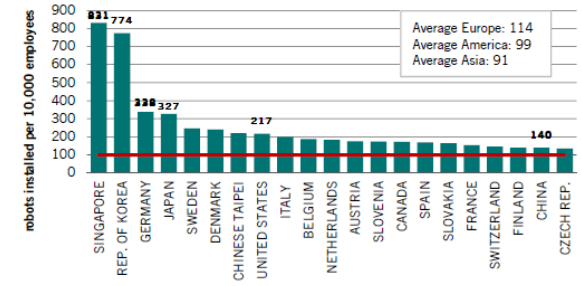
Factory 1.0
Ford Model T assembly line, 1913

Factory 2.0
Ford assembly line, 2015

According to the 2019 report of the International Federation of Robotics (IFR), 422,271 new robots were installed in 2018 (worth 16.5 billion dollar), bringing the number of 'active' robots to nearly 2.5 million (+15%). The IFR is forecasting the number of installed robots to increase by an annual growth rate (AGR) of 12% between 2013 and 2022. Its projection is backed up by the Boston Consulting Group, which estimated in 2015 that the global robotics market is set to grow at a rate of over 10% a year for the next decade: four times faster than the global economy! This growth is all the more remarkable when you consider that the automotive and electronics sectors – the main customers for robots, accounting for 30% and 25% of the total respectively) – are facing a difficult economic situation at present, due in particular to the trade war unleashed by the United States.

The robotics theme is growing in scope and becoming omnipresent in our daily lives: robots are used in fields as varied as industry for dangerous and repetitive tasks, firefighting, surgery and rehabilitation, precision agriculture, 3D printing, entertainment, deliveries (drones), domestic assistance (lawnmowers and vacuum cleaners), in the financial field (fintech) or even to drive our cars (self-driving vehicles).

Robot density in the manufacturing industry 2018



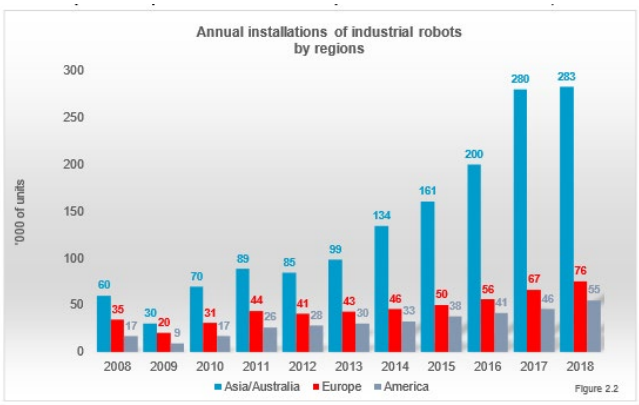
Source: World Robotics 2019

In geographical terms, the IFR lists the ten most automated countries (in terms of robot density per worker) in the world as South Korea, Singapore, Germany, Japan, Sweden, Denmark, the United States, Italy, Belgium (!) and Taiwan. The development in robot density is most dynamic, however, in China. Although that country ranked only 20th in the world in 2018, the Chinese government is intending to move forward and to raise China into the top ten most automated nations by 2020. The graph shows the huge deployment of robots there compared to other major players. Besides China, four other countries (Japan, Germany, the US and Korea) are the main drivers of robot deployment; together, these five countries represent nearly 75% of the robots installed worldwide.

What is the growth potential for robotics?

There are several determining factors that explain the inexorable current and future growth of robotics:

- The world's working age population is decreasing relative to the proportion of elderly citizens. According to the UN, there were 12 active people for each person aged over 65 in 1950, compared to a projected figure of just four in 2050. The loss of productivity and increasing assistance to the elderly will largely have to be compensated for by robots;
- Global economic growth will need to be based on improved productivity: robots will help developed countries to be more efficient and enable developing markets to respond to rising labour costs (over the past 20 years, for example, China's relative unit labour costs have increased by a factor of 3.5);
- According to Pictet AM, the growing scarcity of natural resources and increasing pollution will require the development of new solutions that promote a more efficient and sustainable use of resources and higher productivity;
- Robots are increasingly intelligent (thanks to artificial intelligence), safe and affordable, and are being deployed in an ever-increasing number of industrial and service sectors. According to a study by Société Générale Cross Asset Research, robot efficiency has increased by 300% over the past three decades, while their cost has come down 80%.
- The strongest growth in the services sector is expected in logistics and medical robots:
    - The phenomenal development of e-commerce requires increasingly large-scale, fast and efficient logistical management, while 90% of operations are still carried out manually.
    - Robotic surgery is booming in medical fields as varied as urology, gynaecology and trans-oral (mouth, larynx) and thoracic surgery. It reduces risk and pain and allows for shorter hospitalisation and faster recovery.
- 'Cobots' or collaborative robots represent the fastest-growing segment. This type, which is designed to collaborate and interact with humans, is much more flexible and personalised than an ordinary robot. Having accounted for just 2% or so of the value of the global robot market in 2017, the cobot market could grow from about 300 million dollar to over 5 billion dollar by 2023, according to figures from the firm BIS Research.
- Europe is at the forefront of development thanks to SPARC – the world's largest research and innovation programme in the field of robotics. It was launched on June 3th 2014 by the European Commission and brings together 180 companies and research organisations under the aegis of EuRobotics ASBL. The objective is to help Europe become the world's leading robotics market. SPARC has been granted a budget of over 700 million euro by the European Commission to fund robotics activities in the period 2014–20. The European industrial and research partners (EuRobotics) are meanwhile committed to



supplement the Commission's efforts by investing 2.1 billion euro over the next seven years, more than doubling the impact of EU funding.

To sum up, given faster growth than the global economy as a whole as well as the many other advantages listed above, investing in robotics might be appropriate for investors looking for long-term growth in a theme that is destined to play an increasingly important part in our working and private lives.

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