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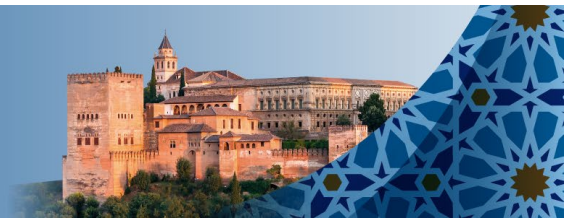

EXTENDED ABSTRACT

Title: the rise of algorithmic society and the strategic role of arts and culture

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Abstract:

This is the time of narratives and storytelling. This is the time for surfing and multitasking. In the era of complexity, women and men look for simple solutions to increasingly complex issues. Decision processes characterizing the fourth industrial revolution (Schwab, 2016) change thanks to the application of Artificial Intelligence (AI), robots, Machine Learning (ML), automated work and the Internet of Things (IoT) (Höller et al., 2014; Ford, 2015; Kaplan, 2016; Russel and Norvig, 2016; Acemoglu and Restrepo, 2018). In this context, metrics and rankings are produced to justify or delegate more objective final decisions based on quantitative rather than qualitative indicators which are more easily accepted in a period of scarce resources, and which also underlie the exercise of soft power not always recognized (Espeland and Sauder, 2007; Noor, 2014; Espeland, 2015; Domingos, 2016). On the other hand, qualitative tools such as narratives are established as scientific methods which were once the prerogative of the "humanities" and are now progressively used in many branches of Economics, animating the debate between algorithms and narratives.

Starting from the diatribe between culturalism and computationalism on the culture of education (Bruner, 1996), moving toward the theme of uncertainty, "*the shadow of the future*" (Bernardi et al., 2019, p. 4), and studies on fertility and the narratives of the future (Vignoli et al., 2020a; 2020b), up to the analysis of behavioural economics and economic crises, narratives have found increasingly validation in literature. In this regard, the Nobel Prize in economics Thaler writes:

> In the beginning there were stories. People think in stories, or at least I do it. My research in the field now known as behavioral economics started from real life stories (Thaler, 2018, p.1265).

Moreover, in the authoritative journal American Economic Review, Shiller (2017) writes:

> This adress considers the epidemiology of narratives relevant to economic fluctuations…. Stories motivate and connect activities to deeply felt value. Narratives "go viral" and spread even worldwide with economic impact. The 1920-21 depression, the great depression of the 1930 s, the so-called great recession 2007-2009 and the contentious political economic situation of today are considered as the result of the popular narratives of their respective time (Shiller, 2017, p. 2).

Many things are changing not only in scientific research but also, and perhaps above all, in society. The effort of analytical research on which the very essence of the concept of experience was based, is today de-legitimized and replaced by the need for speed, by the urgency of an immediate response, moving towards a progressive zeroing of the space-time dimension due to the applications of the new information technologies (ICTs).

The denial of a reality which is increasingly difficult to decode and face leads to nestling in the alienation and evasion finding in the game the fulfilment of the replacement of effort and commitment with that of fun and pleasure. This leads to building other worlds and multiple truths. The notion of true or false fades as does the system of rules and codes that helped distinguish between real life and imagination. Concepts such as virtual reality or augmented reality, coined for the first time in 2010 by former Google CEO Eric Schmidt, are part of the daily life of many digital natives. In many places, we are starting to discuss the technological revolution which is becoming a mental revolution generating a real Darwinian mutation of the existential human condition. The living and working environment is incorporated into a whole consisting of hardly distinguishable parts that involve both the physical and virtual world's experiences represented by the so-called "isosphere" where the fourth industrial revolution and a new "humanology" develops. On the dystopian relationship between human and machine, the Israeli historian Harari in *Homo Deus* revives the debate on humanology, the new field of study that focuses on the future of humans after the resumption of their functions by thinking machines and on that of the machines in the process of their mutual intellectualization and humanization. And he writes:

> It is at the same time, the ecology of the humans and the anthropology of the machines and the study of the mutual redistribution of their functions (Harari, 2016).

This book contributes to the debate through a multidisciplinary and multigenerational approach, telling about the rise of the algorithmic society (a narrative of the past) and the role that culture (a narrative of the future) could play in the digital challenge. It combines the approaches of the Economics of Culture and Creativity with those of the Regional Sciences which appear to be particularly performing but not sufficiently studied in the literature, through a twofold objective:

a) provide a digital transformation's first summary framework both from an economic and social point of view as a starting point for analytical reasoning;

b) identify useful elements in order to build a new research agenda aimed at rethinking and/or reformulating new models of economic development culture-driven and the related policies of culture conservation and enhancement being aware of the many limitations that this attempt may imply.

Hence, culture is both a memory of the past, settled in the cultural heritage, in the communities and the territories, and at the same time as a driver for analyzing the future of the economy and society. In this regard, we asked the following main questions.

What is artificial intelligence and what characteristics does this innovation have? What do we mean by algorithmic society and what economic and social transformations has it generated? How does the relationship between economy, society and culture change with the advent of new technologies and what are new models of culture and technology-driven development that can be outlined?

The issue is complex and to address it we have chosen to integrate the narrative approach with the one borrowed from open innovation studies (Lester and Piore, 2004) by discussing it in formal and informal settings with colleagues, students and the "20th-century elites" experts in different disciplines: scientific, humanistic and legal, political, economic and social sciences, to build an overview of this transformation.

We, therefore, began to draw up a possible research agenda starting from what was written by one of the fathers of the technological revolution Steward Brand, the inventor of the term personal computer (1974), who underlines how:

> Lots of people try and change human nature but it's a real waste of time. You can't change human nature, but you can change tools, you can change techniques. And that way you can change civilization (Brand, 1974).

A brilliant intuition, also debated by the famous American sociologist Sherry Turkle in her book *The Second Self* (1984), is that technology is a catalyst capable of changing not only what we do, but also "*how we think*".

After this introduction, the work develops in the following way. The second paragraph, after broadly discussing the meaning of the Artificial Intelligence ecosystem, has retraced the evolution of the different AI concept's definitions, focusing on those of Machine Learning (ML), Deep Learning and Big Data and the algorithm bias issue[1]. Then, it discussed the paradigmatic scope of innovation by identifying ten peculiar features. The third paragraph retraced the main moments of the rise of the algorithmic society[2], the places from which it was generated, the actors and the most representative innovations. We then examined the main transformations both from a social, economic and cultural point of view. We considered the changes in the attribution of value system, the changes in the knowledge dissemination processes and the knowledge legitimation, then those in businesses, products, innovative processes, work, and even in the new forms of the so-called "media document capitalism". A kind of capitalism in which the documents registered online by users/prosumers become commodities to exchange on the web. The fourth and last chapter discussed the technological transformation of culture-driven development models and the changes induced by the rise of the algorithmic society, highlighting opportunities and threats for drawing up a future research agenda for the enhancement and protection policies of cultural heritage and territories. We have thus identified the birth of a new phase in the relationship between culture, economy and society that we have called "enhancement and technological preservation of culture". Where the enhancement and protection of the "values of diversity" - whether artistic, human, cultural or environmental - and the role of the Territories - whether *Anchors of reality* or *Territories of the mind* - we hope are harbingers of new models of sustainable development based on culture.

What this book has tried to do is to outline the main moments of digital transformations following a multidisciplinary approach to explain the aspects related to culture and creativity that are the area of specialization that perhaps we know best.

References to philosophy, psychology, sociology, information technology and so on, are useful food for thought for our reasoning. The information is collected sometimes according to the "inverted pyramid" approach by surfing the sea of web knowledge, sometimes making use, as far as possible, of the advice of experts from the various disciplines, aware of the many limitations that our reflections may present.

At this point we like to anticipate one of our sentences that well summarizes the *leitmotif* of this work:

> We should not forget that what most distinguishes humans from machines is imagination and as such it should be nourished and protected (cfr. p. 73).

What we are therefore going to tell is a story that begins as a "narrative of the past", since the algorithms and the AI on which it is based have a predictive nature and tell us about the past to predict the future, but ends with a "narrative of the future" because, in the end, we discuss imagination and how culture and creativity allow us to face the challenges of the digital revolution. A story that is born locally and suddenly becomes a global success phenomenon, but which finds its useful and necessary complement in the physical and mental territories.

Keywords: *algorithmic society; digital transformation; cultural heritage.*
JEL codes: O1; O33

[1] We remind you that having decided to privilege the applications of AI connected to the economy of culture and creativity and local development, we will not deepen those connected to robotics (Ford, 2015) and to the IoT (Höller, 2014) on which a vast literature already exists, especially in the field of economics and innovation management.

[2] The terms mutation, transformation, transition and technological revolution are often used synonymously in this book. These indicate under different aspects and nuances the changes that the introduction of digital technologies and AI have generated in what we call an algorithmic society (see par. 3).