

Democracy in the Digital Revolution¹

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Abstract. The abstract should summarize the contents of the paper in short terms, i.e. 150-250 words.

Keywords: Soft Anthropological Revolution, Knowledge Creation and Sharing, Situated Computing,

1 Introduction

In these days there are few voices not recognizing the revolutionary character of the advent of the digital, but its nature is still in discussion. The most widely accepted interpretation considers the digital as the fourth industrial revolution [8]. Digital electronic technology (from computers and internet to mobile devices and internet of things) generates the full integration of material and data flows in the production lines.

Other people (e.g.: [6]) claim that it is the forth cognitive revolution, having its reference figure in Alan Turing, while the previous ones had as reference figures Kepler, Darwin and Freud, bringing humans to discover and accept their being not the center of universe, nor a unique type living entity and neither perfectly rational, but only nodes of a complex network.

Without considering these ways of characterizing the Digital wrong and recognizing that both of them enlighten important aspects of human life in its evolution, I think that they are considering more different effects of the ongoing revolution than its deep nature (that is also provoking those effects) and, therefore, from my viewpoint, they are not able to capture what makes the Digital revolutionary.

The way digital communication, information sharing, social media, etc., in fact, are there for all mankind shows that the Digital is pervading human life, deeply changing habits, practices and ways to relate each other. This could not happen if it is only a technology enhancing industrial and/or business processes and systems or giving sense to new philosophical stances. Its impact is very pervasive and transforms the interrelation between human beings and between them and knowledge and it is at this level that the inquiry must be done.

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In this paper, I will propose a different view and argue on how this view allows to discuss the important challenges democracy has to face in order to revitalize itself, today.

My discourse tries to go beyond the analysis of how the Digital can improve the current mechanisms constituting democracy and its institutions, for considering the forms democracy should adopt to remain effective and to improve participation and sense of being decisive part of a community.

I will base it on the views and considerations of Michel Serres [9], where the Digital is characterized anthropologically by its capability to transform human beings and their way to interact each-other and to create and share knowledge.

2 Soft, Anthropological Revolutions

As I anticipated above, there is a third way for characterizing the digital revolution, that has been proposed by the French philosopher Michel Serres [9]: for him the Digital is the third soft (anthropological) revolution after Writing and Printing. As the former ones, the Digital is revolutionary because it changes in an irreversible way the relation between humans and between them and knowledge.

The invention of alphabets [5] was largely widespread: in several places some people invented (probably inspired by the first drawings of animals and other natural subjects, human beings did in the prehistory) systems of signs aiming to offer to tools for accounting and for narrating. Different features (supporting materials, compositionality criteria, richness of the alphabet and means for creating composed unities) characterized them, but slowly most alphabets converged towards few models and rich alphabets emerged able to cover both the accounting and narrating uses.

The first alphabets allowed the religious and political institutions to improve their capability to govern giving them tools for organizing society and for fixing the truth citizens should share.

The revolution induced by the invention of alphabets begun only when light supports for writing were also invented (Egyptian papyrus was one of the first of these materials - surely the first and the most diffused in the Mediterranean area) and used as writing surfaces. Papyrus opened to anyone the possibility to write his or her truth, breaking the monopoly religious and political power.

This liberated knowledge creation and diffusion from the control of the (religious and political) power. Naturally the liberation was only potential and still very few people could really write new texts and share them with other (few) people, but these few people multiplied voices sharing their knowledge with whoever was interested. The way knowledge was created and diffused changed radically, making it plural.

A new dramatic change was caused by the invention in 1448 of the printing press by the German goldsmith Johann Gutenberg (this is clearly a western viewpoint on this subject: in China book printing begun very much earlier). This, together with the com-

position of texts with metal types, allowed to multiply the number of good quality copies of a single text that could be printed in one day and to reduce drastically their cost, so that the diffusion of written knowledge increased at an unprecedented speed. The first texts that have been printed using Gutenberg's invention were large in-folio codices, that could be placed almost only in public libraries, where readers had large tables where opening them: the way people could access and read books did not change with respect to hand-written codices: only the number of copies grew. But the situation changed dramatically at the beginning of sixteen century, when Aldo Manuzio, one of the first publishers established in Venice [1], created the portable octavo book, that had an immediate success all over the western world and was the prototype of the books that we are still reading today. Portable books were smaller and allowed people to create in their houses their own libraries, so that they were accessible also outside public libraries. Books introduced a new deep change in knowledge circulation, since they allowed anyone to publish the books he/she wrote and to a larger number of people to choose and collect their own books, so that the plurality of knowledge was granted not only at the level of those writing books but also of those reading them. Knowledge became an autonomous field of human practice with its institutions (universities), industry (publishing) and rituals.

The first two anthropological revolutions, in accordance with my account, started when, after the invention giving raise to it, humans were able to 'democratise' it, making it accessible (potentially) to everyone: anthropological revolutions require a new technology and its general availability.

3 The Digital and its Impact on Society

The third soft, anthropological, revolution, has its origins in the work different groups of people do, with the aim to build a programmable computer, in the years immediately before the Second World War in Germany, United Kingdom and United States of America and only Americans, the winners, have the possibility to continue the effort immediately after it.

When computers appear after the end of the second world war, they are big machines very difficult to manage and use, occupying very large spaces and consuming great amounts of energy. As it is well known, despite their cost and complication, computers begin to be diffused in large private and public organizations at the end of the fifties. The evolution of electronic technology from diodes to transistors and integrated circuits made possible a consequent evolution of computing machines from mainframes to mini-computers and, later, to networks of mini and/or personal computers, pushing them in almost all medium size organizations, in a growing number of small ones and, even, in private houses. This pervasive diffusion of computer, even if it has a relevant impact in private and public organizations and in the service sector, is not yet the beginning of the Digital Revolution: the life of human beings is only indirectly impacted by it and continues almost as usual.

The revolution Michel Serres has announced occurs only when computing power is made immediately available to people, when computing becomes universal. Research on human computers interaction, the invention of graphic interfaces, windowing systems, local area networks, the internet had all together a first consolidation in the workstations designed at Xerox Parc (Palo Alto Research Center) in the seventies: Xerox Star, that was presented in 1981, is the first machine sold in the market that is so intuitive that any person can use it without specific training and consultation of its manual. The problem with Star is that it is a very expensive machine, good for engineers and professionals, but unaffordable to common people.

It is only when Apple develops the Macintosh, that was presented in 1984, that the beautiful ideas designed at Xerox Parc shape a machine for all, a universal personal computer. Like papyrus foils for writing and portable books for printing, universal personal computers are the true starting point of the Digital revolution, making computation and its services universally available and easily usable by anyone. It is not by chance that all existing personal computers in few years adopted similar user-friendly interfaces; moreover, in short time, with internal disks and the creation of a unique standard for communication and information sharing (the internet and the web; [4]) personal computers transform themselves from tools for information processing to nodes for communication and information sharing open to anyone in the earth. Universal machines, in fact, open to their users the possibility to have permanent access to all the information that is progressively populating the web reaching un-precedented dimensions, to use it for creating new knowledge and to share it with anyone.

Without developing this point, let me explain, the distinction that I have introduced between information and knowledge: in accordance with Nonaka and Takeuchi [7], information is knowledge made explicit for sharing purposes, while knowledge refers to the know-how, frequently implicit, allowing to act properly and effectively.

The circulation of information and knowledge is now fully supported without constraints. Young generations have discovered this new possibility and are changing their way to approach them: they are always in full contact with the web and, when they need an information or they need to know something, they navigate the web searching for it; when they want to discuss their new ideas and new findings with other people, they share them in the social media. The existing mechanisms supporting and preparing people to access and create knowledge (schools and universities, experts, scholars, books, etc.) are always less accepted and used by new generations, who seem totally absorbed by their life online.

This resumé of how young people relate with knowledge online, does not take into account that accessing knowledge (and information) needs the capability to evaluate its quality and its correspondence with what is requested and, most important, frequently requires some pre-existing knowledge, in order to understand it. In absence of these capabilities, a gap is growing between the large accessibility of information and the capability to understand and use it effectively and putting aside.

It must be recognized that the universal accessibility of information is not a positive fact per se: knowledge distributed in the net is not always of good quality; moreover

even when it is of good quality, it may be difficult to understand because of its specialist and/or scientific nature; finally the amount of bytes a person can access is largely beyond his/her capabilities and therefore users access it through computational filters that are out of their control and are not subjected to norms granting their correctness. We, as also Serres did [9], paid close attention to young generations because the digital revolution is still in progress because the revolution is still in progress and we can assume that their behavior will quickly become that of everybody in the near future, and, in any case, it is influencing also older people.

Let me go one step further in discussing how knowledge creation and sharing are changing in front of the data stored in the web. We can, in fact, distinguish two types of inquiry people do looking for information: on the one hand, a person can search for a specific information (e.g. the title of a movie, the name of a person, his/her telephone address, etc.) to satisfy a curiosity; on the other hand, she can look for something missing in order to proceed in what she, maybe together with other people, is doing. In the first case there is not any creation of new knowledge: she looks for something missing in her personal memory, as if the web were an external extension of it. In the second case, the information that she finds (that she gets in response to her inquiry) is -generally together with the other people collaborating with her- analyzed, discussed and validated, contributing to the creation of new knowledge. Knowledge creation, in fact, is not something that may happen in isolation; it is always connected to practicing, to solving problems, creating something new and therefore has always some specific features making it a unique event.

Social media, with their flat structure where people are considered as consumers of information and services, belonging to predefined typologies without individuality, seem interested only to the first type of inquiries and do not provide means for supporting the knowledge experiences of their users. This, unfortunately, matches very effectively with the reduction of human beings to consumers provoked by globalization, but this is what risks to distort the evolution of the Digital Revolution towards a poorer sociality.

Without recreating the mechanisms allowing people to use the information they find in the web to develop new ideas, create new things, the digital revolution risks to be unable to extend human capabilities. It has to be underlined that not only human and social mechanisms are lacking with respect to the above problem, but also digital technology seems inadequate. An inquiry of this issue is beyond the limits of this paper (I will make reference to it in the Conclusion), but this point merits great attention.

4 The Crisis of Democracy and the Digital Revolution

It looks quite natural, I think, that democracy has something to do with people being able to co-create knowledge during their lives, since political participation is also sharing ideas on the future of the society and acting in order to sustain its possibility to evolve accordingly. The big ideologies characterizing the twentieth century and deter-

mining its political debate as well as its major conflicts inside single states and internationally, have been capable for a long time to offer common perspectives and adequate participation mechanisms to their followers. But, as anyone knows (its reasons are still object of debate, but this is out of the scope of this paper), from the end of the twentieth century big ideologies appear always less convincing and fallacious, so that citizens lose their trust on them and their political compass. In this crisis, democratic institutions become always less legitimate and more ineffective as well as political representation itself. Without their ideological bases, big parties become incapable to offer clear perspective to their followers and to all citizens and appear always more driven by the ambition of their leaders and by external power centers. Citizens cannot find who can represent their expectations and their needs, losing motivations for adhering to a political proposal and becoming more prone to listen to those making seductive promises that cannot be fulfilled. Moreover, in the digital information space, it seems always more difficult to distinguish truth from falsehood, and new political movements are always more characterized by the truths they affirm, rather than by their ideas and programs.

Finally, it has to be recalled the ongoing planetary economic crisis (that is being strengthened by the COVID19 pandemic; also discussing this point is out of the scope of this paper) needing strong political responses that are far from being proposed, in the political game, by any party. Political action is always less effective and far from generating trust in citizens, who seem prefer to listen to those who are promising to defend their privileges (even when they are quite limited) with respect to those who propose long term programs capable to recover the situation. It is not casual that countries where there is no democracy and authoritarian democracies are in better shape than strong and well rooted democracies, like European ones.

Frequently, it seems that the crisis of democracy depends on its weak capability of representing citizens, on its tragic inability of taking decisions and on its high level of corruption, but, even if these are true and have relevance, they are only some evident signs of a crisis, but below them there is something depending on a rupture at the level of the relationship between citizens and their will and action and democratic institutions and their capability to do politics. In other words, below the bad functioning of political institutions, the planetary crisis is impacting the roots of representative democracies and no repair of their mechanisms can solve this problem.

The Digital Revolution constitutes, with respect to the planetary crisis of democracy, both a reinforcing factor and a potential engine for exiting it. It is reinforcing factor, since the leading companies of the digital market contribute to weaken democratic policies subtracting themselves from any public control (at the financial level as well at the level of human rights like privacy, correct information, etc.), attacking human work both pushing its automation and reducing its capability to react to their actions, and, finally, extending the globalization of the markets so that no control is possible to their moves. It is a potential engine for exiting from the crisis of democratic institutions, thanks to the mechanisms enhancing distributed knowledge creation and sharing it can provide.

In conclusion, the crisis of democracy constitutes today a major problem in our societies: participation based on agreement with what parties propose is subject to distorted communication and is not capable to reflect the potential for social innovation young generations (that otherwise are substantially excluded from the political game) may contribute to create. The emphasis on young generations is due to the fact that their reluctance to participate has effects lasting in time. Voting, honest and timely information, social control on government are surely important points we cannot neglect, but we need to make one step further, creating the ways for letting people co-create new knowledge.

5 Conclusion. New Technological Perspectives

In this paper I have discussed how the Digital Revolution is impacting democracy contributing to its crisis. Since one of my major arguments has been that digital technology has not created the systems supporting people (in particular young people) in reinventing their way to participate in the political game, let me conclude it indicating three lines along which digital technology could contribute to make the difference. The emphasis on the technological side of the problem of democracy is due to the fact that technology, like in the cases of writing and printing, that I have shortly summarized at the beginning of this paper, is a precondition of the reinvention of democracy, that can assume new forms only in the interaction space it can create. We can, at this moment, only try to foresee how these forms will be, but we can claim that their quality will depend heavily on the quality of the software we will offer to human beings.

1. Political participation should take forms inspired by open science ([10], [12]), so that local and focalized groups find ways to work together and to share what they discover and do with other groups, contributing to the formation of political programs and to the values supporting them. The technology supporting open science should be developed with this objective.
2. A new perspective in the creation of digital systems (both infrastructures and applications) should be developed and experimented finalized to support the plurality of viewpoints and experiences characterizing human society. I have called this new perspective ‘situated computing’ [2] and I have designed in accordance with it a new front end for personal workstations, called *itsme* [3], that constitutes a good example of what I mean. Other conceptual developments and projects should be developed in this perspective.
3. The infrastructure supporting information sharing in the web should apply the basic principles of *Solid* [11], the web decentralization project directed by Tim Werner Lee at MIT that can be a good starting point to avoid, or at least contrast, the establishment of private monopolies. It should integrate them with the main principles of situated computing, so that it connects, in an effective way, well ordered and managed information in the web with the personal information bases, anyone should be able to build per se.

This is an incomplete list to be discussed, modified and/or extended.

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