Technological changes and their social impacts

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Abstract

The Great Reset emerges from the first evaluations and interpretations of the specialists from the World Economic Forum on the study of the relationship between society and its technologies. It is relevant to mention a roll of defining technologies of the 4th industrial revolution, such as Artificial Intelligence, Nanotechnology, Quantum Computing, 3D Printing, Energy Storage and materials science, have a disruptive and complex character, capable of providing social changes, for which we still don't have legal frameworks or conduct manuals, raising concerns regarding their uses. However, some of these technologies have such a disruptive potential that the mere idea of legislating on them may bring challenges that seem unsurpassable.

The Great Reset

The term, The Great Reset, is a proposal of the World Economic Forum, for a systemic reshaping of capitalism towards a more sustainable and socially fair industry and society.

The Great Reset emerges from the first evaluations and interpretations of the experts working at the World Economic Forum on the pandemic crisis of the SARS-COV-2 coronavirus. Therefore, we can consider the issue as an emerging theme in the study of the relationship between society and its technologies.

Costillo et. Al. (2020) propose the need for a change in the behavior of society and social systems, so that the actions quickly executed in the emergence of the COVID 19 can serve as a model and inspiration for other actions needed to make it possible, for example, to combat the issue of climate change.

The Great Reset, however, is linked to the emergence of transformative technologies that bring with them, in addition to opportunities, the advent of emerging and complex social problems, in what Schwab, (2017) has conventionally called the 4th industrial revolution.

Distinct technologies may cause challenges of as diverse a nature as the immutability of fault in the case of a traffic accident occasioned by an autonomous car (Bonnefon, Shariff and Rahwan, 2016) to the need to tax machines as a response to the replacement of human labor in an increasing number of activities occasioning a greater demand to be met by the "welfare state" (Kovacev, 2020, Wucker, 2016).

In this context, it is important to list a roll of technologies that define the 4th industrial revolution, and that have a disruptive and complex character, capable of providing social changes, for which we still do not have legal frameworks or conduct manuals, still raising concerns regarding their uses.

As such, the technologies that we understand to have this potential would be Artificial Intelligence (Rich,1998), Nanotechnology (Allhoff, et al., 2007; Allhoff, Lin, Moore, 2009), Quantum Computing(Li et.al., 2002, Vermaas, 2017), 3D Printing, (Gupta et.al, 2019; Naghshineh, 2020), Energy Storage, (Nijhuis et al., 2015; Mergelina and Aguilar, 2021), the Internet of Things, (Grammatikis et al., 2018; Brous et al., 2019;) and the field of materials science, (Goncharov, 2020).

Historically, humanity has required time to adapt its institutions and laws to the advent of new technologies. Traffic codes were not necessary in the absence of large numbers of automobiles and highways, and there was no need to regulate the carrying of firearms before their invention.

Although it sounds obviously redundant, these statements are important because the potential for harm to people caused by these devices has created the need for specific regulations to enforce their better use. However, some of the above technologies have such disruptive potential that the very idea of legislating them may bring seemingly insurmountable challenges.

How would a member of the parliament voting for legislation on artificial intelligence behave when believing on religious grounds that life is the exclusive property of human beings? Would a complex artificial intelligence that considers itself a sentient being willing to accept this assumption, or would it conclude that the congressman's decision was based on a prejudice analogous to the one Nazism represented towards the Jews? And if so, how far would this "being" be willing to go for his rights? Would humans be able to put any brakes on a technology like this, or could humans choose to ignore certain laws based on judgments of their own morality? These are troubling questions that need to be answered, but they are not the only ones.

Is the idea of democracy as the best system able to resist a widespread notion of technological manipulation of electoral processes? Would part of the electorate be resisting the big technological companies by betting on right-wing anti-system candidates, as a way to contain what they perceive as fascism represented by an imposition of values different from those they have professed, on the part of big corporations?

And in the case of a total discrediting of both politicians of all spectrums and these corporations, could a widely capable artificial intelligence make useful decisions with better results than those generated by the political process for a given country? And if so, could the voters freely delegate to an artificial intelligence the management of the state? Would there be a way to reverse such a process? Could such a "technocracy" be considered a democracy?

3D Printing

The emergence of new technologies does not yet allow us to see the limits of their advances, as well as the limits of their uses, these technologies present such disruptive potential that existing social models and theories cannot even apply to the notion of a future civilization. In this sense the "Great Reseat" and the nationalist and conservative movements antagonize each other in constructing mutually exclusive dystopian visions.

But there is no need to go that far to analyze the transformative impacts of new technologies. Simple social changes can have gigantic impacts. 3D printers for example, according to Gupta et.al. (2019) can make the demand for skilled labor in many industrial sectors to become scarce. The flexibility of this technology may also allow the possibility of building firearms in garages making it difficult to control them. However, 3d printer technology also enables ample room for positive social developments with new industries focused on leisure, entertainment and creativity offering new job opportunities.

Naghshineh (2020), technology can improve sociocultural sustainability by promoting production by consumers. Individuals within their communities can use 3D printing as a means of preserving their cultural heritage, having the possibility of producing the parts and products they need. In addition, its use also promotes social inclusion, in many places, through the participation of individuals with disabilities in social activities. For example, the technology is used by educators dealing with visually impaired students to produce a variety of adapted and interactive educational material at low cost.

Quantum Computing

Emerging concerns in the field of quantum computing relate mainly to the ability of these systems to break complex encryption codes. Codes that underlie the security of state information and the Global Financial System. The capability of quantum computers should require new advanced cryptographic developments capable of protecting banking data information as well as various other systems, such as those operated by airlines and bus companies (Li et.al., 2002, Vermaas, 2017).

Energy Storage

Energy storage systems are a strategically sensitive part of the fourth industrial revolution. This is because the ability to store energy generated in overproduction cycles for times when it is scarce brings the ability to ensure the energy security of a state (Nijhuis et al., 2015; Mergelina and Aguilar, 2021), this being one of the tripods of the water-food-energy nexus theory (De Amorim et.al. 2018).

In addition, energy storage devices usually have hazardous materials, leading to not integrating and building storage systems near their customers.

Internet of Things

The internet of things also brings the ease of consumer self-service in markets, highlighted by Brous et al. (2019), reducing labor costs. This technology allows for improved quality of customer service and satisfaction, as well as more effective communication between organizations and their customers.

However, as with any communication network, "the Internet of Things, is exposed to many types of vulnerabilities and security threats." (Grammatikis et al., 2018). According to Brous et al. (2019) "data leakage can severely impact individual privacy by revealing confidential personal information, such as personal habits or financial information." The authors further suggest preventing unauthorized access and misuse of this information.

Artificial Intelligence

Artificial intelligence in turn may promise to reduce the demand for labor while continuously putting pressure on the welfare state, it is more machines and fewer humans working. Wucker (2016), proposes that in this sense the discussion about the taxation of robots. The future presents challenges as diverse as "machines," if the term could be used that way, committing homicides in traffic, paying taxes and perhaps, one day, being elected.

Material Science

And finally, Goncharov (2020) points out that materials science interacts with other technologies of the fourth industrial revolution. According to the author, digital production technologies are able to interact with the biological world, as engineers, designers and architects progressively combine computer-assisted design systems, additive manufacturing, materials science and synthetic biology in the discovery of symbiosis between microorganisms, our bodies, the substances we consume and even the houses we live in, so that in his conception the contributions of this field in the scope of Industry 4. 0 interact with other aspects in such a way that the facets of the industrial revolution would be interconnected with the massive use of artificial intelligence as the main thread.

Nanotechnology

Allhoff, et al. (2007), nanotechnology should in the future lead us to devices such as invisibility cloaks and bionic bees. The advancing of such devices brings issues concerning the national security of countries, and the protection of sensitive data and the private lives of companies and individuals.

The arrival of these devices has the potential for social transformation and this potential brings with the need for the advent of a new legal framework capable of responding to emerging demands, in the same way that was previously addressed in the case of artificial intelligence.

In addition, according to Allhoff, Lin and Moore (2009) there is also an underlying environmental concern with these technologies. For the authors the comparatively large surface-to-volume ratio of nano materials has the characteristic to increase their chemical reactivity, and the consequences of this cannot yet be predicted.

For the aforementioned authors "we have none virtually knowledge base of the life cycle of structures and devices developed with nanomaterials, and a precautionary approach would seem to require that we take a light step into the mass use of materials about which we know little."

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