

Knowledge commons and its enemies

Society can only be understood through a study of the messages and the communication facilities which belong to it; and that in the future development of these messages and communication facilities, messages between man and machines, between machines and man, and between machine and machine, are destined to play an ever increasing part

Wiener 1950/1954, 16

Introduction

This little contribution aims at sustaining Domenico Fiormonte's positioning by discussing two different but intertwined elements that in my view will be crucial in understanding the objective of DH, its methodological relevance and its cultural biases.

The first is the moral positioning of Norbert Wiener towards communication technologies that was clearly discussed in his second book on cybernetics: *The human use of human beings* (1950/1954). In this book he explicitly declared his worries about the possible misuse of these new technologies, and the risks that society would face, due to them. I will present his approach and try to show why it is relevant for the digital humanities today.

The second argument is relative to the interpretation of knowledge as a commons, and the role of DH in organizing their resources in order for them to be managed, preserved and transformed in a nonrivalrous content and finally in a public good, governed in favor of the collectivity as a whole.

According to Domenico Fiormonte " Current digital technologies standards appear to be the result of a double bias: the technical one and the cultural one (geopolitical). These two bias are entangled and it is almost impossible to distinguish where the technological choice begins and where the cultural prejudice ends (p. 9)". I will try to argue in favor of this perspective by building a sort of genealogy of the origins of information and communication technologies, in order to understand which is the exact positioning of DH within the big challenge of innovating without becoming dependent by the digitalization technologies, without preserving a critical vision of the risks faced by the humanities in meeting the digital devices.

Digital humanists are in the difficult position of insisting on a double edge, on one hand they have to face the traditional scholars skeptical of the possibilities offered the humanities studies by the adoption of new methodologies; on the other hand they should maintain the critical attitude towards the biases imposed by the use of each device. This is particularly true with the digital technologies whose nature could be retrieved within the theory of computability a branch of the logic of the beginning of last century. As suggested by Longo 2009, the adoption of the machine can be described as the triumph of the alphabetic discrete technology, without keeping into account the continuous quantities and their eventual representation. This precise choice included necessarily a clear positioning against each types of analogical indeterministic representation of phenomena, which just in itself, without taking into account all other biases create a lot of problems in every coding procedures, considering the necessary hierarchical structure

of the representation and the central role of classes and subclasses in the organization of information that need to be processed by its devices.

One of the crucial worries expressed by Wiener was related to the fact that "Such machines [...] may be used by a human being or a block of human beings to increase their control over the rest of the human race or [...] political leaders may attempt to control their populations by means not of machines themselves but through the political techniques as narrow and indifferent to human possibility as if they had been conceived mechanically" (Wiener 1950:181). It is clear that for different reasons communication technology can play a relevant role the management of power and (which is a similar thing) in the rearrangement and creation of new knowledge.

The two issues that I am planning to discuss - Wiener's social concern about the use and misuse of communication technology and the idea of preserving knowledge as a commons - are connected by the special ethical twist of both approaches to knowledge preservation, organization and management, while the application to DH of these two social and political questions is guaranteed by Foucault's vision of a deep relation between the organization of knowledge and power.

My aim is a genealogic description of the political and social horizon in which the digital technologies were conceived and realized because starting from there it is easier to focalize the strict relationship between social issues, technical issues and political issues.

In an interview with P. Pasquino and A. Fontana, Foucault described his method: "c'est ce que j'appellerais la généalogie, c'est-à-dire une forme d'histoire, c'est à dire une forme d'histoire qui rende compte de la constitution des savoirs, des discours, de domaines d'object, etc. sans avoir à se référer à un sujet" (1977, 147).

A society based on human values

In November 1947, writing the first edition of *Cybernetics*, Wiener made a first prophecy about future information and communication technologies and their impact on society: "Taking the second [industrial] revolution for accomplished, the average human being of mediocre attainments or less has nothing to sell that it is worth anyone's money to buy" (Wiener 1948/1961: 28). In a later recollection of his "connection with cybernetics", he admitted that the conclusion of this book "had implications for the sociology in the age of automatization [...]. It was necessary for me to take a definite point of view with regard to the moral problems posed by this new industrial revolution which was clearly under way" (Wiener 1958f/1985: 116). The technological revolution he was contributing to raised some moral questions that needed answers. His solution was to call the trades unions into action to protect workers, together with the insight that such a technological society could be fair and democratic only if it were not based on profit as the only ideal. He was in favour of a "society based on human values other than buying or selling" (Wiener 1948/1961: 28), and he was convinced that people could establish such a human society with the help of technology if they were aware of the risks implicit in misusing machines.

The integration of different disciplines and of human beings with machines could be the correct response to the dangers of the automatized factory. Wiener's insight into the risks and opportunities of the large-scale use of information technology is rather surprising. We can compare his approach to Yochai Benkler's recent project of the networked society – Benkler being one of the most important scholars who supports the creation of a not-for-profit economy based on free exchange of goods and services. In the

conclusion of his recent and already famous volume on the *Wealth of the Networks* he stated: “We have an opportunity to change the way we create and exchange information, knowledge, and culture. [...] We can remove some of the transactional barriers to material opportunity, and improve the state of human development everywhere. Perhaps these changes will be the foundation of a true transformation toward more liberal and egalitarian societies. Perhaps they will merely improve, in well-defined but smaller ways, human life along each of these dimensions. That alone is more than enough to justify an embrace of the networked information economy by anyone who values human welfare, development, and freedom” (Benkler 2006: 473).

The proposed ideal is closer to Wiener’s – a society not based purely on profit and competition, but one which could also rely on the creation of peer networks that cooperate in an informal way for the sake of reputation or purely for the pleasure of sharing. Benkler is not alone in this project. There are several proponents of similar theories on the inevitability of a new economy and the creation of innovative business models in the information and entertainment fields. Lawrence Lessig, for example, concentrates on the changes in copyright and intellectual property legislation he sees as necessary. His position is closer to Wiener’s, regarding the uselessness of copyright and patent law in a world where “invention is losing its identity as a commodity in the face of the general intellectual structure of emergent inventions” (Wiener 1950/1954: 115-116). In the book *Free Culture*, Lessig (2004) argues in favour of a transformation of the intellectual property principle, affirming a radical change in the nature of invention and creativity in an era of informational abundance. The lack of scarcity has a deep impact on the very concept of reproducibility: when there is no difference between the original and the copy, how can we distinguish between the two? Moreover, Lessig’s position is similar to Wiener’s also in that he is very critical of the sustainability of the creativity-encouraging ideal via the use of intellectual property protection. It seems that the organizations who are mainly benefiting from protection are in fact not owned by the creative people; they are, instead, exploiting inventions or pieces of art produced by the real authors/inventors from a monopoly position.

Benkler and Lessig try to put into practice the idea of new human values different from profit to govern our actions, and their approaches could be effectively compared with Wiener’s forecast, i.e. from a liberal perspective. However, they seem to be a little too naïve about the positive effects of technology on the reorganization of society, while Wiener was much more conscious of the social troubles caused by machines in factories and elsewhere. A deeper vision of the consequences of communication technologies in the organization of the workforce with special regard to the creative industry is offered by Andrew Ross (2006), who describes in detail the risks of automatization for below-the-line workers. In his opinion, both the supporters of the monopoly of copyright and the apostles of the libertarian religion such as Lawrence Lessig and the free software theorists are not taking into account the consequences of digitalization on non-specialized workers. The dialectic, in his view, is between monopolists of copyrights and customers who want to access digital content without paying for it, claiming that the abundance of information and creativity needs to be distributed for free. This “copyfight”, as he calls it, completely ignores the rights of below-the-line workers, who are as blackmailed by the abundance of digital content as they were (and still are) exploited by the copyright owners, who make a profit from their badly paid jobs. He closes his paper with some questions that seem to be echoing Wiener’s worries about the role of workers who cannot offer anything valuable to the market of the second industrial revolution: “How can the campaign for a free information domain take up the challenge of conceiving a sustainable income model? What kind of state action is required to ensure that inequalities in the private sphere are minimized by the establishment of a public sphere that is knowledge rich and monopoly free?” (Ross 2006: 763).

These questions are still as open for us today as they were in Wiener's forecast of the society of the future. The solution to the problems is to be flexible enough to understand the issues at stake and work for a society based on human values, as Wiener suggested almost sixty years ago. We are still on the edge of the dilemma: are we innovating for the benefit of mankind or only for the profit of the few most powerful groups who control the technologies? The "virtual", as Wiener foresaw clearly, could be devastatingly "real" for the millions of workers who every day risk losing their jobs, or are forced to work without being able to vindicate their rights, and are in constant danger of being robbed of their dignity and exploited by any means.

The value of information, secrecy and patent law

Wiener's contribution to the identification of the main features and issues of what we call the information society was not limited to the centrality of communication and human-machine interaction. He stressed the importance of having information for life itself: "To live effectively is to live with adequate information. Thus communication and control belong to the essence of man's inner life, even as they belong to his life in society" (Wiener 1950/1954: 18). Access to information, however, was not as straightforward and easy as it could be because "information is more a matter of process than of storage" (pp. 120-121). If this was the case, the conservation of information implied a constant and invaluable depreciation of the content. Terrell Ward Bynum (2005) described some methods used by Wiener to substantiate his information ethics, with special regard to the importance of information for human life. One of these methods was "to identify or envision ethical problems that information technology has generated or is likely to generate in the future, and then suggest ways to eliminate or minimize those problems" (p. 18). We can see this attitude at work in Wiener's claims against the secrecy of information and the various protectionist techniques adopted in the commercial field, as well as in the scientific area.

Wiener's starting point was the definition of information as something that could be sold or bought, having a commercial value that could be measured and exploited. There was no moral judgement in this point of view, but he was trying to show that "it leads to the misunderstanding and mistreatment of information and its associated concepts" (Wiener 1950/1954: 113). This was particularly true of patent law being used to protect scientific discoveries that could be commercially exploited.

Wiener went on to discuss changes in the production of inventions. Instead of being the fruits of the ability of craftsmen and their ateliers, inventions started to be "the result of a careful comprehensive search by a team of competent scientists" (p. 115). The description of information as more a matter of process than of storage, combined with the centrality of scientific research in inventions, implied that the protection of creativity with large-scale use of patent law could reduce innovation and the potential of science to make progress. Moreover Wiener denounced a profound mutation of science after World War II, from the product of the interest of the individual scholar to an impersonal enterprise guided by the goal of protecting people. The change of pace of science, together with the commercialization of scientific inventions, the considerable use of secrecy to protect progress in the military field, and the phantom of a powerful enemy constantly menacing the country could all go to produce, in Wiener's view, disastrous results. According to him, secrecy in science would slow progress without preventing the enemies from reaching similar results: "In the long run, there is no distinction," Wiener concludes, "between arming ourselves and arming our enemies" (p. 129).

His negative view of what we now call “Big Science”, connected with the von Neumann concept of the “Megabuck era”, progressively worsened during the 1950s. Wiener described the new model of science funding begun during the War as the big corruptor of scientists whose role was infringed “both from below and from above”. Big money and big projects attracted people who were not interested in knowledge to the field of science: “These new go-getters in science are people from whom no major creative contribution can be expected and who serve to dilute and keep apart the really creative and devoted young minds from whom the future progress of science is to be expected” (Wiener 1958h/1985: 711). Secrecy played an important role in the development and control of Big Science by the various defence agencies. Yet, it could cause projects to fail because of a lack of vision of the scientists in charge, and the impossibility of criticizing the authorities on the part of the most creative scientists who were always relegated to subordinates roles.

Today we are still facing the same dialectic between the progress of open science on the one hand – whose results naturally belong from the very outset to the public domain, for the benefit of humanity as a whole – and on the other hand the big commercial research effort – whose main objectives are the protection of discoveries under patent law to exploit them commercially. The dilemma envisaged by Wiener remains in front of our very eyes today. Scientific progress risked a slackening in pace because of protectionist barriers against its diffusion and constant transformation. Patents protectionism and the widespread use of secrecy in science threatened the interdisciplinary and internationalist habit of scientists of communicating and discussing their outcomes with each other, with incalculable consequences for the control of the correctness of scientific hypotheses and the improvement of applications, experiments and theories.

As a consequence of his analysis, and to minimize the danger of the protectionist attitude towards science, Wiener adopted a very drastic strategy, following the method described above (see Bynum 2005). The strategy involved three steps. First of all, Wiener decided to decline participation in all scientific projects in which the Department of Defence was even indirectly involved (we will discuss this decision in more detail in the next section). The second step involved the declaration that a scientist’s opinion had to be free from any prejudicial bias coming from financial involvement in any particular firm, and consequently he was engaged in preserving his integrity from any commercial objective in his scientific research: “I have therefore consistently refused consultation fees, retainers, or anything that would allow any entrepreneur in automatization to use my name” (Wiener 1954c/1985: 682). The third step (maybe the most effective and fruitful in terms of positive effects) was the decision “to turn from a position of the greatest secrecy to a position of the greatest publicity, and bring to the attention of all the possibilities and dangers of the new developments” (Wiener 1956: 308). The project of writing a book on Cybernetics that became a bestseller (Wiener 1948/1961) and a more popular volume on the same subject two years later (Wiener 1950/1954) was influenced by his ethical and social worries about the dangerous attitude of the United States to the progress of science.

Knowledge as a commons

Humanities are a special discipline, with the characteristic 'soft' status and clear peculiarities. When we try to apply normal rules that are used in sciences it is very difficult to find a fixed point. In this situation the genealogical description of the origins of a discipline could play a critical role in establishing good practices that are fruits of a mediated awareness of the double cultural and methodological constraints that are inscribed in the complex set of habits and prescriptions that identify the core of the digital humanities.

In order to fulfill Wiener's vision of knowledge as something that is "more a matter of process than of storage" and that we need to spread the outcome of the collective effort for innovation. This positioning implies that we have to consider knowledge as a commons (Hess, Ostrom 2011).

According to this approach we have to remind, however, that "commons is a shared resource that is vulnerable to social dilemmas. Outcomes of the interactions of people and resources can be positive or negative or somewhere in between" (Hess and Ostrom 2011, 13-14).

Wiener was convinced that the ethical positioning about knowledge was that it was not correct that it was possible to sell or to buy it, however as suggested by Hess and Ostrom this is not necessarily the case. We need to clarify the different positions in the management of knowledge in digital humanities for example in order to understand in which corner of the dilemma are we. Wiener's idea was in some sense shared by the first pioneers of the net, who imagined that the protocols and all the software and the languages that were necessary to the functioning of the network should not be subjected to the royalties. All the know-how that was used for the creation of the Internet was donated to the community of the users, who benefited, profited and improved all the tools because they were open to modifications. Knowledge as a process was completely realized in that case.

However this is not always the case. Consider for example, just to cite a project that was inside the large range of the DH, the case of Google Book search project. Many libraries and publishing houses cooperated with the project that remains under the umbrella of a private for-profit company, Google. They exploited the collective community and the so-called common-pool resources (libraries) to achieve the goal of being the most important repository of books in the world. The case of Google Book Search is rather unusual. Google relies on the collaboration (paid for in full) of the libraries participating in the project to increase the quality content residing on the Web, especially on its servers. The books, in fact, always represent an added value, in terms of quality of the information contained therein, which are certainly more controlled and reliable than the average webpage without any guarantee of quality in their construction. The explanation for this, as far as we are concerned – beyond the rhetoric of the benefactor – consists of a simple consideration. Selling advertisements requires the user's attention, and the best way to get the user's attention is through quality content. Besides, the project allows Google to be the Provider (with a capital 'P') of content on the web. Finally, the commercial role of Google Books was clarified by Google's entry into the ebook market with Google eBookstore, where the private company will retain the right to be the sole seller of so-called orphaned books and other texts for which they have obtained permission from publishers (but not necessarily from the authors). So legally controversial was this project that Google proposed paying American authors and editors up to \$200 per book to settle damages. The agreement ratified by the parties (Google and the Authors Guild and the Association of American Publishers) in 2008 was questioned by a district court in Manhattan and is still in progress with judgment expected in 2012. According to Judge Chin, "the deal would give Google a significant advantage over competitors, rewarding it for engaging in wholesale copying of copyrighted works without permission"¹. The question of the ownership of the content is therefore an open one. The tendency of service providers (the service being, in this case, the use of servers to store content) is to consider themselves to have the right to appropriate the content residing on their machines, to the complete detriment of the author of the content. Even the content of the books scanned in libraries across the world is considered in some sense owned by Google, although no author has expressly allowed them to keep a copy.

So if we speak of open access or better of managed commons we need to define the rules that allow to protect the open space, and prevent it from the free riding effect. In order to obtain such a result we need to analyze precisely the forces present in the battlefield and measure them concretely, in order to avoid bad surprises.

According to the analysis proposed by Hess, Ostrom 2011, there is no special difference between data, information and knowledge, as well as artistic output, etc. but in order to understand really knowledge as a commons we need to clarify which are the scope of the methods that use to transform raw data, in information and information in knowledge, because these passages are not neutral in preserving the content for the collectivity or using it for private purposes.

Moreover we need to remember that knowledge is always a cultural production, and view in this perspective we have to take into account its stable relationship with power, as suggested by Foucault. Knowledge, in fact, is a complex concept that has many different meanings. We can consider it as a commodity or as a constitutive force of society (Hess, Ostrom, 2011, 8). as far as one interpretation is preferred on the other we have a different perspective on how it should be possessed and disseminated. This is the reason why digital humanities projects need to assess their aims before arranging methodologies and recognize the cultural orientation of the work, in order for it to be included in the category of managed resource of the commons. Although open access resources are considered as a possible commons, Hess and Ostrom make a very clear difference between them and the real managed resources that can be declared part of the knowledge commons, because they need to be correctly ruled and effectively protected for them to be useful to collectivity. Otherwise they just allow a new turn of the free riding on public unprotected resources. One of the invention of Elinor Ostrom is the double elements that individuate the resources in terms of their properties. The matrix is made not only with the parameter of exclusion but also with that of subtractability. we need to understand the capability of a resource to be subtracted or not subtracted by a private or a group of public authorities, that as suggested by Wiener will it to increase and concentrate their power instead of devolving it to the community.

All these questions need to be addressed before starting a DH project, in order to comply with the social dilemma that is inscribed in every cultural work on texts and other humanities object of research, that will be manipulated by a new digital technology.

Bibliographic sources

Many of the papers by Norbert Wiener are cited from the reprinted version in Vol. IV of his *Collected Works* (Wiener 1985). The page numbers correspond to that edition. In order to facilitate the recollection of the papers, we used the code that identified the papers in that volume.

Benkler, Y. (2006): *The Wealth of Networks*. Yale University Press, New Haven, http://www.benkler.org/wealth_of_networks/index.php/Download_PDFs_of_the_book

Bynum, T.W. (2005) "The impact of the 'automatic age' on our moral lives", in R.J. Cavalier (ed.), *The Impact of the Internet on Our Moral Lives*. State University of New York Press, New York: 11-25.

- Cordeschi, R. (2002): *The Discovery of the Artificial: Behavior, Mind and Machines Before and Beyond Cybernetics*. Kluwer, Dordrecht.
- Hess, C., Ostrom, E. *Understanding Knowledge as a Commons: From Theory to Practice*. Cambridge: MIT Press, 2011.
- Lessig, L. (2004): *Free Culture*. The Penguin Press, New York, <http://www.free-culture.cc/freeculture.pdf>
- Longo, G. (2009) "Critique of Computational Reason in the Natural Sciences". *Fundamental Concepts in Computer Science*. Eds. E. Gelenbe and J.-P. Kahane. Imperial College Press/World Scientific, 43-69. Text originally written in Italian as Lezione Galileana, Pisa, 25 ottobre 2006. <ftp://ftp.di.ens.fr/pub/users/longo/PhilosophyAndCognition/CritiqCompReason-engl.pdf>.
- Ross, A. (2006): "Technology and below-the-line labor in the copyright over intellectual property", *American Quarterly*, 58(3): 743-766.
- Wiener, N. (1948/1961 [1968]): *Cybernetics, or Control and Communication in the Animal and the Machine*. The MIT Press, Cambridge, MA.
- Wiener, N. (1950/1954 [1966]): *The Human Use of Human Beings*. Houghton Mifflin, Boston.
- Wiener, N. (1954c/1985): "Automatization" (with Donald Campbell), *St. Louis Post-Dispatch*, reprinted in Wiener (1985): 679-683.
- Wiener, N. (1956): *I am a Mathematician: The Later Life of a Prodigy*. The MIT Press, Cambridge, MA.
- Wiener, N. (1957f/1985): "A scientist's dilemma in a materialistic world", *Columbia Engineering Quarterly*, Proceedings of the 2nd Combined Plan Conference, Arden House, October 6-9, 1957: 22-24, reprinted in Wiener (1985): 707-709.
- Wiener, N. (1958f/1985): "My connection with cybernetics: its origins and its future", *Cybernetica*, 1: 1-14, reprinted in Wiener (1985): 107-120.
- Wiener, N. (1958h/1985): "Science: the Megabuck Era", *New Republic*, 138: 10-11, reprinted in Wiener (1985): 710-711.
- Wiener, N. (1964): *God and Golem*. The MIT Press, Cambridge, MA.
- Wiener, N. (1985): *Collected Works with Commentaries*, vol. IV (ed. P. Masani). The MIT Press, Cambridge, MA.

ⁱ For a journalistic report of the process see A. Efrati and J. A. Trachtenberg “Judge Rejects Google Books Settlement” the Wall Street Journal, 23/3/2011.
<http://online.wsj.com/article/SB10001424052748704461304576216923562033348.html>