

Dossier

Sociological perspectives on the new digital technologies

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Abstract

This text introduces the dossier *Sociological perspectives on the new digital technologies*, which examines the social implications of a new and evolving generation of technologies whose scope, speed and complexity may be considered unique. Today's technological changes go far beyond digital first generation technologies. More than just productivity enhancers, they are able to operate as a new factor of production – as both labor and capital —, thereby exercising a transformative effect on economic growth. The goal of this dossier is to contribute to a better understanding of the major challenges and opportunities that exist, vis-à-vis these ongoing transformations, from a sociological perspective. Together, the articles included in this dossier enable us to delve more deeply into the themes and topics described above.

Keywords: Economic Sociology, disruptive technologies, changes in employment forms, digitization of work.

The dossier presented here to readers of *Sociologies in Dialogue* examines the social implications of a new and evolving generation of digital technologies whose scope, speed and complexity may be considered unique. Today's technological changes go far beyond digital first generation technologies. More than just productivity enhancers, they are able to operate as a new factor of production – as both labor and capital -, thereby exercising a transformative effect on economic growth. Rapid advances in technologies such as artificial intelligence (AI), cloud computing, internet of things, data analytics and quantum computing, machine-learning, big data, robotics, nanotechnology, 3-D printing and, in the area of biotechnology, genetic engineering, are globally transforming the way people live and work. These technologies can be applied with higher efficiency and lower cost in non-routine cognitive activities. They are expected to have significant implications in wide spheres of social life, from health, education, transportation, energy, agriculture, to business and government. They are making their mark on notions of ownership, consumption patterns, work and leisure time, and on forms of sociability and identities, raising the issue of whether the citizens of tomorrow will identify themselves with careers or jobs.

Today's economy can be expected to undergo profound transformations, as demonstrated by new business models linked to the rise of nontraditional types of employment, such as collaborative, sharing or platform economies (see Ramella's article in this dossier), the creative economy (see Garcia's article), block chain technology and changes in manufacturing driven by 3D- and 4D-printing machines. The application of these disruptive technologies has the potential to pose a number of societal challenges, coupled with new problems to solve and dilemmas to manage. There is no consensus among analysts as to the social implications of current transformations, beyond a common recognition that the labor market is to

undergo significant changes in the coming years - in other words, job loss accompanied by the creation of new forms of employment and economic sectors demanding new skills sets. (World Economic Forum 2016 report, *The Future of Jobs*). There is, however, intense debate as to the nature of these changes. Some analysts predict that the labor market will be divided into two poles – on the high end, knowledge intensive sectors; at the opposite end, activities that can be characterized by low productivity. This scenario also includes a significant reduction of occupations at the middle level and a concomitant growth of societal divisions. Other scholars ponder an increase in the mobility of the labor force, in a globalized scenario in which workers can be recruited from wherever they are found. In this regard, globalization would expand its effects on the labor market.

Some expectations regarding new models of work in the independent or self-employed category refer to tendencies that are already on the rise and will continue to do so. Yet the income that such activities are able to generate is also a matter of concern and reflection. Certain scholars argue that rather than unemployment, job displacement can be expected. In their view, the new economy will increase productivity and expand output, which in turn should alleviate the substitution effect of technology on jobs.

Recent researches on digitization and its labor market implications are concerned with examining these phenomenon through more sophisticated methodologies, in order to generate more consistent formulations on the ability and degree to which new technologies can affect society and, in particular, the future of work. A body of empirical and theoretical literature using elaborate measurement techniques, such as econometrics, examines different groups of occupations and tasks, educational levels, salaries and demographic tendencies, attempting to estimate results for short, medium and long term changes in occupational and labor market transformations and in order to anticipate measures to alleviate their possible negative consequences. Work life is a growing concern, insofar as conceptions of job,

career, work-time and remuneration are being recast. Certainly, a new occupational structure requires negotiations for a new social contract.

The effects of new technologies are difficult to predict to the extent that they trigger unexpected consequences. The interference of social media in societies' political life illustrates how contradictory results may emerge from a particular dynamic of communication: either virtuous or vicious. Thus, sociologists and policymakers must be alerted to the "unexpected consequences" of emerging technologies, so that negative effects can be prevented, corrected or mitigated. To acknowledge, discuss and understand the transformations that are currently underway is a way of "creating" the future. Hence, the extreme relevancy of the ideas addressed in this dossier.

The theme *Digital society* and its social and economic implications was a key issue at the World Economic Forum, held in Davos, 22-25 January, 2019. The session *Learning Today for Tomorrow's Jobs* referred to people's feelings of being left behind as technological innovation outpaces up-skilling. There is concern for how this may act to exacerbate social exclusion.

While such fears are certainly legitimate, past experiences have shown that the skill crises tend to be overcome in the middle and long runs. Society should be prepared in advance, in order to properly "shape the future". As Gui Ryder (ILO General Director) asserts, "The notion that the future of work is out there waiting for us is wrong. We are the people who get to shape that future." (session *Learning Today for Tomorrow's Jobs*, WEF, 2019).

The goal of this dossier is to contribute to a better understanding of the major challenges and opportunities that exist, vis-à-vis these ongoing transformations, from a sociological perspective. The creation of wealth today and, as a consequence, of sustainable forms of social and economic development, depend upon knowledge, technology and innovation. The sociological approach is relevant as a complement to economic analysis, insofar as it reveals how social agents' actions make a difference in the way change is directed. When significant economic and social transformations are

underway, sociologists' analyses of different spheres of reality have an outstanding role to play in suggesting a future shape for society.

The subject addressed in this dossier is of great interest to emerging economies, and particularly for Brazil, a country that is poorly prepared to face the social and economic challenges brought by the new paradigm. The articles included here look at a set of relevant issues that have been little examined by mainstream Sociology, especially in Brazil, that is, issues concerning the digital economy and its social implications.

The first two articles discuss the contribution of digital technologies in expanding business capabilities, as in the case of what have been referred to as the collaborative and creative economies, both of which challenge previous industrial structures. Ramella's article, *The economy of collaboration in the age of digitalization*, addresses issues related to the digitization of the collaborative economy (sharing economy and smart production). The author identifies the expansion of collaborative economic activities within the new economy, characterized by "openness to the outside, decentralization and peer-to-peer horizontal relationships". He links this phenomenon to the transformative potential of digital technologies, insofar as they create the infrastructure for the spread of new patterns of consumption, distribution and production which, in his view, favor the enlargement of "the scope of economic transactions based on collaboration." Following the theses of the new economic sociology, Ramella presents a more complex analysis than that which is usually found in the literature. He draws attention to the fact that with the new technologies, the sharing economy and smart production are interconnected, allowing the coexistence of "different logics of exchange, in which market transactions often mix with forms of mutuality and reciprocity that approach the logic of the gift." It should be noted that this perspective does not suffer from technological determinism, since the author makes it clear that social factors also operate in the way the process unfolds, creating a favorable environment for collaborative economic activities.

Garcia's article *Creative economy and employment in Brazil* underscores the role of the digital age in expanding the possibilities of connections between groups and ideas, contributing to the strengthening of an already existent trend in contemporary society — the emergence of new identities and the democratization of access to the marketplace. Garcia draws our attention to an important transformation that takes place as information and communication technologies contribute to redefining technology-art-market relations. The rapid worldwide development of the creative economy which, according to Garcia, “differs, in various aspects, from the mass industrial world.” is an illustrative example. His article presents data related to the growth of the creative economy in Brazil, over the 2006-2017 period, a time during which companies and jobs in the creative economy expanded faster than those of other economic sectors in the country, creating new opportunities, particularly, for small and middle- sized enterprises.

Yet, as suggested above, the introduction of new digital technologies brings with it the fear of unsolvable problems regarding employment. This has led to the discussion of proposals such as some form of guaranteed basic income. Campa's article, *Technological Unemployment and Universal Basic Income: A Scientometric Analysis*, addresses this issue. The article focuses on the reconstruction of the dynamics of the Emergence, Frequency, Distribution, and Proximity (EFDP) of the phenomena of “technological unemployment” and “universal basic income”, (pointing out the differences between similar concepts such as “structural unemployment”, “technological unemployment”, “unconditional basic income” and “basic income guarantee”) that have recently received great attention from a growing number of scholars. From the perspective of a Sociology of Science, Campa provides a diachronic scientometric analysis of scientific publications that elaborate on these expressions, over the period spanning from 1929 to 2008. The author shows that neither concept is new; rather, they were both used earlier, and particularly during the 20th century, as a way of understanding

and offering solutions in periods of crises, such as the one that occurred in 1930. According to the author, his research indicates a paradigm shift in economic diagnosis and prognosis, concluding that the “economic crises of the contemporary era (1929 and 2008) are the main causes of the success of these two concepts, otherwise rejected respectively as fallacious and utopian by mainstream economics.”

Digital technologies facilitate new modes of cooperation not only in economic arenas, as Ramella and Garcia’s analyses show, but also contribute to exchanges and partnerships in the field of research and production of scientific knowledge, to the extent that innovation becomes faster and the activities related to technological development are rendered not only increasingly dependent on knowledge but also more complex, costly and risky. This is why far-reaching collaborative networks, capable of interaction, are among the key agents of the process - academic-scientific researchers, entrepreneurs, politicians and investors - and become crucial for the success of projects for the sharing costs, knowledge and skills. New policies have been implemented to stimulate the creation of novel models for “off-campus” activities aiming at transfer of knowledge to society through partnership with external agents — businesses, in particular. Guimarães and Barcelos’ article *Researchers’ perceptions on university-business relations in Brazil* addresses issues related to this new role of universities and research centers in Brazil, as a route to the country’s technological “catching up”, as scientific knowledge becomes the central source for wealth creation and a crucial resource in the economic and socially sustainable development upon which the solution of this society’s major problems depend. The article is based on research that investigates the perceptions, actions and strategies of agents who may be considered relevant for technological “catching up” in Brazil, focusing on the university-firm relationship.

Together, the articles included in this dossier enable us to delve more deeply into the themes and topics described above. I take this opportunity to thank the editors of Sociologies in Dialogue for offering us the chance to publish it.

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