

Is 4.0 Industry at the Service of Value Creation?

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"Industry 4.0 is the future of made-in-France", as we read in magazines highlighting this new production method of the future. Since its intensification in the 18th century, the industrial sector has been in constant movement. In fact, the history of industry has undergone four dramatic changes, starting with the first use of coal in 1769. This continued with the revolution brought about by electricity in the late 19th century, then the one due to the use of electronics, computers and telecommunications methods in the 20th, and now we are witnessing the fourth revolution: Industry 4.0.

What does Industry 4.0 actually mean? It is the use of 21st century innovations in the production process. A broad range of creations is covered by this definition: Internet of Things, "digital" technologies like cobotics (the interaction between robots and people), Artificial Intelligence, Big Data, 3D printing, Augmented Reality, and so on.

So objects are becoming intelligent: "smart objects", which mingle algorithms and robotic functions with communication tools. We now talk about cyber-physical systems.

Why is the fourth industrial revolution important? Is it crucial to the development of our economy? Is it intrinsically linked with growth? In 2016, more than 75% of French people worked in the services sector, compared with 13% in industry. Again in 2016, the tertiary sector represented nearly 79% of French added value, compared with 20% for industry. There is thus a considerable imbalance in this transformation of the French economy, which began during the 1970s and 80s, partly accounted for and amplified by France's efforts to be competitive abroad.

This 4.0 revolution could enable France to give fresh impetus to its industry, which would generate gains in competitiveness through the fact that it possesses all the tools to flourish in this sphere: sophisticated production processes, extremely skilled craftspeople and a workforce more than qualified to respond to the demands of industry 4.0.

More than a possibility, it is a necessity for French industry to adapt to new production methods, provided that it accepts profound changes.

Although opinions differ as to how indispensable it really is, Industry 4.0 is beginning to establish a foothold in France and Europe. Germany is in a leading position as regards this change because it is the first European country to introduce the task forces and changes needed for the proper use of these new production methods.

China also excels in this transformation, and as a result, its own products have moved into a higher echelon. Are France and Europe ready to begin this fundamental process of change?

A twofold effort is needed to adapt to these new production methods, involving both businesses and workers.

With businesses, a change in production procedures and above all managerial methods is primordial. Workers' roles are fundamentally transformed, particularly as regards managers. The sociotechnical aspect is a focal issue, as these innovations require the people in charge to have in-depth knowledge of the mechanisms and algorithms involved in them, and a considerable share of what can be called emotional, human intelligence to make up for what cannot yet be perfectly imitated by systems. Are we ready to reinvent management methods to adapt to this new industry?

The changeover to the age of 4.0 also implies investments for companies, which have to rethink their entire production chains, transforming them from mass production to personalised systems. How can the huge amount of work involved be paid for? The European Investment Bank is setting up a fund of €300 million to help businesses finance this enormous project. However, investment is not enough to make a newly-modernised production system profitable. Most companies observe a high, rapid return on investment when they change their production methods. But the quality of infrastructures is very important, and a gradual changeover to 4.0 is preferable in order to fully understand the changes. What advice can be given to companies wishing to modernise, so as to avoid undesirable complications?

Workers and employees also need to adjust as well as the management. Change can frighten people, particularly when it involves the phenomenon of

creative destruction. Will these new kinds of job eliminate long-standing employments in industry? If so, will the new jobs be sufficient to replace the old ones? Some, including the French government, promote the idea that jobs are not destroyed but created by robotics, and that the revolution will not affect the workforce. Others, particularly workers' unions, say that these new technologies will be destructive if the change is not properly managed. Should the State play a role in this management, or only the companies, which are familiar with the environment and thus know more about the transformations to be carried out? How might workers be affected if this change is not properly supervised? Companies would be ill-advised to leave their employees to deal with this change by themselves, especially as such technologies lead to considerable productivity gains, much sought-after by these companies.

So who are the players who should be overseeing these fundamental changes in industry and the economy, and how should they set about relaunching industry? Finally, what impact will these innovations have on the economic and social surplus?