TWO INTELLECTUAL UPHEAVALS INDUCED BY THE DIGITAL TRANSFORMATION

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Abstract

The Enlightenment movement has widely disseminated the conception of a citizen who, in order to be enlightened, must master reading and writing. This conception appears as a fundamental reference for the functioning of the public sphere. But this functioning is affected by the new writing and reading practices induced by the digital transformation. This is why the objective of this poster is to highlight two complementary aspects of digital transformation that have major consequences on digital literacy and digital culture in general. First, the decontextualisation, suspension and reconstruction of meaning. As it gives the means to favor methods that suspend the immediate comprehension of a text, computing easily appears as a methodological guarantee. This feature is particularly visible in the analysis of cultural data on a large scale, which leads to the delinearization of the text because the tools used traverse the entire corpus and produce results most often in the form of lists or of diagrams. Knowledge is therefore not going to be based on reading texts, but on processing corpuses. Second, the unseen formatting of communication and thought. A computer's operating system is inaccessible to the average user, whereas anyone who can read is able to access printed text. At the same time, the concealment of procedures allows a form of transparency to emerge, or even to be brought to the fore, which must manifest itself in the interfaces. But the conditions of communication in a digital environment are largely determined by actors who possess technical or economic capacities. These capacities will impose both the possibilities and the limits of the mode of communication. As a result, the form of texts is constrained by the requirements of computerization, requirements which tend to privilege precisely what is computable.

Keywords: public sphere, meaning, computing, formatting, education

During the 1980s, the potentialities of hypertext and the implications of its development have been often debated. The implementation of links was certainly not new: they undoubtedly appear in all cognitive activity. However, hypertext gave them a status that reflected a specific conception of the ordering (or disordering?) of knowledge. Was it the disappearance of a certain universe of fixity in favor of a universe of fluidity? However, when one examined the various examples of descriptions of the potentialities of hypertext, it was, globally, the high intellectual level postulated among users that was striking. With the development of the Web in the 1990s, debates now concern the huge hypertext of the Web, because it expresses the renunciation of totality and absoluteness. The open encyclopedia made possible by this huge hypertext is based on rejection of the tree structure of the old encyclopedias. But its success does not necessarily invalidate the thesis that there are fundamental points to be privileged in the knowledge network.

Since the beginning of the 2000s, a more larger view has emerged, in relation with considerations about the new writing and reading practices which affect the public sphere in a digital environment. The digital transformation is a transformation of the public sphere too, and the ideal of a citizen who, in order to be enlightened, must master reading and writing, has of course to be renewed. As a step in the study of this evolution, it seems useful to highlight two complementary aspects of digital transformation that have major consequences on digital literacy and digital culture in general.

The first one is the decontextualisation, suspension and reconstruction of meaning. Digital transformation creates radical breaks (Bachimont, 2010). For exemple, machine translation has made decisive progress based on alignments established from bilingual corpora: there is not always need to model the semantics of a text in order to translate it automatically. The same is true in the computarized analysis of cultural data (Manovich, 2017). This type of analysis makes possible the identification of recurring elements that would otherwise be imperceptible. Numerical methods have undeniable advantages, particularly in terms of the quantity of data processed and the visualization of results. All these advantages should not make us forget, on the one hand, that the treatments carried out are not always clearly explained and that their users are not always able to understand them, and on the other hand, that the more or less spectacular visualizations are likely to constitute representations that are all the more difficult to interpret because the treatments themselves are not perfectly mastered.

The second aspect is the unseen formatting of communication and thought. A computer's operating system is inaccessible to the average user, whereas anyone who can read is able to access printed text. At the same time, the concealment of procedures allows a form of transparency to emerge, or even to be brought to the fore, which must manifest itself in the interfaces. But hidden writing is now a constituent of digital media. The old constraints weighing on the printed text could be ignored (at least to some extent), while the new ones are unavoidable because they are present in the technical system itself. As natural language is not suitable for computer processing, it appears that there is a tendency to privilege precisely what is computable (Bouchardon et al., 2011), a tendency which can go as far as admitting only a single form considered perfect for its computerization. Fortunately, some researchers in corpus linguistics warne us: it is not certain that it is possible to list the objects of the world, that knowledge is undoubtedly more inscribed in texts than in the terms of an ontology, and that it is doubtful that it can be fully represented by a logical formalism.

Marked by the growth of digital technology and a profound renewal in the way information is processed, opinions are formed and knowledge is developed, the last decades have provided the first elements of a process of reflection that is probably only just beginning (Bautier, 2013). But, from now on, it should be noted that the writing and reading practices engendered by the digital transformation are characterized by an abstraction that, for those with low levels of cultural capital, is difficult to overcome or exploit. This abstraction risks increasing social inequalities in the treatment of new forms of writing and reading. A new education of the citizen is then needed.

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Two intellectual upheavals induced by the digital transformation

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The Enlightenment movement has widely disseminated the ideal of a citizen who, in order to be enlightened, must master reading and writing. This view has been reinforced, in connection with the development of schooling and the increasingly massive use of printed text (especialy through newspapers and libraries) as a fundamental reference for the functioning of the public sphere. Now, **the public sphere is affected by the new writing and reading practices** in a digital environment. **As a step in the study of this evolution, it seems useful to highlight two complementary aspects of digital transformation** that have major consequences on digital literacy and digital culture in general.

Decontextualization, suspension and reconstruction of meaning

❑ In 1989, Tim Berners-Lee, main inventor of the Web, presents a pioneering project which associates the principle of hypertext with the use of the Internet: the proposed system is **a distributed hypertext system** designed to universally provide linked informations.

❑ The idea of a storage that would constrain information by a rigid hierarchical structure is rejected, in favour of that of a topology of information which evolves and thus represents, at any time, the state of knowledge. There is then **a risk of decontextualization of statements** for the user.

❑ In a second time, computing has taken a more and more larger place in the digital transformation and appears now as a methodological garantee, by allowing the use of **methods that suspend the immediate comprehension of a text**. Machine translation is a good illustration, since it has made decisive progress based on the possibility of finding equivalents between two languages by an automatic statistical analysis of word sequences.

❑ Largely coupled with computation, the digital transformation emphasizes **formal manipulation of meaningless elements**, which places its field at the antipodes of hermeneutics (Bachimont, 2010). This feature is particularly visible in the analysis of cultural data on a large scale (Manovich, 2017). Such a work leads to a delinearization of the text (lists, diagrams…).

❑ As a result, **meaning is not going to be based on reading texts, but on processing corpuses**. It is a major evolution of the humanities and social sciences. Correlatively, a profoundly new idea has emerged: that any corpus can be browsed, that investigations can reach exhaustiveness, and that the document is the digital document.

The unseen formatting of communication and thought

❑ The language of a computer unfolds on several levels, from that of the machine language to that of the programming language itself. **The question of the translation of these different strata** between them therefore must arise, as well as that of the place given to natural language.

❑ **Reading and writing in a digital environment** are largely determined by actors who possess technical or economic capacities that are beyond the reach of most users of computerized media: they will impose on these users both the possibilities and the limits of their mode of communication.

❑ The texts depend now on **the requirements of computerization, that tend to privilege precisely what is computable**, because what can be manipulated is not directly what is meaningful and what is meaningful is not directly manipulable (Bouchardon et al., 2011). Hence a forcing: the semantics is driven by the syntax. This forcing is particularly apparent in the case of the Semantic Web.

❑ As there are **several processes of semantic discretization**, it is relevant to hypothesize that each of them is not only characterized by technical choices, but also corresponds to a policy of meaning, elaborated by designers and developers whose strategies deserve special attention.

❑ The digital transformation brings remarkable potential for intellectual progress. But, while criticism of governments and companies seeking to control the spreading of informations is frequently voiced, this vigilance has no equivalent in terms of **the power relationships that can mark the very components of the production of meaning** (Bautier, 2013).

A necessary education to support the digital transformation

In fact, it is a whole set of actvities that are being transformed by the digital transformation, in all sectors of the public sphere, with possible effects in the corresponding social norms and, correlatively, in the strategies of the different social groups concerned. Given the cultural requirements (new but not totally) that this transformation introduces, it is not untimely to concern ourselves with **the policy that it would be desirable to promote, if we want to better train citizens in access to information, acquisition of knowledge and formation of opinions.**

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