



# CEST

Centro de Estudos Sociedade e Tecnologia



Universidade de São Paulo

Bulletin - Volume 1, Number 8, October/2016

## Disruptive technologies and their reflexes upon the economy and governments

**Sirlei Pitteri**

The word that perhaps best defines the current moment is change. Technologies have catalyzed recent events through the potential of connectivity that has been developed worldwide, opening possibilities to new business models and new professions.

Many studies are being developed in the field of disruptive innovations, that is, those that disrupt the existing business models, broadening the value perception towards certain products and services within the society's perspective.

Harvard Professor Clayton Christensen (2001) was one of the first to warn against this change of paradigm. He took a stance considered extreme by some critics when he said that

big companies fail because they 'do everything right'. In fact, he was already warning against the change in the consumers' value perception. The products or services that overtake the point in which the client becomes aware of value cost more, and he (the customer) is not willing to pay.

Finnish researcher Liisa Välikangas (2010) has been devoting herself on understanding resilient organizations, since the corporate success has never been so fragile. Technological advances, regulatory barriers, and geopolitical shocks – these are just some of the forces that undermine the business models today. In a world more and more turbulent, successful enterprises are failing. Profits are drying up and drops in performance are flourishing.

In short, rupture innovations are causing the displacement of economic activities of business models established according to the current rules and laws of countries for businesses that operate beyond their borders, increasing the economic, political, tributary,

juridical, and social uncertainties.

Many questions remain unanswered. How to deal with technological unemployment? How to regulate these new business models? What are the forces involved in these negotiations? Should regulations be made by the government or by the market? Will the regulation of these activities be able to avoid juridical uncertainty? How are the other countries dealing with these new business models?

However, this is no newness. In recent history we have been able to identify three moments showing important changes caused by disruptive technologies, and we are now living through the fourth age, though still in its onset.

Oxford University researchers Frey and Osborne (2013) tell us the story of William Lee, inventor of the stocking frame knitting machine in 1589, hoping that it would alleviate the daily routine of artisanal workers. He traveled to London to seek protection for his patent and showed Queen Elizabeth I his invention. Contrary to what was expected, the Queen showed herself to be more concerned about the artisans' job and refused to give Lee his patent, claiming that his invention would lead them to ruin, depriving them of jobs and turning them into beggars: "Thou aimest high, Master Lee. Consider thou what the invention could do to my poor subjects. It would assuredly bring to them ruin by depriving them of employment, thus making them beggars." According to

**Now, we are facing an attempt to reinvent the economic and political system on the basis of new technologies and new political pressures.**



the researchers, most likely the Queen's concern was a manifestation of the hosiers' guilds fear that the invention would make the skills of its artisan members obsolete. In fact, the opposition's reactions were so strong that William Lee had to vanish from Great Britain.

This case illustrates the destabilization occurring between disruptive technologies and economic, political, and social systems. Micklethwait and Woolbridge (2015) analyze the main ruptures resulting from economic modifications, almost always involving technological innovations. In 1640 Thomas Hobbes named the State after the biblical monster – Leviathan – as a reply to the sordidness and brutality under the European princes, ensuring them with economic and political advantages as compared to the rest of the world. The authors describe how the 'European incubator of Leviathans' produced competitive monsters, originating a system of government in constant enhancement: national States became commercial empires, followed by the entrepreneurial liberal democracies of the 18th and 19th Centuries.

This occurred on the account of rupture innovations in manufactural industries. James Watt's invention (the steam engine) started the first industrial revolution, enhancing the textile industry productivity. Other industries were improved, such as, the introduction of the assembly line in automobile industry, significantly increasing productivity and reducing costs.

The fact is that one revolution follows the other. Thus, the 19th Century's liberalism was questioned by Stuart Mill and his disciples: What is the use of freedom in a worker deprived of education and medical assistance? If this man or woman deserves the right to vote, then, schooling must be comprehensive and ambitious. Thereby, the social welfare state emerged and prevailed along the 20th Century.

Nevertheless, the last three decades of the 20th Century contemplated the twilight of political systems worldwide due to bloated and ineffective governments within the society's perspective, added to the growing unemployment all over the planet.

The advent of the computer on the factory floor in the 1970s gradually replaced people in structured and programmable activities. Currently, it is clear that any industrial function can be automatized, and factories produce complex electronic products at a far smaller price. The rupture innovations of the beginning of this century are faster and deeper than the previous ones, and they are causing important disturbances in all aspects of everyday life.

Thus, modern science was responsible for the three great already concluded transformations, and one being built! Policy in the 16th

and 17th Centuries emphasized the sovereign power; that of the 18th and 19th Centuries prioritized individual freedom; and the 20th Century's policy defended the social welfare state. Now, we are facing an attempt to reinvent the economic and political system on the basis of new technologies and new political pressures.

Bigger than an organizational crisis, this is the crisis of ideas. The social contract settled between the State and the individual must be reexamined the same way as Thomas Hobbes and Stuart Mill did in their time.

### References:

- CHRISTENSEN, Clayton. O Dilema da Inovação. Quando Novas Tecnologias Levam as Empresas ao Fracasso. São Paulo: Makron Books, 2001.
- FREY, Carl Benedict; OSBORNE, Michael A. The future of employment: how susceptible are jobs to computerization? Oxford University Engineering Sciences Department and the Oxford Martin Programme on the Impacts of Future Technology for hosting the "Machines and Employment", Workshop, September 17, 2013.
- MICKLETHWAIT, John; WOOLDRIDGE, Adrian. A Quarta Revolução: a corrida global para reinventar o Estado. Trad. Afonso Celso da Cunha Serra. São Paulo: Portfolio-Penguin, 2015.
- VÄLIKANGAS, Liisa. The Resilient Organization: How Adaptive Cultures Thrive Even When Strategy Fails. New York: McGraw-Hill Companies, Inc., 2010.



**Sirlei Pitteri**

*Post-Doctorate Degree in Economy of Organizations from Faculdade de Economia da Universidade de São Paulo, and researcher at CEST-USP.*

Coordinator: Edison Spina

This article is a result of the author's ascertainment and analysis, without compulsorily reflecting CEST's opinion.