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An Analytical Approach to Information and Communication Technologies

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by

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Abstract

The twentieth century was a century of scientific and technological development. Especially the fact of information and communication technologies, beyond being a technological leap, has led to different levels of development and changes / transformations. Therefore, developments, possibilities, changes and problems emerging in the Internet and other digital contexts have attracted the attention of communication scientists, sociologists, historians and philosophers, and have become a field of research that leads to interdisciplinary studies. Along with the mass media developed for the last two centuries (from the spread of newspapers to the invention of the internet), every social development or transformation is being discussed by many academicians. We want to know what we should do in this situation or we expect someone to tell us what we need to do. It is an indispensable fact that these new technologies have many cultural and social effects. Digital humanities is seen as an indispensable field for many scholars because it offers new perspective and presents an alternative solution. Epistemology, which is one of the basic disciplines of philosophy, deals with questions such as "What is knowledge?", "How is there a difference between knowledge and belief?" Questions have been the same question for thousands of years, but when we look at the answers, we can see that the root question has changed even if it is expressed in the same words. The difference between Plato's response and Habermas's answer to the same question indicates the change in the object. For this reason, I will discuss some potential problems while also discussing what can be done with this information/knowledge. Moreover, it is aimed to discuss “information society”

analyzing its historical development, the emergence of digital humanities, and the philosophical meaning of the latter.

1.Introduction

Technology and society have always interacted with one another throughout history. This interaction between the two has led to some significant changes in the world. The development of new technology in society inaugurated the Agricultural Revolution, the Industrial Revolution, and the Information Revolution. The age we are in has led to radical changes in almost every area of modern life, thanks to the technology advancing with high speed. Thus, every new social structure brings with its new concepts, methods and viewpoints. For example, there are some concepts such as information society/age in the literature now. According to Frank Webster the information society can be defined as five major types of information: "technological, economic, occupational, spatial and cultural."[1] Information society has been praised by some thinkers such as Daniel Bell and Alvin Toffler; while others have been skeptical, like Herbert I. Schiller being one of them. The Information Revolution begun in the late 20th, and is the most recent revolution, it has emerged as a result of the development of information and communication technologies and drastically transformed society. For example, information became easier to access thanks to information and communication technologies. Production has become global as rapid communication routes such as television, radio, fax and e-mail have broken borders between established cultural communities.

For Frank Webster, there is one more definition of information society that not expressed much by many scholars:

[1] Frank Webster, *Theories of the Information Society.* (Hoboken: Taylor & Francis, 2007), p.8-9.

> The character of information is such as to have transformed how we live. The suggestion here is that theoretical knowledge/information is at the core of how we conduct ourselves these days...I find it the most persuasive argument for the appropriateness of the information society label.[2]

One may ask what the meaning of information was before, or in which ways the information was obtained; for example, there were certain ways to get the information such as books and articles. Therefore, to understand what makes the information society different from other social structures, it is essential to look at what gives the information society its characteristics. After review, it is apparent that the information is in fact dominant in this social structure:

> Information technology now described the expected convergence of the computing, media, and telecommunications industries (and their technologies), understood within the broader context of a wave of enthusiasm for the computer revolution, post-industrial society, information society, and other fashionable expressions of the belief that new electronic technologies were bringing a profound rupture with the past.[3]

Computers and internet are the basis of the information society. Thus, they enable an unprecedented electronic information storage and information flow. It is an indispensable resource in the process of dissemination of information for reasons such as its ability to reach millions of people at the same time, easiness, and cheapness to use. However, one reason why information is important seems to be that information became a commodity, now it is possible to buy or sell information like products:

> What is called the 'information society' is, in fact, the production, processing, and transmission of a very large amount of data about all sorts of matters – individual and national, social and commercial, economic and military. Most of the data are produced to meet very specific needs of super-corporations, national government bureaucracies, and the military establishments of the advanced industrial state.[4]

[2] Ibid., 9.
[3] Thomas Haigh, "The History of Information Technology," *Annual Review of Information Science and Technology* 45, no. 1 (2011): 431–87.
[4] Herbert Schiller, Who Knows*: Information in the Age of the Fortune 500*, (Norwood, NJ: Ablex. 1981), p.25.

The information sector provides significant gains. Those who make this payment are also in the countries that have not yet developed or are in the process of developing. These countries make up 78% of the world population.[5] In the information society, information is in a dominant position in all kinds of activities. In this case, the process of obtaining and disseminating information and communication technologies have a very important place to achieve this. In order to ensure mass distribution of information, information and communication technologies and the internet come to the fore. Information and communication technologies, as well as the internet, ensure that information reaches large audiences with very different qualities, located in different places, in a very short period of time, with little cost and without much effort though also, without either any guarantee of unique content or any control over dissemination. For example, there is such an abundance of information that can be found on websites it may be hard to contain quality control and accuracy.

It is clear that knowledge was commercial before the information age. An example of this is private institutions or the hiring of research teams. However, it seems that what is different now is the delivery and the kind of things that what can be done because of technology. Access to information is dominant in all areas of society. The information society is a multidimensional social phenomenon that describes the changes caused by the use of information in all technological, economic, socio-cultural, and political dimensions. Technology, especially information and communication technologies, is the main factor that mediates knowledge in the development of this social phenomenon.[6]

[5] UNESCO, 1997: p.1-3. http://www.unesco.org/new/en/communication-and-information/memory-of-the-world/register/access-by-year/1997/
[6] Luciano Floridi. A look into the future impact of ICT on our lives: *The information society*, 23.1 (2007): p.59-64.

One of the periods, in which knowledge is the basis for society, is the Enlightenment age. It is necessary to look at the situation in terms of epistemology to understand the meaning of the present context. Humankind has moved away from metaphysics, the ideas of wisdom, experimentation and positivism, in the present time. The twentieth century rose to this occasion by promoting technological developments on the one hand and criticizing it on the other. Today, it is possible to access more information than any time before and one may ask what to do with it. Applying calculation methods to understand knowledge; for example, is more than making traditional history with new tools. It brings new concepts to what the nature of knowledge is and how it changes, how it is produced, and how it relates to other social domains. In this respect, the concept of computational history becomes much more exciting and controversial at the same time. Thanks to computational humanities, it is clear that knowledge, or the nature of the history, has changed.

According to Anthony William, one-way knowledge has definitely changed:

> One-way knowledge is certainly changing is in the way it is represented…Writing however is important because it provides a permanent record of knowledge. The printing press was important because it enabled the written word to spread to many more people. Now we have other ways to record and transmit knowledge that can be studied and reflected upon, such as video, audio, animations, and graphics, and the Internet does expand enormously the speed and range by which these representations of knowledge can be transmitted.[7]

The Internet greatly expands the speed and range of some of the other methods previously stated. In this sense, there are some discussions about computational history and knowledge. The first is the improvement of the data. In other words, this raises questions such as what the data is and how to configure it. For example, sometimes, more complex data or tools are needed to set the data. Another one is whether scholars can determine some patterns of our understanding of

[7] Anthony William, "Is the Nature of Knowledge Changing? – Teaching in a Digital Age," accessed June 19, 2020, https://opentextbc.ca/teachinginadigitalage/chapter/section-2-4-does-technology-change-the-nature-of-knowledge/.

computational sciences. In this regard, some recent developments have been made in technological progress. If this happens, human being will have seen another good aspect of participating in technological progress.[8] Moreover, new professions such as knowledge workers have emerged with information technologies. Thomas Davenport identifies knowledge workers as people with top-level expertise, training and experience. The primary purpose of these people is to create, distribute and apply information.[9]

To understand the technology of our age, we have to look at its relationship with science and society. Today's technology is obtained as a result of systematic research. As George Parayil says, technology, which is the practice of science, requires a conscious and systematic work of production.[10] Thus, the priority and mastery of science is gradually increasing. In this sense, post-industrial society is evaluated as a society based on scientific knowledge. Today, it seems that information is more dominant than knowledge. Although information is a prerequisite for knowledge, the idea that more information will create a more knowledgeable society is not entirely correct. Factors such as education, consciousness, economics, and politics should be in harmony with each other for information to be transformed into knowledge and understood by individuals or societies. It is undeniable that new technologies enable some improvements in many fields.[11] Digital humanities is one of these fields.

[8] Manfred D. Laubichler, Jane Maienschein, and Jürgen Renn, "Computational History of Knowledge: Challenges and Opportunities | Isis: Vol 110, No 3," accessed June 19, 2020, https://www.journals.uchicago.edu/doi/full/10.1086/705544.
[9] Thomas Davenport, "Thinking for A Living: How to Get Better Performance and Results from Knowledge Workers," accessed June 19, 2020, https://www.researchgate.net/publication/248078273_Thinking_for_A_Living_How_to_Get_Better_Performance_and_Results_from_Knowledge_Workers.
[10] George Parayil, *Technological Knowledge and Technological Change*, Technology in science Vol 13, Pergamon press.1991: 290-91)
[11] Webster, *Theories of the Information Society.* P.23-24

When we look at the literature, we can see that information or information society has been a highly discussed topic. For example, as Antony William said, the way knowledge is being represented has changed. Webster also pointed out that more information doesn't mean that society has more knowledge. While it is claimed that the structure of information has changed, the question of what we will do with this information has not yet been answered. In other words, we can already access copious amounts of information and it seems, in time, even more will be available. For this reason, the purpose of this dissertation is to discuss some potential problems while also discussing what can be done with this information. Moreover, it is aimed to discuss information society analyzing its historical development, the emergence of digital humanities, and the philosophical meaning of the latter. For example, why some scholars resist seeing Digital Humanities this way and why some in humanities are threatened by it. What kind of relationship do we have with technology and why does the Digital Humanities provoke controversy? What type of knowledge can we get from digital humanities that would not be available otherwise?

2. Emergence of technology and development of information society

2.1 The Development of the Information Society

The term "communication age" was first used by Canadian communicator Marshall McLuhan in 1962. This is the same year that US economist Fritz Machlup also used the word "information society." Others believe the Japanese Yoneji Masuda first introduced the information society in his work called "The Information Society: As Post Industrial Society.[12] The higher utilization of the power of information in daily life and the use of information and communication technologies in the processing of data are the most determinant indicators of the information society. The identification of the information society with the invention of the computer, which is a technological product, was also one of the reasons why scholars defined it as a technology model or a society model transform.[13] "Networks," which allow for the transfer of all kinds of information such as text, sound, and image, are fundamentals elements of the information society. Besides, Frank Webster suggests that there is a linear relationship between economic modernization, information, and communication technologies in the new economy of the information society.[14] According to Jonny Ryan, the concept of the information society suggested initially (and perhaps still) "technological emphasis." Depending on the developments in communication and electronic technologies, the increase in the speed of production and

[12] Yoneji Masuda, The Information Society: *As Post Industrial Society* (World Future Society, 1981), p.3.
[13] Michael S. Mahoney, "The history of computing in the history of technology." *Annals of the History of Computing* 10, no. 2 (1988): 113. https://ieeexplore-ieee-org.ezproxy.lib.usf.edu/stamp/stamp.jsp?tp=&arnumber=4640427.
[14] Webster, *Theories of the Information Society*. P.77.

distribution of information and, more importantly, the fact that data has become a "commodity" (commercial goods) all helped to create the information society.[15]

In light of all this, information society can be described as a product of developments in information technology. This new form of a community can be referred to as "post-industrial society" or "post-capitalist society." As Hamid Mowlana says:

> It seems reasonable to claim not only that information technology is one among many new technologies but also that it has a revolutionary character if it enables discontinuity ("revolutionary leap") in economic development. However, this does not imply that it is possible to define in general (or even quantitatively) the extent of the development of productive forces (technology) needed for a radical change in production relations. This is especially because radical changes in production relations are not simply determined by technological changes; rather, they reflect the character of the productive forces (including enrichment of human labor power) that challenge the economic structure to respond to their developments with its own transformations.[16]

Therefore, the information society is not only technology. It has also developed as a phenomenon in which social and cultural factors play a role.

To gain a place in this process of change, human beings have attempted to dominate the technology by creating new resources and human communities. That values the information in a developing and changing social order and trains individuals who know how to use and produce reports and seek, classify, store, and evaluate the information in an appropriate environment.[17] Therefore, the information technology used to collect, process, organize, store, and transfer data from one place to another has become a strategic resource in these societies. Innovations in information and communication technologies have an essential impact on the development of the concept of globalization, affecting every field of economic and social life. This impact has

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[15]Johnny Ryann, *A History of the Internet and the Digital Future*. Reaction Books, 2010: 123. https://ebookcentral-proquest-com.ezproxy.lib.usf.edu/lib/usf/reader.action?docID=618772.

[16] Hamid Mowlana, Information Society and Civil Society*: Contemporary Perspectives on the Changing the World Orde*r, (Purdue University press, 1994), p.57.

[17] Mitchell Waldrop. The Dream Machine*: JCR Lickliter and the Revolution that Made Computing Personal*, (Stripe Press 2018), p.282-285.

caused a social transformation of all segments of society from various aspects and had profoundly influenced approaches to public administration, business procedures, and individual lives. These technologies, which have already left their mark on the twenty-first century, are preparing the ground for a new social change, the formation of the information society.[18]

While scholars speak of the information society, they constantly emphasize the industrial revolution. The reason for this emphasis is due to the social or cultural structure changes during this time/time period. However, it is also evident that the seventeenth century and later changes are more than just the invention of the steam engine. For example, the printing press and telegram had great effects on this period as the result of the Enlightenment period. Therefore, first of all, the fact that we talk about the industrial revolution has an important position for understanding the information society.

Marshall McLuhan was the first to emphasize the importance of information and communication tools. According to McLuhan:

> "The medium is the message" quite naturally. Before the electric speed and total field, it was not obvious that the medium is the message. The message, it seemed, was the "content," as people used to ask what a painting was about. Yet they never thought to ask what a melody was about, nor what a house or a dress was *about*. In such matters, people retained some sense of the whole pattern, of form and function as a unity.[19]

McLuhan claims that the tool was the message itself. The tool is the actual content, and the tool shapes the message. In other words, the tool is the mirror of the message; the nature of the tool determines the quality of the message transmitted. The content is decisive, not the path of the message. For example, according to an example given by Marshall McLuhan himself, the use of light for brain surgery or nighttime baseball match is not essential. Since they cannot exist

[18] Giovanni Schiuma and Daniela Carlucci, "Big Data in the Arts and Humanities," *Theory and Practice*, n.d., 246.
[19] Marshall McLuhan, *The Medium is the Message*, (Gingko press, 2004), p.301.

without electric light, the content of electric light can be assumed to be somehow in these activities. Despite this technological determinism of the vehicle regarding McLuhan, the following word means that he approves the idea that there is a mutual interaction process between people or society and vehicles. We shape our tools, and in turn, they shape us.[20] This view of McLuhan, which is compatible with the idea that information technologies also shape the information society while producing the information tools of the community.

What best describes McLuhan's view that we shape our tools? He evaluates mass media in two categories as hot and cold. According to McLuhan, hot tools convey information, ultimately as vehicles with low audience participation. Cold tools, where audience participation is more substantial, are the tools that the missing elements in information transmission must complete in the mind of the viewer. In other words, the tools produced shape according to the scientific and technological knowledge of the society. In line with the expectations of the system and are shaped by culture.

On the other hand, the tools developed by the community can cause significant changes in the social structure with the technological innovations it carries. Likewise, the subject of the transformation of the communication revolution started with the use of the printing house in the Gutenberg Galaxy into the "electronic revolution" in the twentieth century.[21] McLuhan claims that the printing revolution that started with Gutenberg, which saw the industrial revolution as a predecessor, individualized reading. In the study of The Global Village, he mentioned that mass media would spread rapidly to society and turn the world into a global village. Also, the author believes that electronic media will reunify humanity. Due to the development of social networks in the internet age, it has allowed electronic media to be sent instantly across the world. Also, in

[20] Ibid.,203-4.
[21] https://www.Medyakronik.net.

his famous work "The Mechanical Bride," McLuhan discussed the impact of the Industrial Revolution on people and the influence of modern man on advertising, printing, and visual media products. Moreover, McLuhan explained that the printing press only provides men with freedom in visible consumption-oriented societies and how technological tools shape us through striking analysis.[22]

Daniel Bell, who made outstanding contributions to the post-industrial social theory, interacted between technological tools and the post-industrial society structure in his works Cultural Contradictions of Capitalism [1978]) and (The Coming of Post-Industrial Society: A Venture in Social Forecasting [1973]). It includes a striking analysis of the changes created by the process. The idea of trans-industrial society, as formulated by Daniel Bell, consists of three stages, the transition from traditional to industrial society and now to the trans-industrial organization. What distinguishes each step from the other is the mode of production which is a typical Marxist interpretation. The means of production, which are the main factors that determine the manufacture style, also vary between traditional, industrial society, and post-industrial society. For example, according to the determination of Bell, the infrastructure of the trans-industrial society consists of communication networks including cable, broadband, digital television, optical fiber network, fax, e-mail, ISDN.

In contrast, the infrastructure of an industrial society are transportation networks such as ports, railways, highways, and airports. Information is the source of innovation that creates value-added, increasing returns to scale and saves capital in the next substitution.[23] Although the means of production differ, there is a definite similarity between industrial society and the post-

[22] McLuhan, *The Medium is the Message*. P.204.
[23] Daniel Bell, The Coming of Post-Industrial Society: *A Venture in Social Forecasting*, (New York: Basic Books. 1999), xvii.

industrial society. This similarity between two is the change that the means of production caused in the social structure. This is also related to the transformation of an industrial society to one dominated by the creation of financial products, and a service economy.

The pre-industrial society is an information society in a sense. Scholars acquire innovation resources from research and development. That is, there is only a new relationship between science and technology due to the central location of new type of knowledge. This factor is indicative of being an information society.[24] Therefore, Bell claims that information societies moved from a structure that require less information to a more knowledge-based structure and from the production of goods to the creation of services in the economic field. Also, manual labor lost value, and professionals and technical workers gained importance. At the same time, he argues that theoretical knowledge took a central place in forming a source of politics and innovation instead of ownership. As well as developing towards a technology base and new forms of decision making in which intellectuals were active. Moreover, according to Bell, the pre-industrial society design is game between persons, which rises alongside machine technology and is based on information.[25] Therefore, the information society is in the axis of the mutual relationship between this smart technology and human communities. For Daniel Bell, the information society is like a separate period from the industrial revolution. However, this radicalization for Anthony Giddens is a modernity. In this sense, for Giddens, we cannot define today's society as an information society, because from the modern society there is actually an information society. Therefore, there is no transition to a new social period for Giddens, as Bell claimed. Daniel Headrick also continues this view later.

[24] Ibid.,212.
[25] Ibid.,116.

Alvin Toffler, an information society theorist, made very interesting analyzes on the construction of the information society in his famous work, *The Third Wave*. According to Toffler, humans have undergone two significant waves of change, each of which has dramatically destroyed previous cultures and civilizations and replaced the previous lifestyle. It took thousands of years for the First Wave of Change - the Agricultural Revolution - to take place. The Second Wave - the birth of the Industrial Revolution - only took three centuries. Today, the Third Wave, which is faster and will complete itself in a few decades, is likely to drag history from one side to the other. This most recent historical landmark has been reached in the United States in the decades since 1955. Of course, the 1950s was the decade that the Third Wave began to accumulate in America. The third wave emerged, with small time differences, in other industrialized countries, including Britain, France, Sweden, Germany, the Soviet Union, and Japan. Toffler emphasizes that the beginning of the third wave began in the 1980s, mentioning that all high-tech nations are stumbling between the third wave and the outdated and ossified economies and institutions of the second wave.[26]

In the Third Wave, according to Toffler, cheap mini-computers are about to invade American homes. Computers connected to banks, shops, government offices, neighboring homes, and businesses tented to reshape not only production and sales but also the nature of work and even the family structure. According to Toffler, today we are talking about a dead, yet intelligent environment around us, because we are building a new info-sphere for Third Wave civilization. The key to this revolutionary progress is undoubtedly the computer. A machine combination that describes the process between electronic memory and data storage, and was the subject of scientific curiosity in the early 1950s. In the half-decade between 1955 and 1960, the

[26] Alvin Toffler, *The Third Way*, (New York: Bantam Books. 1980), p. 13.

Third Wave began to slowly enter the business world when the wave began to spread across the United States. All the technological developments representing the Third Wave, especially computers, created the "intelligent environment," and the intelligent environment started to change not only our way of analyzing problems and integrating information but even our brain chemistry.[27]

These technologies have caused substantial changes in economic and social structures as well as the way of using information. For example, according to the Toffler, when a secretary has the necessary tools in the economic structure, this secretary has a new "Home Computer Programming" system from which she can perform her current duties from home and office. Inspired by the Guardian Newspaper's "cottage industry of the 1980s", Toffler called this development the "electronic cottage - the small cottage."[28] According to Toffler, if the "electronic club" becomes widespread, the chain of consequences that is of great importance spreads to the whole society. If employees carry out some or all job responsibilities at home, they will not even have to act to change the job most of them are obliged to do today; they will easily plug a different computer into a socket. Also, Toffler specifically addresses the family institution among many changes in the social structure. According to that, The Second Wave meant the end of the extended family. The Third Wave implies that the nuclear family will no longer serve this ideal society model. In this new type of society, there is a solo or single population living alone except a family.[29] According to this, information societies are depicted as isolated societies where family ties are relatively weakened by living in electronic or virtual environments.

[27] Ibid.,168.
[28] Ibid.,175.
[29] Ibid.,199.

According to Toffler, in the process of transition to the information society, we force people to adopt a new pace of life, face new situations, and specialize in shorter intervals. We force them to choose from quickly multiplied options. In other words, we force them to process information at a much faster pace than necessary in a society that evolves at a slower pace. There may be little doubt that we have been exposed at least to excessive arousal. Toffler discusses what consequences this can have for the mental health of people living in techno-societies.[30] For Toffler, technology is not the only source of change in society. According to Toffler, the confusion in the organization of a society can be initiated by many factors, such as changes in the chemical composition of the atmosphere, climate, and inefficiency. However, technology is an immense force behind the urge that undeniably accelerates change.

Although there are two different approaches that technical advances are either an independent variable that directly affects social order and social change, or that it is a factor that provides social change more indirectly due to economic development and growth. It is a generally accepted view that events have a significant impact on social change. Therefore, it is not possible to evaluate and understand the development process of the information society by isolating or independently from information and communication technologies. Manuel Castells understands the information technology revolution as the starting point in the complex analysis of the new economy, society, and culture due to its spreading to all areas of human activity:

> I contend that around the end of the second millennium of the common era a number of major social, technological, economic, and cultural transformations came together to give rise to a new form of society, the network society…[31]

[30] Alvin Toffler, *Future Shock*, (New York: Bantam Books, 1970), p.182.
[31] Manuel Castells, *The Rise of Network Society*, (Wiley-Blackwell, A John Wiley & Sons, Ltd., Publication, 2010): Xviii.
https://ebookcentral-proquest-com.ezproxy.lib.usf.edu/lib/usf/reader.action?docID=470450

Castells also says that the new social forms and processes do not mean that they only emerged as a result of technological change. According to him, undoubtedly, technology does not determine society. In society, many factors, including creativity and entrepreneurship of the individual emerging in the process of scientific discovery, technological innovation, and social practices, intervene. The latest output depends on an intricate pattern of interaction, so it cannot trace the technological change. The contradiction of technological determinism is without technology society; society is also a possible artificial problem since it is incomprehensible and unrepresentative without its technological tools.[32]

However, if society does not embrace technology, it may stifle its development mainly through the state, or it may attempt rapid technological modernization to change the fate of the economy, military power, and social welfare within a few years primarily through government intervention. The ability and inadequacy of societies to technology largely shape the destinies of technologies that are strategically decision-making in every historical period. While technology does not determine historical evolution and social change on its own, technology (or its deficiency) determines the capacity of societies to transform themselves as well as their decision to reveal the technological potential of communities in an always different process.[33] These findings of Castells confirm that the interaction process between society and information technologies is more effective than the foundation of information technology.

It is also necessary to mention the views that describe the information and information technologies. These views play an essential role in the transition to the information society, as the means of production of the new order. For example, Peter Drucker, in his post-Capitalist society, with the new process, the means of production are no longer the land of the agricultural

[32] Ibid.,5.
[33] Ibid.,7.

community or the capital of the industrial society; stated that the new production tool is information. According to Drucker, the surplus-value does not arise with labor and capital, and by applying the information to knowledge, "efficiency" and "innovation" emerge. Therefore, the main actor in this new process is the "knowledge worker." This is a new class that dominates this order. Drucker mentions that information managers will be the ones who can use information efficiently and who possess both production facilities and production tools. Based on this, the main economic problem of the new process will be the knowledge worker and the efficiency of the information work.[34]

Nevertheless, another approach came from the Industrial Revolution with the economic transformation of the industrial community. According to some historians like Eric Hobsbawm, the industrial revolution created a new society, and, as it was discussed above, the information society is another stage of the industrial society. Manufactures produced in factories are no longer the central issues in the information society, as it was in the industrial community. Information societies help industrial organizations to develop new industries, making these machines necessary machine tools. Then, they hold the information needed for the operation of these machines, and they offer this information gradually and in pieces. According to this approach, if information societies help industrialize other cultures, this can still be accepted as an indication that they also need industrialization. In a sense, the information society and industrial societies are interconnected and complementary structures.[35] That is, the information society is a different kind of society that helps the development of the industrialization in terms of information and technology.

[34] Peter F. Drucker, *Post Capitalist Society*, (Oxford, 1993), p.18.
[35] Thomas J. Misa, *Leonardo to the Internet: Technology & Culture from the Renaissance to the Present*, 2nd ed, Johns Hopkins Studies in the History of Technology (Baltimore [Md.]: Johns Hopkins University Press, 2011). P.81.

Likewise, as Daniel Headrick said, the information age cannot start with the this or that event, people always need and use the information. The revolution we are experiencing now is the result of cultural change that started three centuries ago. People have lived in an information age without realizing it.[36] However, there is no definite limit on the transition from the Industrial Age to the information society. The change is to a community that has made information a commodity, something that the public can accumulate and sell. This situation is different from a time when people gathered data to learn something. Today, a human being can collect data to produce knowledge that responds directly to some intentions, and it is not just there.[37]

2.2 History of technology: Computer Age and the Internet

Although the invention of computers dates back to the 1880s, the entry of personal computers into our lives isn't until the 1970s. Computers are one of the important tools in the creation of information technologies:

> The computer has played the central role in that transformation, both accommodating and encouraging ever broader views of information and of how it can be transformed and communicated over time and space.[38]

Thanks to computers, we can store copious amounts of the requested information as well as being able to process and produce new knowledge.[39] The invention of mobile devices has brought a new dimension to the communication or communication sector. Due to the technological advancements made in computers, the capabilities have improved tremendously.

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[36] Daniel Headrick, When Information Come of Age*: Technologies of Knowledge in the age of reason and revolution 1700-1850*, 2002, p.241

[37] Jane Gilbert, Catching the Knowledge Wave: *The Knowledge Society and the Future of Education* (Wellington, NZ: New Zealand Council for Educational Research, 2005), p.35-39.

[38]Mahoney, *The history of computing in the history of technology*. P.117.

[39] Nathan Ensmenger, "The digital construction of technology: Rethinking the history of computers in society." *Technology and Culture* 53, no. 4 (2012): 756.

For example, being able to access online databases, social networks, and being able to provide data transfer. This transformation surpasses the purpose of communication of mobile devices into a pocket computer that can perform many functions. It has created a revolution in the field of informatics. Besides the production and processing all kinds of information and data, the developments in the field of transfer show that the advances in information technologies have reached unbelievable points.[40] Mobile devices, which have become an indispensable part of the internet in our daily life, are the most growing part of information and communication technologies. Increased knowledge and economic activities needing more information lead to the development of different telecommunication systems and their use together from time to time.[41]

In parallel with the striking developments in the information and communication tools, the events in the software and programming languages of these tools have become the symbol of the information age societies. For example, while the smallest building block representing the industrial society is atom, that of the information society is the "byte," which determines the size of the assets in a digital environment. Archives, concrete documents, and books have been replaced by the information society, virtual data, and images. At the same time, paper and pen are the tools for information entry and transfer. They have become the means of data society and key data entry.[42]

Information technologies and social structure interaction have caused significant changes in economic and social structures as well as the way of using information. The current knowledge in societies has a structure suitable for lifestyle, perception, and interpretation. It provides the basis for the research that assumes that the information society is a structural

[40] Ibid., p.766.
[41] Misa, *Leonardo to the Internet*. P.279.
[42] Ibid., p.16-18.

transformation process based on the interaction of social, information, and communication technologies. The idea that develops in the field of information technologies originates at the beginning of a new era and the establishment that a new type of society is generally accepted. The age that started with the development of information and communication technologies, and the information age developing community is also called information collection. These phenomena are considered to be related to each other because of the enormous information produced by technological advances in informatics. This situation creates an information society that is used extensively in all areas of social life. The arrival of the information society as a concept coincides with the period after the Second World War. Scholars interpret the emergence of new communication (information) technologies as a relationship between the rise of the information society.[43] The interrelated and simultaneous developments of the information society and information and communication technologies do not provide sufficient evidence to say that these technologies are the only factor that creates the information society. It allows us to say that it is a useful tool to explain this type of community.

One of the highly functional theoretical tools used in explaining the information society is the industrial society typology. Experts have developed the information society model on the relationship between technology and social structure and tried to make it concrete by comparing the information society and its industrial organization.[44] Likewise, as Hans Freyer said, every social structure creates a structure parallel to the knowledge of the period in which it lived. The information available in societies is suitable for lifestyle, perception, and interpretation. Indeed, the information society has evolved in the process in which the knowledge produced in the

[43] Alistair Black, "Information History," *Annual Review of Information Science and Technology* 40, no. 1 (September 28, 2007): 441–73, https://doi.org/10.1002/aris.1440400118.
[44] Misa, *Leonardo to the Internet*. P.13.

information age gained effectiveness in all areas of the social structure. Also, thus the information technologies mediated the transformation of the social fabric. Therefore, the thought in question is considered necessary because it constitutes the basis of the research that assumes that the information society is a structural transformation process based on the interaction of the community with information and communication technologies.[45]

In the transition to the information society, the incredible developments in information technologies have made the world a small village by bringing people and communities closer together. Thanks to the inexpensiveness in information technology and the introduction of personal computers in the early 1980s, people now have the opportunity to access more information than before. Internet technology, which enables millions of computers in the world to connect to a network, provides access to information and information banks to a large extent. A person who connected to the internet from anywhere in the world has the opportunity to access the bank account from any place.[46] Thus, information societies can ensure the structural transformation or reconstruction of the community by taking advantage of the technical benefits provided by information technologies.

On the other hand, it gives the opportunity and resources to produce information with the scientific knowledge it has gained in the field of information and technology. Information technologies, which closely follow new developments in the information society and feel compulsory to create innovations to meet the needs of this continually developing and advancing the organization. While continuing their advances in the technological field as part of the process of mutual interaction.[47] The importance of information and communication technologies in the

[45] Hans Freyer, Sosyolojiye Giris, (Ankara yayinlari, 1963), p.98.
[46] Michael R. Williams, *A history of Computing Technology*. (IEEE Computer Society Press, 1997), p.144.
[47] Ibid., p.55.

management of information has increased exponentially with the development of internet technology. Due to expanding the use of the internet and the added value obtained (knowledge, trade, marketing, promotion, telecommunication traffic), the internet has become the primary target of many countries in information and communication technologies. Many countries are proactively working on this issue. Even though the carrier of the internet constitutes a big market, the goods and services offered through the internet promise a significant share of global capitalist capital. It requires a say in the field of informatics to gain power and profit in the economy-political field. Undoubtedly, the lion's share from this economy falls to Western European Countries, America, and Japan, which are the producers of information technologies. The knowledge and equipment required for the production, use, and renewal of the mentioned technologies make the whole world dependent on these countries in the struggle for power.[48]

The industrial and technological era made important modifications to the ways in which connect information and knowledge. Thus, the transition from the dominance of knowledge to the dominance of information took place. Also, thanks to new technologies, the ways of obtaining information have changed and these changes have paved the way for the emergence of digital humanities.

[48]Brian Winston, Media, Technology and Society: A History: From the Telegraph to the Internet. London: Routledge, 1998.
http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=nlebk&AN=503975&site=eds-live.

3. The Digital Humanities Revolution

3.1 The History of Digital Humanities

Today, it is possible to find a lot of definitions related to Digital humanities. One of the most common definitions is the application of computer technologies to human sciences.[49] The other one is an umbrella term that provides a wide range of applications for the creation, implementation, and interpretation of digital technologies.[50] Edward Ayers states that since the mid-1990s, the rare collections of memory institutions, which have been exposed to access restrictions for various reasons for many years, have begun to open up to a broader audience with the help of computer technologies.[51]

Many studies have taken place about the subject of the development of digital humanities, along with the first departments and laboratories established within the fields.[52] Patrik Svensson begins to explain the emergence of digital humanities by evaluating the relationship between the social sciences and computer sciences. Svensson also analyzes the prominent studies of the field and the problems that arise based on these studies. In the Hidden Histories project, interviews were conducted and recorded with essential names in the area (Willard McCarty, Geoffrey Rockwell, Harold Short, Ray Siemens, John Unsworth). In the

[49] "Life in the Network: The Coming Age of Computational Social Science," accessed June 19, 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2745217/.
[50] Willard McCarty, Humanities Computing: *The promise of digital humanities*, (A whitepaper, 2005). http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.024767234&site=eds-live.
[51] Edward L Ayers, "The Pasts and Futures of Digital History," n.d., 6.
[52] Cathy N. Davidson "'Chapter 28: Humanities 2.0: Promise, Perils, Predictions,' in 'Debates in the Digital Humanities' on Manifold," accessed June 19, 2020, https://dhdebates.gc.cuny.edu/read/untitled-88c11800-9446-469b-a3be-3fdb36bfbd1e/section/c6fc3cc1-5751-4c6b-aac5-b9890206930f.

study, they aim to reveal the unrecorded oral history related to the emergence of the field of digital humanities between 1949-1980. The bibliography includes studies carried out using information technologies produced since 1960.[53]

Initially, scholars saw this field as a supportive tool for humanities,[54] since then we have seen it evolve into a discipline that requires its standards, theoretical explanations, and intellectual effort in its applications.[55] As studies increase, scholars no longer see the field of digital humanities as a tool, but the main goal in performing these studies is part of the element.[56] In digital humanities studies, the first wave of the Digital Humanities focused on the presence of quantitative studies. In this period, which coincided with the 1990s and early 2000s, there are studies for the establishment of a technological infrastructure with a wide range of digitalization projects. The pioneering work of the field is Roberto Busa's work on Index Thomisticus, the medieval cleric Thomas Aquinas, in the 1940s.[57] Following this work, Antonio Zampolli used computer technologies in his literary and language studies in the 1960s. During the first wave, cultural memory institutions tended to transfer their collections to digital use. They made them available for multiple purposes (American Memory Project, Canada Digital Heritage Conservation project, etc.). For example, With the opening of different editions of original

[53] Patrik Svensson, Introducing the Digital Humanities." In Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital, 1-35. ANN ARBOR: University of Michigan Press, 2016. Accessed June 20, 2020. www.jstor.org/stable/j.ctv65sx0t.5.

[54] Willard McCarty, "Attending from and Attending to the Digital from Humanist Discussion Group (by Way of Willard McCarty on 2006-02-01 (Humanist Archives Vol. 19)," accessed June 19, 2020, https://dhhumanist.org/Archives/Virginia/v19/0573.html.

[55] N. Katherine Hayles, *How We Think: Digital Media and Contemporary Techno genesis* (Chicago; London: The University of Chicago Press, 2012). P.42-66.

[56] David M. Berry, and Fagerjord, Anders. Digital Humanities: *Knowledge and Critique in a Digital Age.* Oxford: Polity Press, 2017. Accessed June 19, 2020. ProQuest E-book Central. https://ebookcentral.proquest.com/lib/usf/detail.action?docID=4875256

[57] Roberto Busa, "The annals of humanities computing: The index thomisticus." *Computers and the Humanities* (1980).

manuscripts to electronic media, applications such as databases and linguistics automation have been developed.[58]

There is a more qualitative approach in the second wave. This approach has helped make texts easier to analyze to infer. Productive and interactive studies, such as explanation and grading, are seen. Integration (combining) of digital tools into the core methodology of human sciences have taken place within this period.[59] Within the first wave comes the completion of narrow studies such as coding, text analysis, and scientific publishing. In the second wave, there has been progress towards a paradigm of digital humanities as a discipline. They created literature on issues such as convergence with other disciplines. In this period, studies using new and unified methodologies are remarkable.[60]

> Indeed, I think that we need to further explore both first and second wave digital humanities, but also start to map out a tentative path for a third wave of digital humanities, concentrated focus around the underlying computationality of the forms held within a computational medium (I call this the computational turn in the Arts and Humanities, see Berry 2011). That is, looking at the digital component of digital humanities in light of its medium specificity, as a way of thinking about how media changes produce epistemic ones… we could say that third-wave digital humanities points the way in which digital technology highlights the anomalies generated in a humanities research project and which leads to a questioning of the assumptions implicit in such research, e.g. close reading, canon formation, periodization, liberal humanism, etc. We are, as Presner (2010: 10) argues, 'at the beginning of a shift in standards governing permissible problems, concepts, and explanations, and also in the midst of a transformation of the institutional and conceptual conditions of possibility for the generation, transmission, accessibility, and preservation of knowledge.'[61]

[58] David M. Berry, "The Computational Turn: Thinking About the Digital Humanities," Sussex research online, 2011, 23. https://sro.sussex.ac.uk/id/eprint/49813/1/BERRY_2011-THE_COMPUTATIONAL_TURN-_THINKING_ABOUT_THE_DIGITAL_HUMANITIES.pdf
[59] Berry, *Digital Humanities. P.75.*
[60] Ibid.,79.
[61] "Digital Humanities: First, Second and Third Wave," accessed June 19, 2020, http://stunlaw.blogspot.com/2011/01/digital-humanities-first-second-and.html.

Today, this field, which is increasing its effectiveness gradually, offers a full spectrum both in terms of application and the area it affects (such as geographic visualization, three-dimensional modeling, development of theoretical access to digital culture objects).[62] The usage of digital collections and crowdsourcing applications played a significant role in the studies carried out with the realization of Web 2.0 technology. For example, in the digitization of the Venice archive project, the area of access to past information expanded by making use of information technologies along with scanning. With the crowdsourcing of the material, the animation of the city of Venice in history has been revived. In another study, using documents, maps, and photographs from English archives, visualized the historical Pudding Street, seen as the beginning of the great London fire in the 17th century.[63] There are many institutions and organizations in the world that support the studies carried out in this field and enable these studies.

On threshold between humanities and social sciences is also the work of digital archaeologists, whose work aims to explain and analyze ancient material culture via 3D digitization and visualization and via virtual simulation of cultural heritage sites, for the purpose of heritage preservation and information dissemination.[64]

3.2 The Digital Age

[62] Lisa Spiro, "Getting Started in Digital Humanities Journal of Digital Humanities," accessed June 19, 2020, http://journalofdigitalhumanities.org/1-1/getting-started-in-digital-humanities-by-lisa-spiro/.
[63] Joe Dempsey et al., "Pudding Lane: Recreating seventeenth-century London." *Journal of Digital Humanities*, 2014: 9-17. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=mzh&AN=2018287125&site=eds-live.
[64] Davide Tanasi, "The Digital (within) Archaeology. Analysis of a Phenomenon," in The Historian 82.1, pp. 22-36. accessed June 19, 2020, https://www.tandfonline.com/action/cookieAbsent

Discussions on what the industrial society will evolve to in the future started in the late 1950s.[65] Initially, this period was called the Post-Industrial Age.[66] It is also known by various names such as Information Society/Age, Internet Society/Age, Electronic Age, Cyber Society/Age, Digital Age, Post-Industrial Age, Post-Modern Age, and New Age. After the use of the Internet became widespread in the 1980s and finally fully released in 1995, the post-industry term was replaced by the word information.[67]

The possibilities offered by computer technologies in recent years have significantly affected humanities and studies in the field of literature. Computer aided analysis methods have revealed studies that are out of reach of human power. Visual outputs such as tables, graphs, charts, and mapped data continue to change the movement of literary criticism. Also, visualization opportunities developed in the literary field have reopened the concepts of text, author and reader:

> The importance of visualization has been widely recognized in many different fields, including medicine, genetics, physics, mathematics, and economics, as being a key component in knowledge discovery and interpretation. Its importance has been such that it is currently considered to be its own discipline and has several dedicated journals (*e.g., IEEE Visualization and Computer Graphics, Information Visualization, Computer and Visualization in Science*). Different forms of visual communication are used to make massive amounts of data readable, to illustrate the results of a model and make them more intelligible, and to render part of an argument visible by converting it into a "reasoning artifact"[68]

Therefore, what does digital period or culture mean? In its simplest use, it refers to a society that includes only telecommunications and information networks, electronic products, and

[65] Webster, *Theories of the Information Society*. P.30.
[66] Bell, *The Coming of Post-Industrial Society*. P.216.
[67] Castells, *The Rise of Network Society*. P.5.
[68] Marcos Llobera, "(Archaeological Visualization: Towards an Archaeological Information Science (AISc)," accessed June 19, 2020, https://www.researchgate.net/publication/225894361_Archaeological_Visualization_Towards_an_Archaeological_Information_Science_AISc.

computational systems based on binary data using electronic or electromagnetic signals.[69] In other words, the digital age is actually a kind of adaptation to new alternative technologies. We can observe from almost every discipline that researchers use the Internet and the Web in an interactive way. The digital era allows people to gather massive amounts of information and develop of new technologies that can be a commercial product. On the one hand this is a relationship that explains the interest in the development of new technologies, on the other hand thanks to these alternative technologies, the interdisciplinary boundaries began to become obscure. Digital Humanities emerged as a result of these developments with the introduction of computer technologies in traditional humanities.

Scholars have been working all over the world on apps to help us better understand the past by repeating the content on cultural sites. For example, thanks to new technologies, historians make interactive maps, and linguists use computer technologies to determine the patterns of words used in texts. Integrating traditional heritage management, museology, history, archeology, literature, and computer and communication technology tools, this field is called digital humanities. Studies in the field of digital humanities brings a new perspective to the humanities and social sciences and their main problems like the critique of subjectivity towards the humanities.[70]

However, when we look at any dictionary or search the internet today, we see that there is no consensus on the definition of digital humanities. In other words, digital humanities does not have a complete definition. One of the controversial issues is whether the history of information technologies/Digital humanities is a new field or not. Some scholars (Timothy Brennan) claim

[69] Lauren, Rabinovitz. "Memory Bytes: History, Technology, and Digital Culture," n.d.,2004: p.3.
[70] Matthew K. Gold, *Debates in Digital Humanities*, University of Minnesota Press. 2012. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.023595370&site=eds-live.

that it is not a new field, and it has only recently acquired a new name by using technological tools. Others (Eric Weiskott, Sarah Bond) argue that not only have technological tools changed, such as tablets or programmers, but they also offer a new perspective.

According to Melissa Terras, digital trends in the human sciences that were shaped by the discovery of the internet were not considered separately from traditional human sciences in the 60s.[71] In those years, computer-aided methods were used in fields such as music, visual arts, philosophy, sociology, linguistics, and literature outside of sciences. However, if sciences accept computer technologies only as a support tool to be used in their field of study, this prevents digital trends from developing as a separate discipline from other humanities. Terras includes different views supporting this approach:

> Alvarado (2011) argues that the term digital humanities is 'a social category, not an ontological one'. At the time of writing a common theme is whether one must programme or not in order to be a digital humanist. At one end of the spectrum is Stephen Ramsay, who wrote, 'If you are not making anything, you are not ... a digital humanist' (Ramsay, 2011a, further sketched out in his blog post featured in this volume). At the other end is Marc Sample (2011) who argues that, 'The digital humanities is not about building, it's about sharing'. Another important theme is the perceived lack of theory in digital humanities, which has been explored by, among others, Liu (2011) and Rockwell (2011). [72]

Lou Burnard begins these debates by defining what a scientific discipline is. For Burnard, a scientific discipline is best described as an institutionalized subdivision of the various activities that make up science. For him, science is nothing more than a social consensus, as Jean François Lyotard (1984) stated in his Postmodern Condition: A Rapport on Knowledge. Burnard describes these communities that have the authority to reach consensus in terms such as "team", "unity", "social network" and "interest-group". In other words, for Burnard, digital approaches in human

[71] Edward Vanhoutte, Julianne Nyhan, and Melissa M Terras, "Defining Digital Humanities," n.d., 2013, p.3. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=nlebk&AN=608888&site=ed
[72] Ibid., 5.

sciences are disciplines like other disciplines. It is interdisciplinary. It has methodological focus, is a social requirement and has historical foundations.[73] For this reason, it may be helpful to reveal the difference between the old method and the new method in order to better understand what digital humanities are.

According to Donna Haraway, besides the thesis and method determined in traditional studies, restrictive arrangements such as summary and result reduce and criticize critical text through cultural classification and hierarchy activities.[74] However, the data presented with interrelated mappings, charts, graphs and visual reforestation interchange with each other. Different disciplines, modes and opinions are intertwined on these outcomes. Here, the boundaries of different disciplines lose their apparent clarity, and the permeability between the borders reaches the highest level. Thus, the reader, researcher and critic of digital analysis methods become autonomous. It establishes connections with its own experience between data networks established with visual devices, without being guided by anyone and opinion. It creates new implications and establishes its own critical text. As a result of all of these, it seems that hierarchical relationships created by cultural conventions between students, researchers, readers, critics and writers lose their importance.

The speed, accuracy, unlimited memory usage, holistic visualization and instant access to all of these Thomas Rommel provided by computer technologies strengthen the methodological foundations of digital orientations in humanities. The fact that this area is a social necessity stems from the fact that computer technologies offer an environment that facilitates social life. In this framework, the widespread use of communication and being a part of daily life brought

[73] Lou Burnard "Is Humanities Computing an Academic Discipline? Or, Why Humanities Computing Matters," accessed June 19, 2020, https://iath.virginia.edu/hcs/burnard.html.
[74] Donna Jeanne Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991). P.17-19.

many changes. First of all, geographical limitations are eliminated with all kinds of visual, audio and linguistic communication. Then it provided instant access to scientific studies by scientists and researchers all over the world. Finally, other computer-assisted teaching activities, especially language teaching, emphasize that this field is a social need today. The contribution of computer technologies to other fields and the interaction between these branches of science has been the historical roots of this branch.[75]

There has been a renewal of traditional research methods thanks to digital humanities. Multiple attempts to produce, process, and store the data have been made for new methodical approaches. Finally, there is a transition from Web 1.0 technologies to Web 2.0 technologies to create the research infrastructure in digital humanities. Social humanities studies that develop with the use of Web 2.0 technologies contribute to the socialization of scientific information without time and space constraints by offering an interdisciplinary substructure. In other words, thanks to web 2, Hypertext, Wiki tools, crowdsourcing software, etc. It carries the computer technologies used in the first phase of digital humanities to the broad network culture around social sciences. Thanks to this crowdsourcing approach, in which third parties are also included in the process, many benefits in terms of both content and time are provided in the works performed. The crowdsourcing is the fulfillment of businesses and organizations that were once carried out only by their employees, by an undefined and broader network of people. It provides technical modernization in the application of this term used in the business and innovation sector. There are works on digital broadcasts and media over simultaneous networks[76]. The field

[75] Thomas Rommel, A Companion to Digital Humanities: *Literary Studies*, 2004: 88-95. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.034400348&site=eds-live.

[76]Tara McPherson, "Introduction: Media Studies and the Digital Humanities." Cinema Journal 48, no. 2 (2009): 121. doi:10.1353/cj.0.0077

of digital humanities is seeking ways to produce alternative information in terms of paradigm at this stage.

Today, digital humanities is defined as the application of digital technologies to social information. After review of these developments, is it possible to claim that digital humanities can show scholars what can be done with this endless information stock? Or this might be because of the indispensable side of digital humanities? It is essential to look at the historical evolution of digital humanities' tools before we question what changes digital humanities have brought to our lives, and what sorts of scrutiny they have caused.

3.3 Digital Humanities Tools

In parallel with the development in the computer and communication sector, tools for interpreting and understanding cultural heritage in the field of digital humanities are developing day by day. Although the use of these computer programs is not widespread among those still working in the field of human sciences, the usage rate is increasing daily. For the plans to appeal to more effective and broader users, it would be appropriate to measure user expectations frequently and update the programs accordingly.[77] Thanks to these developments, the primary purpose of which is to determine innovative approaches for humanities studies, researchers, and students, while providing the public with more profound and more sophisticated access to cultural assets. The presentation and interaction of the materials used enrich with this perspective, which also brings innovative approaches to the field of education.[78]

[77] Fred Gibbs and Trevor Qwens, "Digital Humanities Quarterly: Building Better Digital Humanities Tools: Toward Broader Audiences and User-Centered Designs," Volume 6 Number 2. 2012. accessed June 19, 2020, http://www.digitalhumanities.org/dhq/vol/6/2/000136/000136.html.
[78] Bernie Frischer, "Summit on digital tools for the humanities: Report on summit accomplishments." *Charlottesville, VA* 23 (2006): p.6.

There are many programs developed in the application of human sciences, dedicated to such things as interpretation (grading) and visualization of content, collaborative approach and display of crowdsourcing, time and space uncertainty, formal analysis and determination of authors, electronic publishing, and text analysis. For example, scholars often use programs such as Word Seer, Textile, Voyant, Computer-Aided Text Markup and Analysis, Word Map for text analysis, data mining, text coding, and visualization. Studio, Juxta, etc. are commonly used to understand the text better. Omeka, which can be used for internet publishing and storytelling and is one of the most frequently used digital humanities tools. It assists with the development of methods such as collaborative reading, writing style, and content information, as well as practices for determining the author, relations of words in the text with text, extracting statistics The Text Analysis Portal for Research, Textile, Voyant, Word seer, etc. There are also utilities for semantic grading of digital images that provide more accurate results in terms of access like Digital Research Tools that offers a handy list of digital research tools.[79]

Experts also strive to meet various research and methodological needs and to make existing programs more comfortable. The purpose of one of these projects, the Document Image Digitization with Interactive Description Capability project, is to develop new tools to analyze historical documents and to manage them. In this project, the development of tools used for classification based on the shape and content features took place during the digitization of historical documents.[80]

The library is one of the institutions that brings knowledge or the production of information socially. The library/archive is a social institution that finds, registers, organizes and

[79] Lei Xu, "Semantic Description of Cultural Digital Images: Using a Hierarchical Model and Controlled Vocabulary," 5/6, 21 (June 2015), http://www.dlib.org/dlib/may15/xu/05xu.html.
[80] Project DIGIDOC, 2016. http://digidoc.labri.fr/

presents information to produce information. Therefore, the library is an institution that brings social quality to information and plays a role in the social construction of reality. Libraries are an institution created by the society that transmits and mediates information about reality, and since it is a social institution, it has a function in the social construction of reality.

3.4 The Function of Digital Humanities in Libraries

The possibilities and digitalization provided by the web environment have caused changes in every field. Developments such as the spread of search engines in information access and the integration of library services into academic publishing platforms have pushed libraries into innovations in the information processing process.[81] UCF is an example of a digital library where people can find and search through digital archives, blogs, and images. These sources consist of many examples showing that the research nature that came with the digital humanities has changed.[82]

However, digital preservation activities started to become a problem for libraries over time. Later, Digital Curation Center (DCC, 2004-2015) was established in the UK with the introduction of the "data deluge" and "Continuing Access and Digital Preservation Strategy". The Digital Curation Curriculum (DigCCurr, 2006-2009) project emerged in the USA and tried to expand the definition of DCC:

> Our cultural heritage, modern scientific knowledge, and everyday commerce and government depend upon the preservation of reliable and authentic electronic records and digital objects. While digital data holds the promise of ubiquitous access, the inherent fragility and evanescence of media and files, the rapid obsolescence of software and hardware, the need for well-constructed file systems and metadata, and the intricacies of intellectual property rights place all of these materials at risk and offer little hope of

[81] Isabel Galina Russell, "The role of libraries in Digital Humanities" July 1, 2011. http://conference.ifla.org/ifla77

[82] For more info: https://guides.ucf.edu/DH

> longevity for information that is not intentionally preserved. A decade of work in digital preservation and access has resulted in an emerging and complex life-cycle constellation of strategies, technological approaches, and activities now termed "digital curation."[83]

Digital curation means more than data protection and digital archives. Digital objects are used by libraries and archives to convert large data sets in a short time. Nevertheless, it should be noted that many data and data protection processes are for static files. In other words, when complex data are concerned, digital curation is insufficient and needs to be improved.[84]

Digital humanities reflect the spirit of libraries. So much so that the essential functions and processes of libraries and digital humanities applications overlap. Applications such as the organization of information, data management, digitization and improvement, digital protection, the use of technology in communication and distribution, and the production of useful tools for scientific research are typical. Thanks to digital humanities applications, cultural assets are conveyed to computer masses both in a more precise manner and to a broader audience. The main functions of libraries are to provide access to users by organizing information. The primary purpose of both fields is the democratization of access to information[85].

On the other hand, collections of cultural memory constitute the primary sources of digital humanities. Rare works and resources in libraries, museums, and archives are the primary application data of this area. Cultural memory institutions are affected and concerned by the digital human science approach is due to the location of the source of the resources and institutions. Currently, this area affects many functions, especially for academic libraries, from

[83] Harvey, D. R., and Gillian Oliver. *Digital Curation*. Second edition. ALA Neal-Schuman, an imprint of the American Library Association, 2016:5 http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.036184228&site=eds-live.
[84] Ibid., 8.
[85] Ben Showers, "Does the library have a role to play in the digital humanities?" *JISC Digital Infrastructure Team* (2012).

relations with management and other units (institutes, faculties, departments) to the training of librarians. Another critical role offered by libraries is the reliability of resources provided to the general public. The expectation is to obtain an approximate result in the transfer of funds from one medium to another before the digital world. Today a copy of the original work can be transferred to digital media.[86]

In addition to preserving the current state of the work, many healing and sustainable practices can be made. Digitalizition, digital edition, digital archiving creation are the central works of digital humanities and libraries.[87] These enable studies to take advantage of digitized works with additional capabilities that differ from their physical originals. Creating analytical and annotation tools through the digital archive, artifacts allows academics to add content to digital files directly, create copies for long-term storage, in different resolutions. Scholars can extract specific information and combine with other digital versions and cultural assets without destroying the originality.[88]

Digitalizition and the widespread use of digital humanities applications in this context bring essential challenges regarding the source material, metadata, and access.[89] In addition to digitalization, the concept of digital protection has emerged. A digitized cultural asset can have a single resource or multiple resources located in different cultural memory institutions. Preserving all these versions and ensuring sustainability by creating provenance should be among the librarianship functions. Also, the use of an unnecessary digital medium outside of context and

[86] Craig Dietrich and Ashley Sanders, "On the Word, Digital" July 29, 2016, https://acrl.ala.org/dh/2016/07/29/on-the-word-digital/.
[87] Micah Vandegrift & Steward Varner, "Evolving in common: Creating mutually supportive relationships between libraries and the digital humanities." *Journal of Library Administration* 53.1 (2013): 68.
[88] Stewart Varner and Patricia Hswe, "Special Report: Digital Humanities in Libraries. A new American Libraries/Gale Cengage survey shows uncertainty and adaptation in this growing field." *American Libraries Magazine* 4 (2016): 16.
[89] Chris A. Sula. "Digital humanities and libraries: A conceptual model." *Journal of Library Administration* 53.1 (2013): 10-26.

meaning makes libraries' function at this point vital. At this point, libraries should prevent continuous and incorrect use of copies rotating around with practices that develop metadata and provenance principle.[90]

Applications in the field of digital human sciences not only supported the essential functions of librarianship but also extended the scope of these services. Librarians enable users to find new methods, take new approaches, and even create applications by using technology in their fields.[91] The new area, integrated with library services with the definition of digital librarianship, aims to provide support to users (students, faculty, staff, and researchers) to discover opportunities beyond digitalization with the help of computer technologies.[92]

In this context, many libraries around the world, especially academic libraries, have a digital humanities lab. Librarians with computer technologies in charge help users find the most suitable computer technologies for their collection and content needs.[93] Besides, the library provides support for computer-based projects that users want to create. This unit also includes support for the digitization and beyond work that libraries want to do on their collections. Digital humanities offer an easily implemented paradigm for librarians, and this paradigm is compatible with existing librarianship services. Librarians should not be a spectator to the inclusive and broad vision of digital humanities and should develop themselves in this direction.

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[90] Dietrich and Sanders, “On the Word, Digital”
[91] Alex Poole and Deborah Garwood, Natural allies": Librarians, archivists, and big data in international digital humanities project work." *Journal of Documentation* 74.4 (2018): 804-826.
[92] Sula. "Digital humanities and libraries” p.27.
[93] Molly Dahl Poremski, “Evaluating the Landscape of Digital Humanities Librarianship,” *College & Undergraduate Libraries,* 2017: 147. accessed June 19, 2020, https://www.researchgate.net/publication/317557091_Evaluating_the_landscape_of_digital_humanities_librarianship.

3.5 The Importance of Digital Humanities and Some Debates

As mentioned above, it is not possible to reveal the exact definition of digital humanities. One of the most current writers who say and criticize that digital humanities is not a new field is Timothy Brennan. One of the most important questions raised by Brennan is what has digital humanities accomplished. He concludes that something called digital humanities does not reveal anything new. According to Brennan, what digital humanities does provide a framework for lucrative technology deals in classrooms with the promise of extensive automation of teaching[94]. Michael Kramer criticizes the applications that use computer technologies on big data and texts with the approach of statistical and quantitative techniques.[95]

However, according to Eric Weiskott, Brennan's mistake is to mix digital in humanities with digital humanities. Brennan sees digital humanities as a program and, ultimately, an epistemology. Digital technology can help to uncover new ideas. The problem with the formulation of the digital humanities is that it equates a new institutional investment with a new form of knowledge. Institutional investments and types of expertise are related. Still, you can have one without the other, as an independent scholar or any director of a Center for Some New Combination of Disciplines will tell you. The real problem is winning technology deals (a new corporate investment), not digital technologies. Humanities provided intellectual logic in their "traditional form." That is to say, institutional errors or interests in structure do not indicate that digital humanities are a problem.[96] According to Sarah E. Bond, Hoyt Long, and Ted Underwood, Brennan is willing to admit that computers can help linguistic issues: for example,

[94] Timothy Brennan, The Digital Humanities Bust, *The Chronicle of Higher Education*, October 15, 2017, pp. 1-6.
[95] Gold, *Debates in Digital Humanities*, 2012.
[96] Eric Weiskott, There is No Such Thing as 'the Digital Humanities', *The Chronicle of Higher Education*, November 1, 2017, pp. 1-4.

"compiling compatibility" or "deciphering Maya stelae." But he denies the idea that they can help address fundamental questions about the humanities. Moreover, thanks to digital humanities, academics have learned to do more than just count a word. They now use words to build models that represent phenomena like genre, character, and literary judgment.[97]

[97] Sarah Bond, 'Digital' Is Not the Opposite of 'Humanities', *The Chronicle of Higher Education*, November 1, 2017, pp. 1-4.

4. Technology, Knowledge, and Information: a philosophical perspective

4.1 The Relationship among Technology, Knowledge, and Information

In technology philosophy, two basic approaches or two sub-branches are encountered. The first one is more of a "social" technology philosophy, which investigates the ongoing technology in terms of its social and political effects as the only approach for quite a while. The second is the technology itself, which is ontological and practically - what kind of a design, what kind of process it is subjected to, and it is mainly ethics and an analytical technology philosophy linked to decision making processes.[98] To sum it up roughly, the first tradition is directed at the effects of technology on people and society, while the second is directed at technology itself.

When it comes to technology, it seems important to consider Martin Heidegger's thoughts. While developing this idea of Heidegger, it can be argued that it has a purpose to grasp the essence of technology and reveal it rather than anti-mechanization. In this context, it can be suggested that Heidegger's "intertwined problem with technology (what is technology?) And human question (what is human?). Heidegger goes to a comparison within the framework of the technical view of the Ancient Greek period, namely the concept of "techne", in order to explain the technological thinking and modern technology:

> From earliest times until Plato the word techne is linked with the word episteme. Both words are names for knowing in the widest sense. They mean to be entirely at home in something, to understand and be expert in it. Such knowing provides an opening up. As an opening up it is a revealing. Aristotle, in a discussion of special importance (Nicomachean Ethics, Bk. VI, chaps. 3 and 4), distinguishes between episteme and techne and indeed with respect to what and how they reveal. Techne is a mode of

[98] "Philosophy of Technology (Stanford Encyclopedia of Philosophy/Fall 2018 Edition)," accessed June 19, 2020, https://plato.stanford.edu/archives/fall2018/entries/technology/.

> aletheuein. It reveals whatever does not bring itself forth and does not yet lie here before us, whatever can look and turn out now one way and now another. Whoever builds a house or a ship or forges a sacrificial chalice reveals what is to be brought forth, according to the perspectives of the four modes of occasioning. This revealing gathers together in advance the aspect and the matter of ship or house, with a view to the finished thing envisioned as completed, and from this gathering determines the manner of its construction. Thus, what is decisive in techne does not lie at all in making and manipulating nor in the using of means, but rather in the aforementioned revealing. It is as revealing, and not as manufacturing, that techne is a bringing-forth.[99]

Heidegger compares the ancient Greek concept of "techne" with modern Western technology as an example. Accordingly, it states that there is a difference between a windmill built on a river in ancient times and the hydroelectric power plant built in the modern period. Accordingly, while there was a "techne" compatible with nature itself, today there is a "technology" that dominates nature because the windmill does not accumulate water and make it an object of profit.[100]

For the Frankfurt School thinkers, rationalism has always been an important concept in the study of modern society and its pathologies. Especially in the Dialectic of Enlightenment, written by Max Horkheimer and Theodor Adorno, this theme comes to life in the thesis that the devastating consequences of instrumental rationality are inherent to the concept of Enlightenment. Frankfurt School thinkers also worked on the role of technology in the production of forms of social organization and control mechanisms. Another name to be mentioned in this context is Herbert Marcuse. According to Marcuse, technology is not the complete set of technical devices and equipment; According to him, technology is a social process. Power creates a rationality based on a technological basis through this technological process. In this rationality, "technology makes individual attention" dependent through adaptation and compliance:

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[99] Martin Heidegger, *The Question Concerning Technology, and Other Essays* (New York: Garland Pub, 1977). P.13.
[100] Ibid., 14.

> This mobilization and administration of libido may account for much of the voluntary compliance, the absence of terror, the pre-established harmony between individual needs and socially required desires, goals, and aspirations. The technological and political conquest of the transcending factors in human existence, so characteristic of advanced industrial civilization, here asserts itself in the instinctual sphere: satisfaction in a way which generates submission and weakens the rationality of protest.[101]

Jürgen Habermas, on the other hand, requires a mode of approach and agency that dominates nature and society. Accordingly, the goal is to rationally act as a self-control. in a way, it is the establishment itself. The rational construction of relationships in life according to these rational criteria sets the ground for institutionalization of a politically uncertain and difficult to depict type of power: Such an aim of power is 'material' and in this respect belongs to the form of the technical mind. However, this pressure has paradoxically disappeared from the consciousness of the people, because the legitimization of power has taken on a new character: namely, it points to 'increasing productivity and domination of nature'[102]

Another name whose views will be included is Marshall McLuhan, who is considered one of the important thinkers in the context of communication studies. The thinker carried out his studies especially in the context of communication technologies and culture. Therefore, developments in information and communication technologies cause some changes in cultural sense. According to McLuhan, the invention of the printing press or, in other words, the "Gutenberg revolution", revealed the written culture / reading culture that developed individuality especially in the West. However, electronic culture tends to reunite people. In this regard, it is possible to say that digital media / social media increase interaction between people. However, as we have emphasized before, it does not seem possible to state that this is a

[101] Herbert Marcuse and Douglas Kellner, *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*, Repr, Routledge Classics Philosophy (London: Routledge, 2007). P.78.
[102]Jurgen Habermas, *Technology and science as ideology,* in Toward a Rational Society. London: Heinemann. (Translation of Habermas, 1967), p.238-60.

constructive, positive, "public" interaction, or rather, the whole interaction is in this direction. It can be stated that it is more accurate to define the culture environment created by the digital / digital age we are in as cyberculture or Internet culture. Thus, it would be appropriate to add a "digital age" to the age classification made by McLuhan.[103]

Epistemology as a related field philosophy of technology tries to enlighten the concept of knowledge from a historical and systematic perspective. There are two main reasons why the concept of "knowledge" started to take a much more central place in both academic and social life. The first is the emergence of empirical theory of knowledge in early modern philosophy. The second is the development of information technologies and various mathematical theories of information in the twentieth century. From a historical point of view, the concept of information can be interpreted as an effort to make large amounts of data of humanity measurable.[104]

Information and Communication Technologies, or, recently, Info Communication, is used to refer to all technologies. This includes communication and computer technologies that enable data to be collected, processed, stored, and transmitted from place to place through various networks. Information Society, on the other hand, is synonymous with concepts such as "Information Society," "Digital Society," "Post-Industrial Society," "Post-Capitalist Society," and "Cybernetic Society." It is a comprehensive concept. the information society is a term that describes the information itself. It is the primary source of power in the economic, political, social-cultural fields of activities for the production, processing, and distribution of information. The information society is essentially the most common use of the term, but Castells makes an analytical distinction between the "information society" and the "informed society." According

[103] McLuhan, *The Medium is the Message*, 2004.
[104] "Stanford Encyclopedia of Philosophy (Spring 2019 Edition)," accessed June 18, 2020, https://plato.stanford.edu/archives/spr2019/index.html.

to him, the term information society is essential in all communities, including Medieval Europe, as it emphasizes the role of information in society. On the contrary, the term "informed [resurrected] or" informational" is a particular form of social organization. It is the production of information the primary source of power due to the new technological conditions that have emerged in the current historical period.[105] According to another definition, the information society is a form of post-industrial society that forms based on technology, data, and develops by taking its driving force from the dynamism of cultural globalization.[106]

It is clear that the information and knowledge today are different than past. Although information has become a product to be sold or bought today, this does not mean that this information will lead to valuable knowledge, or even real or truthful knowledge.

4.2 A philosophical assessment of knowledge and information society

People who do not know or grasp the reality they live in cannot develop life and therefore it is difficult for them to create a civilization. In order to produce new things in the fields of civilization such as science, art, literature, technology and philosophy, the existing reality should first be known and perceived. In this sense, reality is conveyed to us through information in the information society. The meaningfulness of knowing / knowledge is not an activity that can be limited to certain attributes. It is a transition from data related to reality or unprocessed information to processed information. In other words, converting data to information is a process. Transforming the data into information is done with the social tools listed above. therefore, social feature is gained in the construction of reality with these tools. In addition, the

[105] Castells, *The rise of the network society*. P.21.
[106] Gary Hall, "Toward a post-digital humanities: Cultural analytics and the computational turn to data-driven scholarship." *American Literature* 85, no. 4 (2013): 800.

transformation of information into knowledge, in other words, the internalization of knowledge by the individual / society means the social construction of reality. Headrick calls this raw reality or data related to this reality as a pattern and talks about the transition from pattern to information. In addition, Headrick argues that in order for the pattern to turn into human information, the human being must understand it well. Briefly, data can be referred to as raw reality, information-interpreted reality, and knowledge as "transmitted/received/perceived reality".[107]

This awareness is realized through social activities that occur in social life such as telephone, radio, television, newspaper, internet, satellite, magazine news and examples in the text of the book. As soon as the aforementioned reality is known thanks to the social mechanism consisting of the listed tools, the social construction process of reality begins. In fact, even knowing reality through social mechanisms is an activity that constitutes the social quality in the construction of reality. Any kind of discourse to be written, spoken and shown after the act of knowing indicates a signification. So, the judiciary takes place after the act of knowing. The meaning of reality is to change it from raw to manipulated. Signification is a process that facilitates and perhaps provides perception of reality. The information process includes the stages of processing and transmitting raw information (data). Reality is made sense of knowledge. This is conveyed through meaningful information.

Philosophy is one of the main disciplines that concentrates on the processes of obtaining knowledge and what it is. The understanding of knowledge has been changed over the years and presented with different perspectives. However, the transformation of information into technological products and the discovery of the Internet have provided us with a completely

[107] Headrick, *When Information Come of Age*. p. 13.

different view of information. The Internet has become one of the most important means of information flow and transmission all over the world. As a result of these developments, the information society took its place on the stage of history as a new society after the agriculture and industrial society. However, from Kuhn's point of view, the information society is not a new society, it is a more transitional or intermediate society because this situation is like the sum of the innovations that come from more communication technologies.

Information is a broader concept than information and its explanation is more complex. It is possible to base the explanations about the knowledge up to the Greek culture. Information is passive unless information enters formal, formatted data and into a knowledge-based process. The information can be placed on the computer's hard disk and stored. However, knowledge is the result of an activity in which intellectual, cultural and physical efforts take place together.[108] Knowledge includes information in this situation. When we define the current social reality as an information society, naturally, the question of what information society will bring serious epistemological discussions. According to Daniel R. Headrick Information has always existed throughout history. Our surroundings are always full of information. The information did not appear in the twentieth century and after the discovery of the computer or the Internet. To say today is the age of information, it reduces the information that humanity has never experienced before. Concerning this difference, Headrick states that information systems have changed since the eighteenth and nineteenth centuries in order to emphasize the emerging change.[109]

In fact, the storage, reproduction, distribution, and sharing of information among information systems have changed drastically until today. Therefore, as the important descriptors

[108] Dominique Foray, *The Economics of Knowledge*. Cambridge, Mass: The MIT Press, 2004: p.16. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=nlebk&AN=122508&site=eds-live.
[109] Headrick, *When Information Come of Age*. p. 15.

of the period called information society, it is accepted that the abundance of information, easy reproduction, distribution and these activities are carried out via computer and Internet. When we think socially, we can witness that words and terms such as knowledge, science, scientist, scientific research and technology create fascinating effects. Among them, questions such as where the source of the information was, how it was obtained, the limits, and the place of the human mind and mind in this process have been the interest of philosophers for centuries.

The twentieth century took its place in history as a period in which these issues were discussed extensively. Or how are individual perceptions generally obtained on the Information (episteme)? How do we distinguish between scientific and non-scientific information? How effective are our knowledge-based productions in our lives? Why is information important? What societies are what we call an information society? What has been interpreted from the examples, knowledge in history is not based on observation and experiment, although there are some exceptions. In addition, the old type of information is generally limited in scope, which is revealed by individual efforts, rather limited in terms of social benefits (of course, aside from the positive prevalence like printing press, lethal prevalence like the invention of gunpowder). Of course, their contribution to scientific heritage cannot be denied. Changes in the method of obtaining information and the invention of the steam engine are important steps in the history of science and technology. After the start of the of the industrial society, a new history page was opened where thousands of workers from the provinces working in large factories entered production. Humanity has undergone innovations not only from the industrial revolution and beyond, but from the beginning. The transition from hunting gathering to agricultural society is the result of thousands of years of progress and innovation.

However, the years after the Industrial Revolution were a period when technological products began to emerge. During this time, they created effects in scientific and social structures with many successive inventions. This process, which economists refer to as successive waves of technological change, is classified by Freeman as follows. Two definitions (classification), which have not been used in previous years, have become widespread. If an information is obvious, it can be written, expressed by drawings, it can be transferred, that is, it is codified, it is called open source (codified, explicit). Although having open source is important, its strategic importance is low due to the ease of coding and transmission. Books, magazines, dictionaries, and encyclopedias, reports, databases with tens of thousands of titles are open sources of information. The ones that we can reach easily by searching the internet are also included in the open information group[110]. Although open source is codable, it is also stated that it may suffer some loss during coding processes.[111] As the role of economic income of knowledge increases, it is observed that institutions that provide open information on the internet now make them commercial (transformed into implicit information). Implicit information (tacit), on the other hand, is a separate type of information with strategic importance Also called know-how is a kind of implicit knowledge. This knowledge is an accumulation that exists in one's mind, with its abilities of intelligence, intelligence, memory power, and intuition. Since implicit information is often not encoded, it cannot be transmitted instantly to the other party, even if it is requested.[112] For example, for a person who is interested in molecular physics, the accumulation about what

[110] Christopher Freeman, *The Economics of Industrial Innovation*. 2nd ed. MIT Press, 1982. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.025991434&site=eds-live.
[111] Björn Johnson and et.al, "Why All This Fuss about Codified and Tacit Knowledge?" accessed June 20, 2020, https://www.researchgate.net/publication/5212390_Why_all_this_Fuss_about_Codified_and_Tacit_Knowledge.
[112] Freeman, *The Economics of Industrial Innovation.*

can be done, how it works over the years, and the accumulation of years that will create new theories are referenced as implicit knowledge.

On the other hand, Luc Soete and Christopher Freeman discusses that technology contributes to economics and increases efficiency. However, it may be asked what the social dimensions of this are. Internet applications are one of the areas where technological innovations can create significant economic returns for some companies. The surplus values created on the internet are created in four steps according to Castells. The first one is the companies that provide internet infrastructure, namely telecommunication companies. The second is those that produce hardware for these companies. The third is those who do not produce anything on the internet, do not market, but earn money from the advertisements they receive on their free internet pages. the fourth is those who sell online (e-commerce).[113] This is showed in developed countries where information contributes directly and indirectly to economic growth. The USA has had a great economic development from mid to late 1990s thanks to computers, communication and software.[114]

Jean-Francois Lyotard is one of the thinkers who stated that the position of knowledge changes with the postmodern period. According to Lyotard, the changing position of knowledge does not mean acquiring new knowledge. For Douglass Kellner, the postmodern society represents the computer information, scientific knowledge and high-tech society. In other words, it is a society that changes and arises from new advances in science and technology.[115] First of all, the postmodern period is a crisis period like the Enlightenment period. It is a period in which

[113] Castells, *The Rise of Network Society*. P.25**.**
[114] Pippa Norris, Cosmopolitan *Communications: Cultural Diversity in a Globalized World,* (Cambridge press, 2009), 121-31.
[115] Douglass Kellner, "Your Gateway to World-Class Journal Research," Douglass Kellner, SAGE Journals: June 1, 1988: 238).
accessed June 20, 2020, https://journals.sagepub.com/action/cookieAbsent.

a disbelief prevails against everything that is seen precisely. Postmodernism refers to a bankruptcy of information release versions. It also refers to the changes in the society caused by the technological (TV, internet, Facebook, twitter) and scientific advances in the scientific field. As Baudrillard argued, humankind is now in a perception of reality surrounded by many technological tools such as television, internet, newspapers and fashion. There is no basis for whether there is a truth outside these:

> Of the same order as the impossibility of rediscovering an absolute level of the real, is the impossibility of staging an illusion. Illusion is no longer possible, because the real is no longer possible. It is the whole political problem of the parody, of hypersimulation or offensive simulation, which is posed here.[116]

This change in the social bond has also led to a change in the status of knowledge. The reflection of this epistemological change in Lyotard is the legitimacy problem of knowledge. The legitimate information problem is actually not a new issue. There are traces of this in Plato's dialogues. Dialogue games fulfill two functions within science: research and teaching.[117] For Cashinahua, there is a trio of authority groups in the narrative tradition: the sender, the receiver and the sender. The thing that provides the responsibility is the relationship between these three powers, namely language games. The legitimacy problem is a problem about language games. For Lyotard, the legitimacy problem cannot be considered separately from the language. To understand what Lyotard expresses, it is necessary to consider Ludwig Wittgenstein's language games.

Unlike previous considerations, Wittgenstein does not see language as a total of words or a means of expression. Wittgenstein thinks that there is a close connection between language and lifestyles and culture. What is expressed as a language;

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[116] Jean Baudrillard, *Simulacra and Simulations*, (Stanford; Stanford University Press, 1988), pp.166-184.
[117] Jean F. Lyotard, The post-modern condition: A Report of Knowledge, Theory and History literature, volume 10, 1984: 58-59.

> Giving orders, and acting on them a Describing an object by its appearance, or by its measurements a Constructing an object from a description (a drawing) a Reporting an event a Speculating about the event a |12| Forming and testing a hypothesis a Presenting the results of an experiment in tables and diagrams a Making up a story; and reading one a Acting in a play a Singing rounds a Guessing riddles a Cracking a joke; telling one a Solving a problem in applied arithmetic a Translating from one language into another a Requesting, thanking, cursing, greeting, praying. [118]

Lyotard takes Wittgenstein's language games and uses them with a new interpretation of the issue of legitimacy. More precisely, language games become the way Lyotard sees the solution of the problem of responsibility. Lyotard does not only see scientific knowledge as the information that is trying to be legitimized. Knowledge does not only create scientific knowledge, there is also narrative knowledge with a certain responsibility in life. Although scientific knowledge needs narrative knowledge for its own responsibility, a drag until this modern period is considered a mistake:

> With modern science, two new features appear in the problematic of legitimation. To begin with, it leaves behind the metaphysical search for a first proof or transcendental authority as a response to the question: "How do you prove the proof? " or, more generally, "Who decides the conditions of truth? " It is recognized that the conditions of truth, in other words, the rules of the game of science, are immanent in that game, that they can only be established within the bonds of a debate that is already scientific in nature, and that there is no other proof that the rules are good than the consensus ex tended to them by the experts.[119]

The responsibility of knowledge is now based on the rules of the game in which it is located, rather than an authority outside of it. In science, it is no longer used for small narratives, but for big narratives, and meta-narratives that ban voters take into account when making laws. Thus, the narrative event is not just a tongue crawl to legitimize.[120] With the modern period, a direct call is made to the narratives. Narratives are becoming Meta-narratives instead of their small

[118] Ludwig Wittgenstein et al., *Philosophische Untersuchungen =: Philosophical Investigations*, Rev. 4th ed (Chichester, West Sussex, U.K.; Malden, MA: Wiley-Blackwell, 2009).15.
[119] Lyotard, *The post-modern condition.* P.29.
[120] Ibid., 45.

assets hidden in science. And the source of the responsibility of knowledge are not small narratives, but meta-narratives. One of the biggest meta-narratives of the modern period is science itself. Therefore, as epistemology is based on such a language, as Lyotard said, epistemology has gained a new position in the postmodern period.

Functionality may be seen as the most important reason for technological development. With the increasing changes in technological development, it is seen that the place of nonfunctional knowledge fell into the background. Knowledge is no longer something to be obtained in old ways. The understanding that information is based on the harmony of the object outside and in mind has lost its effectiveness. Today, it is very easy to access information. Information is as close as a key to individuals, individuals are under an informatic information bombardment when internet is entered. The circulation in which information has entered has taken the whole world. All this is the result of technical development. Today, living in a village or in an inaccessible place does not prevent information because, with the globalization, the world itself has become a village. Anyone who knows almost a simple level of general research method, that is, a little bit of the language of the machines, can access information. However, this still does not eliminate the fact that knowledge is commercial and a power game because, although everyone reaches the information, there is a certain group of people who upload this information to the machines. Therefore, technology enables everyone to reach information quickly, while it enables the power holders to easily dominate the information that comes with it. Computers and technological tools do not give information directly and it is a problem especially in term of power relations.

Technological developments have accelerated, especially after 2000's. While making an invention or making a technical tool was a long process, now technological tools are developed

within a very short time. The reason why developments are so fast is due to the rapid access to information, but it is also due to a more important feature of technology. This is the storage of information. Even though computers are getting smaller, their features are increasing. The commercialization of machines even smaller than they are, transforms them into a commodity where information is obtained and classified. The idea that knowledge is a purpose in itself disappears. Information is now produced to be sold. Computers and phones that enable people to enter Facebook, Twitter, Google are the best examples of this.

It is seen that the informatics aspect of knowledge is more dominant in the current period. More precisely, it would be more correct to say this: the knowledge should have informatics codes, otherwise there is not much room for knowledge.

Conclusion

The societies of our age are rapidly evolving towards a different type of society, the "information society", where knowledge gradually replaces the factors of production in the industrial society. Although it is a controversial issue whether or not it is the current information society we are in, the role of information technologies in the establishment of the society we are in cannot be denied. Scientific and technological developments of the Industrial Period have an important place in this historical course. The knowledge and machine technology of this period, which is regarded as a turning point in human history, is thought to have an important share in the development of information technologies. With the increasing use of information and communication technologies in economic and social life, they have become the means of production of the information age. Knowledge, which is the basic value of the new age, is produced and processed with these tools.

The paradigms produced in communication technology form roughly two different approaches. The first one takes into account the positive aspects of communication technology. In other words, some scholars argue that technological advances increase happiness for people. Others argue that, despite the fact that communication technologies do not bring a new social stage, this is an extension of the technological development of the free market system. Thanks to the advancing technology and widespread internet practices, the data has been stored, analyzed, measured, made meaningful and transformed into information. It paved the way for science based on numerical data, especially in social and humanities. On the other hand, it caused the

information to be transformed into a product to be bought and sold. For this reason, it seems that possessing information technologies will continue inequality and imbalance between developed and developing countries.

Today, the meaning of knowledge and ways of obtaining information have also changed. We have the opportunity to access information as we never had before. Moreover, we see that information is more dominant than knowledge. Unfortunately, this brings with it the fact that this situation does not create a more knowledgeable society. The effective use of new alternative technologies in many areas along with the digital age has caused the interdisciplinary nerves to fade. The emergence of digital humanities has been the result of these developments. Whether digital humanities is a new field or not is a controversial issue. Digital humanities offers a number of solutions for what needs to be done with today's information stack. With the use of new technologies in the field of digital human sciences, new information that is not possible to be acquired before is acquired. In parallel, it is seen that digital humanities services are opened especially in academic libraries. In addition, with this new area, the concept of digital librarian has emerged, and libraries have gained the ability to melt computer technologies and humanities in a crucible. Thus, great steps are taken to protect cultural heritage and archives.

At this point, while thinking about technology, it can be stated that there are two basic philosophical approaches as we mentioned earlier. The first is the "social" approach, which deals with technology mostly with its social / political dimensions and effects, while the second is the "analytical" approach that thinks more about the features of technology. While the first approach looks at technology from a much wider window and sees the whole view, the second approach focuses more on the practical problems of technology. Especially since the end of the 20th century, it seems that the second trend has come to the fore. It is possible to say that rather than

establishing a technology theory in a broad sense, individual technologies tend to explore the political / social / ethical dimensions. So, one way to think about technology is to think broadly about the concept of technology and what it is about. This way is another approach to think about dilemmas/problems that arise for more technical reasons. From this point, it would not be wrong to say that many technologies have important benefits related to human and social life, and some of them carry good and bad aspects together like all the other facts in life. In this context, the Internet and other communication and information technologies that are patterned around the study have caused many positive/negative phenomena to change both in human and social life with their developments in the process.

It is also possible to look at modernity-postmodernity debates in the context of information and communication technologies. For example, one factor that shows the difference between modernism and postmodernism is information technologies. Information technologies have a great role in breaking the perception of reality and moving to the age of hyper reality. In other words, it cannot be ignored that the exposure of individuals to excessive information has an important effect in the loss of truth in the post-truth era. In this sense, it is the fact that the reality is completely erased and uncertain, rather than the reproduction of reality.

It is seen that the logic of functionality has reached its peak with increasing technology. In the narrative of functionality, information gains meaning depending on its suitability for machine languages and having a functionality. If the information is evaluated according to the suitability of the machine languages, it shows that those who have the right to enter these machines have an authority over the information. Therefore, it can be said that knowledge has become a game of power. This indicates that information can be accessed at any time, and that information also turns into an exploitable commodity. Information has been reduced to the language of many

machines or databases such as Facebook, twitter, google, smart phones, it has become both easily accessible and exploitable. For instance, if someone wants to access information, they have the ability to and can use the information as they wish. That is to say, today information has become a commodity in its subject and open to exploitation. This metadata zed information is used by the authority owners to increase their power more easily. Today, knowledge is no longer a value in itself. What is expected from knowledge is that it provides benefit, that is, is operational.

As a result, one of the important problems of our age is what we can be done with the abundance of information that we have today. In this study, Digital Humanities is presented as an alternative solution due to the storage of information and better understanding by the society and offering new perspectives. On the other hand, it is clear that the nature of the information in our age has changed and the information is more dominant than the knowledge. This has caused the information to become a product to be traded. However, this doesn’t mean this information is correct or valuable. This is also a relationship that explains the interest in the development of new technologies.

References

Ayers, Edward L. “The Pasts and Futures of Digital History,” n.d., 6.

Baudrillard, Jean. *Simulacra and Simulations*, (Stanford; Stanford University Press, 1988)

Berry, M. David. and Anders, Fagerjord. Digital Humanities: *Knowledge and Critique in a Digital Age.* Oxford: Polity Press, 2017. Accessed June 19, 2020. ProQuest E-book Central. https://ebookcentral.proquest.com/lib/usf/detail.action?docID=4875256.

Berry, M. David. “The Computational Turn: Thinking About the Digital Humanities,” Sussex research online, 2011, 23. https://sro.sussex.ac.uk/id/eprint/49813/1/BERRY_2011 THE_COMPUTATIONAL_TURN- _THINKING_ABOUT_THE_DIGITAL_HUMANITIES.pdf

Black, Alistair. “Information History.” *Annual Review of Information Science and Technology* 40, no. 1 (September 28, 2007): 441–73. https://doi.org/10.1002/aris.1440400118.

Brennan, Timothy. The Digital Humanities Bust, *The Chronicle of Higher Education*, October 15, 2017, pp. 1-6.

Bond, Sarah. ‘Digital’ Is Not the Opposite of ‘Humanities’, *The Chronicle of Higher Education*, November 1, 2017, pp. 1-4.

Burnard, Lou. “Is Humanities Computing an Academic Discipline? Or, Why Humanities Computing Matters.” Accessed June 19, 2020. https://iath.virginia.edu/hcs/burnard.html.

Busa, Roberto. "The annals of humanities computing: The index thomisticus." *Computers and the Humanities* (1980). http://www.alice.id.tue.nl/references/busa-1980.pdf

Castells, Manuel. *The Rise of Network Society*, (Wiley-Blackwell, A John Wiley & Sons, Ltd., Publication, 2010), https://ebookcentral-proquest-com.ezproxy.lib.usf.edu/lib/usf/reader.action?docID=470450

“Computational History of Knowledge: Challenges and Opportunities | Isis: Vol 110, No 3.” Accessed June 19, 2020. https://www.journals.uchicago.edu/doi/full/10.1086/705544.

Davenport, Thomas. “Thinking for A Living: How to Get Better Performance and Results from Knowledge Workers,” accessed June 19, 2020, https://www.researchgate.net/publication/248078273_Thinking_for_A_Living_How_to_Get_Better_Performance_and_Results_from_Knowledge_Workers.

Davidson, N. Cathy “‘Chapter 28: Humanities 2.0: Promise, Perils, Predictions,’ in ‘Debates in the Digital Humanities’ on Manifold,” accessed June 19, 2020, https://dhdebates.gc.cuny.edu/read/untitled-88c11800-9446-469b-a3be-3fdb36bfbd1e/section/c6fc3cc1-5751-4c6b-aac5-b9890206930f.

Dempsey, Joe. et. al., “Pudding Lane: Recreating seventeenth-century London.” *Journal of Digital Humanities,* 2014: 9-17. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=mzh&AN=2018287125&site=eds-live.

“Digital Humanities Quarterly: A Short Introduction to the Hidden Histories Project and Interviews.” Accessed June 19, 2020. http://www.digitalhumanities.org/dhq/vol/6/3/000130/000130.html.

Dietrich, Craig, and Ashley Sanders. “On the Word, Digital ← Dh+lib,” July 29, 2016. https://acrl.ala.org/dh/2016/07/29/on-the-word-digital/.

“Digital Humanities: First, Second and Third Wave.” Accessed June 19, 2020. http://stunlaw.blogspot.com/2011/01/digital-humanities-first-second-and.html.

Drucker, F. Peter. *Post Capitalist Society*, (Oxford, 1993).

Ensmenger, Nathan."The digital construction of technology: Rethinking the history of computers in society." *Technology and Culture* 53, no. 4 (2012).

Floridi. Luciano. A look into the future impact of ICT on our lives: *The information society,* 23.1 (2007).

Foray, Dominique. *The Economics of Knowledge*. Cambridge, Mass: The MIT Press, 2004. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=nlebk&AN=122508&site=eds-live.

Freeman, Christopher. The Economics of Industrial Innovation. 2nd ed. MIT Press, 1982. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.025991434&site=eds-live.

Frischer, Bernie. “Summit on digital tools for the humanities: Report on summit accomplishments." Charlottesville, VA 23 (2006).

Hans Freyer, Sosyolojiye Giris, (Ankara yayinlari, 1963).

Gibbs, Fred, and Trevor Qwens. “Digital Humanities Quarterly: Building Better Digital Humanities Tools: Toward Broader Audiences and User-Centered Designs.” Accessed June 19, 2020. http://www.digitalhumanities.org/dhq/vol/6/2/000136/000136.html.

Gilbert, Jane. Catching the Knowledge Wave: *The Knowledge Society and the Future of Education* (Wellington, NZ: New Zealand Council for Educational Research, 2005).

Gold, K, Matthew. *Debates in Digital Humanities*, University of Minnesota Press. 2012. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.023595370&site=eds-live.

Habermas, Jurgen. *Technology and science as ideology,* in Toward a Rational Society. London: Heinemann. (Translation of Habermas, 1967)

Hall, Gray. "Toward a post-digital humanity: Cultural analytics and the computational turn to data-driven scholarship." *American Literature* 85, no. 4 (2013)

Haigh, Thomas. “The History of Information Technology.” *Annual Review of Information Science and Technology* 45, no. 1 (2011): 431–87. https://doi.org/10.1002/aris.2011.1440450116.

Haraway, Donna Jeanne. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, 1991.

Harvey, D. R., Gillian Oliver, and D. R. Harvey. Digital Curation. Second edition. ALA Neal-Schuman, an imprint of the American Library Association, 2016. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.036184228&site=eds-live.

Hayles, N. Katherine. *How We Think: Digital Media and Contemporary Technogenesis*. Chicago; London: The University of Chicago Press, 2012.

Headrick, Daniel. When Information Come of Age*: Technologies of Knowledge in the age of reason and revolution 1700-1850,* 2002.

Heidegger, Martin. *The Question Concerning Technology, and Other Essays*. New York: Garland Pub, 1977.

“Information Society and Civil Society: Contemporary Perspectives on the ... - Slavko Splichael Editor - Google Books.” Accessed June 19, 2020. https://books.google.com/books?id=woP6mONjdCUC&pg=PA208&lpg=PA208&dq=Hamid+Mowlana,+Civil+Society,+Information+Society+and+Islamic+Society&source=bl&ots=fEIbtQ82Zn&sig=ACfU3U3LjlO-ujgJWO8ZkXHnjSz1DG7LtQ&hl=en&sa=X&ved=2ahUKEwjL5ePlro7qAhWPd98KHUlSCaMQ6AEwA3oECAgQAQ.

Johnson and et., Björn. “(PDF) Why All This Fuss about Codified and Tacit Knowledge?” Accessed June 20, 2020. https://www.researchgate.net/publication/5212390_Why_all_this_Fuss_about_Codified_and_Tacit_Knowledge.

Kellner, Douglass. “SAGE Journals: Your Gateway to World-Class Journal Research.” Accessed June 20, 2020. https://journals.sagepub.com/action/cookieAbsent.

Laubichler, D. Manfred. Maienschein, Jane. and Renn, Jürgen. “Computational History of Knowledge: Challenges and Opportunities | Isis: Vol 110, No 3,” accessed June 19, 2020, https://www.journals.uchicago.edu/doi/full/10.1086/705544.

“Life in the Network: The Coming Age of Computational Social Science.” Accessed June 19, 2020. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2745217/.

Llobera, Marcos. “(PDF) Archaeological Visualization: Towards an Archaeological Information Science (AISc).” Accessed June 19, 2020. https://www.researchgate.net/publication/225894361_Archaeological_Visualization_Towards_an_Archaeological_Information_Science_AISc.

Lyotard, F. Jean. The post-modern condition: A Report of Knowledge, Theory and History literature, volume 10, 1984.

Mahoney, S. Michael."The history of computing in the history of technology." *Annals of the History of Computing* 10, no. 2 (1988). https://ieeexplore-ieee-org.ezproxy.lib.usf.edu/stamp/stamp.jsp?tp=&arnumber=4640427.

Marcuse, Herbert, and Douglas Kellner. *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Repr. Routledge Classics Philosophy. London: Routledge, 2007.

Masuda, Yoneji. The Information Society: *As Post Industrial Society* (World Future Society, 1981).

McCarty, Willard, “Attending from and Attending to the Digital from Humanist Discussion Group (by Way of Willard McCarty on 2006-02-01 (Humanist Archives Vol. 19).” Accessed June 19, 2020. https://dhhumanist.org/Archives/Virginia/v19/0573.html.

McCarty, Willard. Humanities Computing: *The promise of digital humanities,* (A whitepaper, 2005). http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=usflc.024767234&site=eds-live.

McCarty, Willard. What is humanities computing? Toward a definition of the field. 1998:1.

http://www.mccarty.org.uk/essays/McCarty,%20What%20is%20humanities%20computing.pdf

McLuhan, Marshall. *The Medium is the Message*, (Gingko press, 2004)

McPherson, Tara. "Introduction: Media Studies and the Digital Humanities." Cinema Journal 48, no. 2 (2009): 119-123. doi:10.1353/cj.0.0077.

Misa, Thomas J. *Leonardo to the Internet: Technology & Culture from the Renaissance to the Present*. 2nd ed. Johns Hopkins Studies in the History of Technology. Baltimore [Md.]: Johns Hopkins University Press, 2011.

Mowlana, Hamid. Information Society and Civil Society*: Contemporary Perspectives on the Changing the World Orde*r, (Purdue University press, 1994).

Norris, Pippa. Cosmopolitan *Communications: Cultural Diversity in a Globalized World,* (Cambridge press, 2009).

Parayil, George, *Technological Knowledge and Technological Change*, Technology in science Vol 13, Pergamon press.1991.

"Philosophy of Technology (Stanford Encyclopedia of Philosophy/Fall 2018 Edition)." Accessed June 19, 2020. https://plato.stanford.edu/archives/fall2018/entries/technology/.

Presner, Todd. and Johanson, Chris. "The promise of digital humanities: A whitepaper.", n.d., 19. 2009: 2. http://humanitiesblast.com/Promise%20of%20Digital%20Humanities.pdf

Project DIGIDOC, 2016. http://digidoc.labri.fr/

Poremski, D. Molly. "Evaluating the Landscape of Digital Humanities Librarianship," *College & Undergraduate Libraries*, 2017: 147. accessed June 19, 2020, https://www.researchgate.net/publication/317557091_Evaluating_the_landscape_of_digital_humanities_librarianship.

Rabinovitz, Lauren. "Memory Bytes: History, Technology, and Digital Culture," n.d., 353.

Rommel, Thomas. A Companion to Digital Humanities: *Literary Studies*, 2004: 88-95. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=cat00847a&AN=ushc.034400348&site=eds-live.

Russell, G. Isabel. "The role of libraries in Digital Humanities" July 1, 2011. http://conference.ifla.org/ifla77

Ryann, Johnny. *A History of the Internet and the Digital Future*. Reaction Books, 2010.

https://ebookcentral-proquest.com.ezproxy.lib.usf.edu/lib/usf/reader.action?docID=618772.

Schiller, Herbert. Who Knows*: Information in the Age of the Fortune 500,* (Norwood, NJ: Ablex. 1981)

Schluma, Giovanni, and Daniela Carlucci. “Big Data in the Arts and Humanities.” *Theory and Practice*, n.d., 246.

Showers, Ben. "Does the library have a role to play in the digital humanities?" *JISC Digital Infrastructure Team* (2012).

Sula, A. Chris. "Digital humanities and libraries: A conceptual model." *Journal of Library Administration* 53.1 (2013).

Lisa Spiro, “Getting Started in Digital Humanities Journal of Digital Humanities,” accessed June 19, 2020, http://journalofdigitalhumanities.org/1-1/getting-started-in-digital-humanities-by-lisa-spiro/.

“Stanford Encyclopedia of Philosophy (Spring 2019 Edition).” Accessed June 18, 2020. https://plato.stanford.edu/archives/spr2019/index.html.

Svensson, Patrik. "Introducing the Digital Humanities." In *Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital*, 1-35. ANN ARBOR: University of Michigan Press, 2016. Accessed June 20, 2020. www.jstor.org/stable/j.ctv65sx0t.5.

Talbot, Jade. “The Computational Turn: Thinking About the Digital Humanities,” 2011, 23.

Tanasi, Davide. “The Digital (within) Archaeology. Analysis of a Phenomenon.” in *The Historian* 82.1, pp. 22-36. Accessed June 19, 2020. https://www.tandfonline.com/action/cookieAbsent.

Toffler, Alvin. *The Third Way*, (New York: Bantam Books. 1980).

Toffler, Alvin. *Future Shock*, (New York: Bantam Books, 1970).

UNESCO, 1997. http://www.unesco.org/new/en/communication-and-information/memory-of-the-world/register/access-by-year/1997/

Vandegrift, Micah. & Varner, Steward. "Evolving in common: Creating mutually supportive relationships between libraries and the digital humanities." *Journal of Library Administration* 53.1 (2013).

Vanhoutte, Edward, Julianne Nyhan, and Melissa M. Terras. “Defining Digital Humanities,” n.d., 331.

Varner, Stewart. and Hswe, Patricia. "Special Report: Digital Humanities in Libraries. A new American Libraries/Gale Cengage survey shows uncertainty and adaptation in this growing field." *American Libraries Magazine* 4 (2016).

Waldrop. Mitchell. The Dream Machine*: JCR Lickliter and the Revolution that Made Computing Personal*, (Stripe Press 2018).

Webster, Frank. *Theories of the Information Society*. Hoboken: Taylor & Francis, 2007. http://public.eblib.com/choice/publicfullrecord.aspx?p=292956.

Weiskott, Eric. There is No Such Thing as 'the Digital Humanities', *The Chronicle of Higher Education*, November 1, 2017.

William, Anthony. "Is the Nature of Knowledge Changing? – Teaching in a Digital Age," accessed June 19, 2020, https://opentextbc.ca/teachinginadigitalage/chapter/section-2-4-does-technology-change-the-nature-of-knowledge/.

Williams, R. Michael. *A history of Computing Technology*. (IEEE Computer Society Press, 1997).

Winston, Brian. Media, Technology and Society: A History: From the Telegraph to the Internet. London: Routledge, 1998. http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=nlebk&AN=503975&site=eds-live.

Wittgenstein, Ludwig, G. E. M. Anscombe, P. M. S. Hacker, and Joachim Schulte. *Philosophische Untersuchungen =: Philosophical Investigations*. Rev. 4th ed. Chichester, West Sussex, U.K.; Malden, MA: Wiley-Blackwell, 2009.

Xu, Lei. "Semantic Description of Cultural Digital Images: Using a Hierarchical Model and Controlled Vocabulary," 5/6, 21 (June 2015). http://www.dlib.org/dlib/may15/xu/05xu.html.

https://www.Medyakronik.net.