The Challenges for Digital Society: Education and E-Leadership

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Abstract: The way in which digital technologies have transformed our everyday lives is before our eyes. Such technologies now appear to be physical and cognitive prostheses that give meaning and continuity to our daily work, radically redefining the times, the spaces and the ways of our daily living. These changes pose new challenges to organizations and their traditional mechanisms of operation, engagement and socialization of knowledge (Nonaka, 1995). This process of general increase of complexity in our society is leading to the emergence of a new socio-economic and organizational model that we are not able to understand and govern yet, opening up scenarios of profound inequalities and new risks. We are in the middle of a crossroads of opposing tensions which do not find explanations in univocal interpretations but demand a collective effort to understand the renewed role which university can have in advanced modernity. What are the great challenges of the future? How can human development be pursued in the context of the changes and uncertainties that characterize our times? Trying to define the boundaries of this radical change is just the first step in an effort to understand today's complexity

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1. Introduction

The way in which digital technologies have transformed our daily lives is before our eyes. These technologies now appear as physical and cognitive prostheses which give meaning and continuity to our actions, radically redefining time, space and socio-economic balances. These changes pose new challenges to organizations and their traditional mechanisms of operation, engagement and socialization of knowledge (Nonaka, 1995). This process of general complexity of our society is leading to the emergence of a new socio-economic and organizational model that we are still unable to understand and govern, opening up scenarios of profound inequalities and new social and economic risks.

1.1 Problem Statement

We are in the middle of opposing tensions which do not find explanations in unequivocal interpretations but demand a collective effort to understand the renewed role which the vast space of education (as education-training-work) can have today in advanced modernity.

- What are the major challenges of the future?
- How can social and economic development be pursued in the context of changes and uncertainties that characterize our times?

1 The essay has been presented during the Central European Conference in Finance and Economics (CEFE 2017), September 20-21, 2017, Herľany, Slovak Republic.
1.2 Aim of the Study
These are the two central questions which the essay focuses on through a reasoning aimed at reconstructing the directions of change (§ 1), some perverse effects that can be seen in the ongoing change processes (§ 2) and the challenges to form new Generations of men and women capable of coping with the digital evolution and moving within complex organizational environments (§ 3).

2. The Directions of Change
It is visually discernable how the way digital technologies have transformed our daily lives. Such technologies now appear to be physical and cognitive prostheses that give meaning and continuity to our daily activities, radically redefining socio-economic times, spaces and balances. On the basis of this epochal change, not yet fully understood in its outcomes and developments, there are many researchers who have attempted to outline the contours of our time that are distinguished by its global and reticular character (Castells, 2001, 2004; 2006; 2009). A development in which the Internet and the Impact of digital development have emerged as carriers of the so-called knowledge economy (Foray, 2006) and knowledge society (Lundvall, 2006).

To better understand the complexity that characterizes the digital challenge it may be interesting to investigate the contribution prepared by the World Economic Forum (2016/a: 2016/b) in outlining the four directions of change introduced by the digital society, which leave out some areas of expertise which are increasingly becoming interdisciplinary and multidisciplinary spaces that require people flexibility and resilience.

The first one refers to the conquest of longevity made possible by the scientific and technological progress that marked the '900, determining the increase in life expectancy and the quality of life. This phenomenon contributes to the complete redesign of the social system regarding the labour market and welfare systems. This imposes a comprehensive and radical rethinking of learning paths (increasingly oriented towards lifelong learning), access and exit mechanisms from the world of work and career paths, increasingly fragmented and discontinuous, with the risk of being trapped in 'bad jobs' or blocked biographies (Capogna, 2011).

These problems demand the overcoming of sectorial and disciplinary solutions to make way for integrated and trans disciplinary approaches, able to look at the complexity of the phenomenon through a multidimensional perspective. A perspective capable of simultaneously looking at the social and human dimension of development without being crushed by economic-financial constraints and priorities. This implies the need to rethink alternative models of socio-economic development, which are sustainable and inclusive. A second innovation path is given by the industrial automation processes and the impact they produce in the global and social scenario. Impact that can be synthesized in four priority development directions.

a) The use of data, the computing power of machines and connectivity that unfold in big data companies in the internet of things and cloud computing.

b) The analytics industry derives from the fact that the Internet creates totally traceable systems, providing a wealth of data that can be of great value both in terms of research and commercial terms, opening a great debate on this and in order to skills to manage this amount of data, both in the debate between privacy, accessibility and transparency.

c) The human-machine interaction that refers to the development of more and more user-friendly interface and therefore subtle and pervasive for their ability to intervene in a hidden manner and modify the categories of risk related to work and personal and social development (Capogna, 2014/b).
The applications of real-world digital solutions, such as robotics, 3D printing, and artificial intelligence that radically modify the physical world around us and, therefore, our way of interacting with it and among us.

To address these processes of innovation it is necessary to develop new horizons of meaning (sense-making), innovative and adaptive thinking, and distributed intelligence for the prospect of sustainable development models that are able to mature a new balance within a world of work which, while destroying jobs, seems blocked by a growing mismatch of skills in crucial profiles.

While such innovation perspectives let see new developmental paths, there is no shortage of authors reporting the risk of "easy enthusiasm for big data" (Bonolis, 2016) and their potential effects. This process of general increase in complexity of our society is leading to the emergence of a new socio-economic model that we are not able to understand and govern yet by placing the polarization of the organizational arrangements, that is the third of these changes.

If modern society coincided with the emergence of new collective and institutional actors such as organizations and nation-states, on which the social pact was founded, which was the foundation of our welfare systems for the whole of the twentieth century, in contemporary, liquid and global society (Bauman, 2000), we are witnessing further evolution. One observes a depletion of the functions of founding and constitutive institutions of modern society (family, labour organizations, schools, national governments, etc.); while emerging new polarized relationship models between more and more super-structured organizations with regard to processes, production and value management (multinationals, supranational economic and political organizations, World Bank, supranational agencies, information and digital giants etc.) and "timeless and spatial" organizations that have their roots into the network and the changes it introduced in the social system 'atomizing profiles working' into a myriad of experiences, relationships and skills that shatter personal, professional and organizational identity. The perverse and unforeseen consequences of this unstoppable trend are evident in the fact that never before such levels of production and wealth have been reached and, at the same time, never such heights of widespread poverty, inequality and social injustice have been touched. This injustice also affects the education system when the World Report 2014 on Education for All (UNESCO, 2014) denounces that a quarter of young people in poor countries cannot read and that one of the dramas of the socio-economic crisis in the world is given by a shortage in the quality of the teacher training.

For all these reasons, reflecting on the quality of the entire education system is central. The pivotal competencies considered to meet this systemic complexity include cross-cultural, networking, diversity management, collaboration capabilities in virtual environments, design, adaptability, and resilience to move within the complex, fragmented and territorially dispersed and digital organizational systems. Moreover, in 1993 the World Health Organization (WHO) denounced the need to promote "social and relational skills that allow the students to effectively address the needs of everyday life, relating with confidence to themselves, to others and to the community", considering the profound value, in terms of economic and social consequences (the trust), which lies in the immaterial dimension of the covenant of reliance at the heart of communities that have solid social capital (Coleman, 1988; Putnam, 2000).

The whole of these new challenges asks to imagine a different, sustainable, and fair future, envisaging innovation paths that can rethink the present and the future of our societies, starting with a new ability to engage the mass-media-digital panel of our times in cultural, social and educational processes; and this is the last directress of the highlighted change. The convergence of these trajectories requires the development of an ecological approach capable of raising digital culture in people to move with consciousness and critical thinking in the media world.
This obliges us to deal with new and more complex training goals that can integrate new media literacies (Horton, 2007), media competences (Baacke, 1998), digital literacy (Gilster, 1997), computational thinking, management of cognitive, emotional and relational load. These are sophisticated and high skills which are essential to move with consciousness and critical spirit as active and co-responsible citizens for the common good, overcoming the anthropocentric perspective that has led to the development of modernity. Possible applications of digital evolution open highly innovative scenarios for organizations and rethinking entire work and social processes. However, in the impact of these processes of change, we can be glimpsed some perverse effects that we will try to outline below, focusing only on the possible drift towards a particular idea of technology.

3. Perverse Effects
One of the most relevant innovations associated with digital society is the concept of 'big data'; because, thanks to the traceability of data, it makes a lot of information available reaching far beyond our management and interpretation skills. This tumultuous technological development opens the way to new and provocative development paths, putting together both the power of computing and modern computer systems and the access to unimaginable data until just a few years ago, leaving ever more complex challenges ahead. Challenges that Doug Laney (2001) has defined through the 3V (volume, velocity, and variety) growth model to indicate that data volumes increase as time passes, their generation speed, the variety of data. As with these elements, a further dimension is quickly affirmed, one referring to the legitimacy of such data which often risk being inconsistent.

These elements complicate the processes of extraction, analysis and interpretation and require people and organizations to provide:

- an investment in datasets which can efficiently process the growing amount of data;
- the elaboration of alternative representation models (data merging and integration, Machine Learning, algorithms, etc.) to handle such complexity;
- an increasing focus on the formation of professional figures with high technical-mathematical-statistical skills for the definition, management and understanding of analysis processes.

On this trail, Schönberger and Cukier (2013) point out that the big data present some dark sides, which can be summarized in the fact that, more and more, in complex decision making processes, particularly where the time factor represents a significant variable, the final choice is delegated to an algorithm. Algorithmic decisions are presented as neutral, objective and reliable, able to support complex decision-making processes, but they have some perverse effects of great concern. An example of this is the fact that not so often important choices for the economy and everyday life are entrusted to automated procedures and powerful software which, thanks to sophisticated mathematical models, reduce or eliminate human intervention, with the intent to make more rapid and reliable complex operations, and reduce related risks. Not counting the organizational contexts where algorithms are automatically updated by machine based on artificial intelligence tools (such as Google’s algorithm). But, algorithms are not at all neutral and objective as we are inclined to believe. In fact, they discriminate, as well as the more decision makers that they propose to correct because they are not able to understand the cultural framework and social variations of the processes. They cannot count on the main intuitive and emotional intelligence of the most powerful of technologies: the human one. Algorithms can make very accurate predictions, but they cannot explain their motivations and consequences. Kevin Slavin (2011) denounces that algorithms model our reality and, when automated, these processes escape the control of the most, take a long time and effort before being recaptured and brought to normal in case of system errors or bugs.
A significant example in this regard comes from the finance world, where finding the time when buying and selling titles can make the difference between wealth and bankruptcy. The risk lies in the loss of control that may result from system bugs or the complexity of mathematical models (Ausiello, Petreschi, 2011). In the same line, the *International Trade Union Confederation* moves a clear statement in consideration to the "financialization system" that characterizes our era. The term "financialization" indicates the growing financial sector dominance over overall economic activity and, at the same time, the weight that financial markets show in determining the state of the global economy as well as the behaviors of companies that are often more profitable to speculate in finance instead of make investments in productivity and work. This is because interest rate and stock price developments are increasingly influencing the definition of business strategies, leading to what appears to be the predominance of financial assets far beyond the production of goods and services. In reality the terms "financialization" is traveling categorically parallel with the term "globalization" and part of what is generally referred to as the "global economy" a convenient word used for the structural changes of our economy and society and that in substance lead to the distribution of the powers, where in the centre we have the finance and where the people are often out of the game. How far are we from Edgar Morin, and from his man's ethics?

Digital development is also linked to the growing movement of ideas inspired by the open date philosophy that public assets available to institutions or public administrations must guarantee free access to anyone who wants to study them in accordance with the administrative transparency principle that aims at ensuring the broadest possible information circulation both inside and outside the governmental system. Transparency and information correctness that should contribute to fueling credibility and web reputations that in the post-modern economy are increasingly associated with the ability to govern access and research systems in the network.

In our society, the conquest of technique and its penetration into every social and organizational space is so heavy and pervading that, according to the *Converging Technologies for Improving Human Performance*, by the National Science Foundation's (2003:297), in the global scenario, in relation to the modern war "[... ] the human has become the weakest link, both physiologically and cognitively".

The perceived risk behind this excessive confidence in technological infrastructure is linked to several orders of reasons that we cannot consider exhaustive of the problem:

1. a) to the renewal of a certain myth of rationality and confidence in the possibilities offered by the digital instead of the promise of absolute rationality and linear progress desired during the modernity;
   b) to the creeping domain of digital holder's power who behind the promise of freedom, equality and sharing, build new platforms and control spaces that contribute to rejuvenating knowledge and educational systems (and not only) in new market opportunities to monetize;
   c) to the pulling force of certain cultural imperialism oriented towards the primacy of technocracy which serves to process and standardize complex processes and systems and to uniformize and homologate to the detriment of specificities and peculiarities;
   d) the drift that is seen in the overwhelming affirmation of an economical reading of reality based on the principle of usefulness, productivity and measurability applied to everything, incautiously also to social spaces based on care relations such as education and healthcare.

But we cannot consider the Einstein's fundamental principle, which states that "not everything that can be counted counts, and not everything that counts can be counted."

The reflection on the dangers of such risks and perverse effects that help us understand that in a digital and high technological society the real difference is not (or not only) in mastering specific technical skills but by promoting a digital culture and criticism thinking capable of
forming people able of moving into organizational systems where the traditional hierarchy leaves room to reticular relationships; the system turbulence requires a continuous adaptation process (Mintzberg, 1996); the centrality of information, like a fly to innovation, calls on social actors to a paradigmatic change in the way of understanding communication from mere content transmission to an empowerment tool for people and organizations.

In other words, network society requires attention to multiple identity formations, capable of confronting community retreats (family, school, church, neighborhood, work, etc.), the turbulence and complexity of systems and the growing multiculturalism expansion. All these processes leave the subject alone in front of the increasing dematerialization of organizations (Sennet, 2001) in a framework of relationships with variable configurations whose digital mediation is an inescapable component.

4. Educating to the Digital Society

Following these considerations, we see the emergence of four core competencies that we can summarize with Morin, great thinkers of the complexity (2001):

- the area of strategic and complex thinking, in other words, dialogic, recursive and based on the 'hologram principle', which refers to the ability to contain the whole information, in every single particle of all;
- the area of technical-methodological skills that may have different levels and degrees of mastery but which still require transversal and widespread training given the pervasiveness of digital technologies in our lives;
- the area of expertise associated with the exercise of a planetary identity underpinned by the increasingly strong "globalization" processes, capable of thinking of local development as community development and not just as economic speculation;
- and, finally, the area of digital competence, or better digital culture, which are needed to move consciously within a system that shifts between the opportunities of democracy and digital innovation and those of the risk of a new form of technological totalitarianism made possible by an unjustified use of political propaganda by the Internet.

In reality, Edgar Morin often says nothing about the word “internet” because for him in the application of new technologies it is not the technology that should be center stage but always the people. Morin knows very well that internet is the first communication system shared. In this case, it is difficult to imagine the further progress that the application of artificial intelligence, semantic web, and increased reality will make it possible for the market, creating collaborative environments more and more focused on enhancing of the experiential, contextual and socio-relational dimension, further amplifying the elements of a socialization process that occurs outside traditional educational agencies, leaving young people more and more alone.

This radical change in the places and processes of knowledge building and social and sharing opportunities poses new challenges to the knowledge economy and the processes of economic and social innovation in the network society. The network society implies an extension of the emotional and cognitive experience for the subject. Through the web, each one can connect to the whole world requiring to the subject to mature new forms of awareness for moving within dematerialized relations that solicit differently perceptual systems but not for that are without consequences for the subject. Educational systems are, therefore, faced with new challenges, not merely the transmission of knowledge but the formation of subjectivity capable of:

- expressing themselves through new forms of relationship and community, of which digital mediation is now an inevitable component;
understand the reflections of identity construction determined by living the web, overcoming the real-virtual dichotomy, because they are two faces of the same medal whose consequences always and in any case reverberate on the 'here and now' of our everyday life;
• to anticipate the possible future of social and economic organizations immersed in extremely turbulent systems in the face of the extraordinary changes in the act.

Therefore, to the technological development must correspond the integral human development. Reducing the complexity and delegation the own evaluations and subjective choices to external responsibilities (as in the example of algorithms) are always reassuring. Such delegation does not require active involvement and participation in the understanding and evaluation process. It relegates the subject to a state of subordination and extradition by himself and social complexity. In this circumstance action, rather than being guided by personal value-orientation, which everyone has to face, is predefined by the procedure and the salvific algorithm, definitively releasing the subject from the burden of choice. Where the main subjectivity interpretative of the social actor and his true chance of being (Heidegger, 1976) in relation is lacking, we are confronted with cultural hegemony and the fascination of the simple and modelled solutions offered by the techno-economic paradigm, which increasingly assume the appearance of a 'steel cage' rather than an opportunity for progress and social justice.

5. Conclusion and Recommendations
To conclude, we can say, in the face of high technical and methodological skills to move in digital systems, we need strong social-emotional skills to sustain the cognitive, emotional, and relational loads that glide in real-virtual environment. In this sense, the challenge of contemporary society, in confronting to the digital that has been tried to rebuild, is to forge people enabling them to freely enjoy what is available for full self-realization, exercising, from an ethical and responsible perspective his/her ability to choose according to the common good (capabilities approach) (Nussbaum, 2000, Sennet, 2007). For this reason, WHO (1993) calls for promoting Life Skills Education in School such as; self-awareness, emotion management, stress management, critical thinking, decision making, creativity, effective communication, problem solving, empathy, and interpersonal relationships which represent the basis of a community based on relationships of confidence, and able to promote social capital.

In the hyper-technological and digital society, the challenge to win is to forge people and new leaders capable of sharing the centrality of people and their inalienable value. A new humanism is therefore possible, indeed, necessary, promising and expected to form figures capable of moving within reticular relationships where the hierarchy takes on forms of variable configurations and forging leaders capable of seeing digital as a factor of innovation, enabling, possible world connector and change flyer. People capable of envisaging new horizons of meaning through which to redesign and exploit the opportunities offered by digital technologies to contemporary society on an ecological and global scale. To ensure fair, solid and ecological development at a global level is the only way to prevent and counter the social and economic disasters that lie ahead of our eyes.

References
• Bonolis M. (2016), La deassiomatizzazione dell’ipotesi di razionalità in sociologia, Franco Angeli, Milano.
• Castells M. (2001), Galassia Internet, Feltrinelli, Milano. Crossref


Coleman J. (1988), Social Capital in the Creation of Human Capital, American Journal of Sociology 94

De Masi D. (2017), Lavorare gratis, lavorare tutti. Perché il futuro è dei disoccupati. Milano: Rizzoli


Morin E. (2001), I sette saperi necessari all’educazione del futuro, Cortina, Milano.

NSF (2003), Converging Technologies for Improving Human Performance, National Science Foundation, U.S.A.


OMS (1993), Life skill Education in School (OMS


UNESCO (2014), Rapporto mondiale 2014 sull’Educazione per tutti, UNESCO.


WEF (2016/b), The Future of Jobs, World Economic Forum:


Kevin Slavin (2011), How algorithms shape our world, 21 lug 2011: https://www.youtube.com/watch?v=TDaFwnOikVE