

**ISTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SOCIAL SCIENCES**

**A CRITIQUE OF JACQUES ELLUL'S VIEW OF TECHNOLOGY:  
FACEBOOK PHENOMENON AS A CASE**

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**MAY 2011**

## **FOREWORD**

I would like to give expression to my deepest gratitude for those who have helped me through the completion of this thesis.

Through this work I have received remarkable support from Professor Aydan Turanlı. I am grateful to her for her interest in supervising me and for the enormous kindness, support, enthusiasm and generosity of time and energy throughout the process. I also thank her for her valuable feedbacks and criticisms. I would also like to thank Professor Mark. A. Shields for his kind support, his directions and generosity of time. During all this process he has been a remarkable guide for me.

I would like to dedicate this thesis to my family, who have supported me in all my decisions in life and who have patience, strength and love for a daughter more than she has expected.

I am particularly thankful to my Professors in Izmir, Professor Devrim Sezer and Professor Aslıhan Aykaç who have provided me a vision of life with academy which I cannot imagine myself being apart from.

I would also like to thank my friend Aysenur Ölmezses, for the fruitful intellectual discussions and for her companionship through the process.

May 2011

Melis BAŞ

## TABLE OF CONTENTS

Page

<b>SUMMARY .....</b>	<b>iv</b>
<b>ÖZET .....</b>	<b>v</b>
<b>1.INTRODUCTION.....</b>	<b>1</b>
<b>2.OVERVIEW OF MAJOR APPROACHES TO THE SOCIAL ANALYSIS OF TECHNOLOGY .....</b>	<b>4</b>
2.1 Instrumentalism.....	4
2.2 Substantivism.....	5
2.3 Social Constructivism.....	7
<b>3.TECHNOLOGY IN ELLULIAN TERMS.....</b>	<b>9</b>
3.1 Technique and Technology.....	10
3.1.1 Technique and Technology - before the eighteenth century.....	10
3.1.2 Technique and Technology - after the eighteenth century, modern technique.....	12
3.2 Technology as a System.....	17
3.2.1 Technology as a system – characteristics of the technological phenomenon.....	20
3.2.2 Technology as a system- characteristics of technological progress.....	24
3.3 Jacques Ellul as a Technological Essentialist.....	30
<b>4. TECHNOLOGY IN SOCIAL CONSTRUCTIVIST TERMS.....</b>	<b>34</b>
4.1 The Systems Approach.....	36
4.2 The Actor-Network Approach.....	37
4.3 Scot.....	39
4.4 Langdon Winner’s Critique on Social Constructivism.....	41
<b>5. EMPIRICAL IMPLICATIONS AND ASSESMENTS.....</b>	<b>45</b>
5.1 Minitel.....	49
5.2 The Facebook.....	50
5.2.1 The Facebook - Ellul on facebook.....	53
5.2.2 The Facebook - Social constructivists on facebook.....	63
5.3 Internet and Democracy.....	67
<b>6. CONCLUSION: REFLECTIONS ON AGENCY AND TECHNOLOGY .....</b>	<b>78</b>
<b>7. APPENDIX.....</b>	<b>82</b>
<b>REFERENCES.....</b>	<b>87</b>
<b>CURRICULUM VITAE.....</b>	<b>90</b>

## **A CRITIQUE OF JACQUES ELLUL'S VIEW OF TECHNOLOGY: FACEBOOK PHENOMENON AS A CASE**

### **SUMMARY**

In the industrial civilization that we live in, technology demonstrates a pervasive role in all aspects of our lives. I tried in this thesis to discuss and contrast two major approaches to technology-society relations, and evaluate how well they account for current social networking practices, using Facebook and the internet and democracy debate as cases.

In the first chapter of this work I will try to present an overview of major approaches to the social analysis of technology. I will give a brief summary of Instrumentalism, Substantivism and Social Constructivism. In the second chapter I will try to define what technology is in Ellulian terms. In the third chapter of my thesis I will analyze what technology is in social constructivist terms. In the fourth chapter, I will display empirical implications and assessments. I will analyze what digital communication technologies are with an emphasis on the social network sites. In this context I will analyze the Facebook phenomenon from the two approaches of technology. I will analyze the role of Facebook in the revolutions which took place in the winter of 2011 in Tunisia and Egypt and analyze the relevance of those revolutions to technology. I will present a result of an online debate that took place in late-February and early-March 2011, on "*The Economist*". I will try to examine the remarks of the parties of the debate and the result of the debate. In conclusion, I will try to present my reflections on agency and technology.

## **JACQUES ELLUL'UN TEKNOLOJİ GÖRÜŞÜNÜN BİR ELEŞTİRİSİ: İNCELEME OLARAK FACEBOOK FENOMENİ**

### **ÖZET**

Yaşadığımız sanayi medeniyetinde teknoloji hayatımızın her alanında yaygın bir rol üstlenmektedir. Ben bu tezde teknoloji-toplum ilişkisini inceleyen iki büyük düşünce yaklaşımının görüşlerini tartışmayı ve karşılaştırmayı, güncel sosyal ağlarla olan ilişkilerini incelemeyi bu bağlamda da Facebook ve internet ve demokrasi tartışması örneklerini kullanmayı amaçladım.

Bu çalışmanın ilk kısmında teknolojinin sosyal analizi hakkındaki yaklaşımların bir genel açıklamasını sunacağım. “Instrumentalism”, “Substantivism” ve “Social Constructivism” görüşlerinin kısa birer özetini sunacağım. İkinci kısımda Ellul’un düşüncesinde teknolojinin ne olduğunu açıklamaya çalışacağım. Üçüncü kısımda teknolojinin “social constructivist”ler için ne olduğunu açıklayacağım. Dördüncü kısımda ampirik çıkarımlar ve değerlendirmeler ortaya koyacağım. Dijital iletişim araçların neler olduğunu sosyal ağlar üzerine vurgu yaparak açıklamaya çalışacağım. Bu bağlamda “Facebook” olgusunu teknoloji hakkındaki iki büyük düşünce açısından inceleyeceğim. 2011 kışında Tunus ve Mısır’da meydana gelen devrimlerdeki Facebook etkisini ve bu devrimlerin teknoloji ile olan bağlantısını ortaya koymaya çalışacağım. “*The Economist*” dergisinin internet sitesinde 2011 Şubat sonu Mart başı dolayında gerçekleşen çevrimiçi tartışmanın sonuçlarını da bu bağlamda göstereceğim. Tarafların gözlemlerini ve tartışmanın sonucunu inceleyeceğim. Sonuç olarak da teknoloji hakkındaki görüşlerimi açıklamaya çalışacağım.

## 1. INTRODUCTION

In the industrial civilization that we live in, technology demonstrates a pervasive role in all aspects of our lives. Modern technology embodies the values of a particular industrial civilization and especially of its elites, which rest their claims to hegemony of technical mastery. (Feenberg, 1999:1) In the 21<sup>st</sup> century, within the light of technological developments technology presents us many problems and opportunities. Our daily life is surrounded, aided and accrued on every aspect by technologies. The presence of technology is irresistible in industry and society. In these years we are forced to adjust technologies into every aspect of our lives so studying technology is a necessity for social sciences. Many critics maintain the idea that the century that we live in is under a technological hegemony. We can here ask the question “What is technology?” Richard Sclove points out the misunderstandings about technology as; people ordinarily think of technology as machinery or gadgetry, as an economic factor of production, as knowhow, as what engineers do, or as progress and they characterize technology in terms of single intended function. People tend to see technology as an application of science. (Sclove, 1995:1) The purpose of this thesis is to discuss and contrast two major approaches to technology-society relations, and to evaluate how well they account for current social networking practices, using Facebook and the internet and democracy debate as cases. For this purpose I will analyze the two theoretical foundations’ approach to technology; first one will be substantivism; which will be represented in the thesis by Jacques Ellul and the second one will be social constructivism. The reason I chose to study these two approaches is that; these two approaches represent the two axes of the definition of technology. While substantivism disregards agency in effecting technology, agency plays a crucial role in social constructivist theory which positions it into the center surrounded by historical and cultural contexts.

Ellul argues that technical phenomenon has become the defining characteristic of all modern societies regardless of political ideology. (Feenberg, 1999:3) He emphasizes the distinction between technique and technology. In his understanding technique refers to “the totality of methods rationally arrived at and having absolute efficiency

(for a given stage of development) in every field of human activity and technology means the discourse on technique. (Son, 2005:519) For him “Technique elicits and conditions social, political and economic change. It is the prime mover of all the rest; in spite of any appearance on the contrary...Technique’s own internal necessities are determinative.” (Son, 2005:524) Social constructivists on the other hand are against the view of technological determinism and emphasize the importance of the agency. In the recent decades there has been tremendous development in social studies of technology and Science Technology and Society studies. It can be said that constructivist approaches, beginning from the emergence of the field of study became dominant and essentialist approach became criticized. I believe the reason for this is social constructivist approach points out that the only and realistic way to understand a technology is sociologically, analytically and empirically. This approach is closer to the common understanding of “technology” as “instrumental”. Mark Shields in his article “*Reinventing Technology in Social Theory*” indicates that for social constructivists technologies incorporate, material and nonmaterial, human and nonhuman elements simultaneously and seamlessly. (Shields, 1997:198) According to Shields, social constructivism is largely oriented toward explaining how technical actors shape and define artifacts to make them appear useful to relevant social groups. While the main concern of the thesis is to discuss and contrast two major approaches to technology-society relations, and to evaluate how well they account for current social networking practices, I decided to analyze substantivist and social constructivist critique of technology in the context of the digital communication technologies. Digital communication technologies constitute a new kind of technology. As a part of globalization, newspapers, magazines, radio, commercials and video games constitutes the forms that compose mass communication tools. (Giddens, 2005:450) Digital communication tools are one of them. Digitalization enables people to join or shape actively to what they see or hear and it provides basis for the development of interactive media. (Giddens, 2005:463) Aside from these tools of the digital communication, the Internet emerged spontaneously. World Wide Web (www) which is the most known part of internet is actually a library for multimedia. It was discovered by a software engineer in a physics laboratory in Switzerland at 1992. The widespread software was designed by a student in the University of Illinois. (Giddens, 2005:466) How many people are

connected to internet is unknown but in the beginning of the 21<sup>st</sup> century, over 2 billion people had access to internet. It is anticipated that since 1985, the use of internet is increasing with the percentage of 200 every year. This development which is increasing exponentially proves that the developments in communication technologies will develop further. (Giddens, 2005:467) In addition to what has been indicated above, online social networks have become extremely popular, various websites allows users to interact and share content using social links. These networks provide hundreds to even thousands of social links to establish with one another. (Viswanath et al. 2009:1) Facebook among other social network websites had shown an exponential growth in membership in recent years.

In the context that has been outlined, in the first chapter of this work I will try to present an overview of major approaches to the social analysis of technology. I will give a brief summary of Instrumentalism, Substantivism and Social Constructivism. In the second chapter I will try to define what technology is in Ellulian terms. In the third chapter of my thesis I will analyze what technology is in social constructivist terms. In the fourth chapter, I will display empirical implications and assessments. I will analyze what digital communication technologies are with an emphasis on the social network sites. In this context I will analyze the Facebook phenomenon from the two approaches of technology. I will analyze the role of Facebook in the revolutions which took place in the winter of 2011 in Tunisia and Egypt and analyze the relevance of those revolutions to technology. I will present a result of an online debate that took place in late-February and early-March 2011, on “*The Economist*”. I will try to examine the remarks of the parties of the debate and the result of the debate. In conclusion, I will try to present my reflections on agency and technology.

## **2. OVERVIEW OF MAJOR APPROACHES TO THE SOCIAL ANALYSIS OF TECHNOLOGY**

There are various definitions of technology made by various different theoretical foundations. According to Sismondo's classification; there are three theoretical foundations of the definition of technology; first one is instrumentalism, the second one is substantivism and the third one is social constructivism. Instrumentalism defines technology as a tool which submits to the values established in culture and tradition, substantivism believes that there is an underlying force in technology which is autonomous and overrules those values. Social constructivism believes that science and technology are thoroughly social activities. (Viswanath et al. 2009:10) There are so many differences in those theoretical foundations about technology and it would be best to define them each in order to understand the technological phenomenon.

### **2.1 Instrumentalism**

Instrumentalism defines technology as a tool or instrument. This is the default point of view. It is standard and stereotypical view of technology mainly shared by most of the engineers. The basic argument of instrumentalist definition of technology is that technology is a tool for achieving pre-modified goals. Some thinkers emphasize the design process of technologies which are directed by human and some thinkers agree that technology means material objects. The basic point that all thinkers agree is that the design and direction of technologies are in human control and because of that technology has no valuative content of its own, that it is neutral in the context of its ends. Feenberg defines instrumentality as a form of domination, that controlling objects violates their integrity, suppresses and destroys them. If this is so, then technology is not neutral and simply using it involves taking a valuative stance. (Feenberg, 1996:2) According to Feenberg the neutrality of technology implies four points. First one is that technology is indifferent to the variety of ends it can be employed to achieve. (Feenberg, 1991:3) Second one is that technology shows no

indifference with respect to politics, at least in the modern world, and especially with respect to capitalist and socialist societies. Tools are useful in any social context no matter what they are. For example a hammer is a hammer, a steam turbine is a steam turbine and they are used the same way in any social context. Technology then appears to be different from traditional legal or religious institutions, which cannot be readily transferred to new social contexts because they are so intertwined with other aspects of the societies in which they originate. (Feenberg, 1991:5) But on the contrary the transfer of technology appears to be inhibited only by its cost. The third point is that the socio-political neutrality of technology is usually attributed to its "rational" character and the universality of the truth it embodies. Technology is based on verifiable causal propositions and such propositions are true, like scientific ideas they maintain their cognitive status in every conceivable social context, they are not socially and politically relative. This leads to the thought that what works in one society can be expected to work just as well in another. The fourth point includes the thought of the universality of technology and this means that the same standards of measurement can be applied in different settings. Technologies stand essentially under the same norm of efficiency in any and every context and it is capable of this because it is neutral. For Feenberg, this approach places "trade-offs" at the center of the discussion. Not optimizing two variables is the basic law of the instrumental theory of technology. The technical sphere can be limited by nontechnical values, but not transformed by them. (Feenberg, 1991:6) The instrumentalist understanding of technology appears to account for the tensions between tradition, ideology, and efficiency which arise from socio-technical change. For example modernization theory, studies how elites use technology to promote social change in the course of industrialization. Instrumentalism provides the framework for those kinds of research. (Feenberg, 1991:7) Of course not every instrumentalist necessarily believes the points that are emphasized by Feenberg but I believe he makes quite conclusive remarks on the thought.

## **2.2 Substantivism**

With the historicizing trend in the emerging biological and social sciences of the late 18th and 19th century this trend firmly rooted in the idea of progress. Substantivism found its surest guarantee in the promise of technology. (Feenberg, 1999:1)

Feenberg denotes that “substantive theories” of technology attribute a more than instrumental but a substantive, content to technical mediation. Substantive theory argues that technology is not neutral but embodies specific values. The tools we use shape our way of life in modern societies where technique has become all pervasive and because of this pervasive character of technology means and ends cannot be separated. Technological development transforms what it is to be human because how we do things determine who and what we are. (Feenberg, 1999:2) Jacques Ellul and Martin Heidegger; the best known two substantive theorists argue that technology constitutes a new type of cultural system that restructures the entire social world as an object of control. Feenberg denotes that something like this view is mentioned in Max Weber's pessimistic conception of an "iron cage" of rationalization, although he did not specifically connect this projection to technology. Ellul on the other hand makes that link clear by arguing that the "technical phenomenon" has become the defining characteristic of all modern societies regardless of political ideology. Heidegger shares the same idea that technology is relentlessly overtaking us. Feenberg quotes Heidegger in “Questioning Technology” as;

We encounter our world in action as a concrete whole, revealed and ordered in a definite manner that belongs to our epoch. Technology is such a mode of revealing of our time, technology is no mere instrumentality. It forms a culture of universal control. Nothing escapes it, even its human makers. Everything loses its integrity as a part of coherent world and is leveled down to an object of pure will. (Feenberg, 1991:7)

Although the basic claims of substantivism are all too believable, this approach attributes magical powers to technology. (Feenberg, 1991:7) Modernity is an epistemological event that discloses the hidden secret of the essence of technology according to substantivism. The hidden secret is the rationality itself which is the drive for efficiency for increasing control and calculability. In pre-modern societies, this process unfolds autonomously once technology is released from the restraints that surround it. The substantive theory of technology warns us about the cultural character of technology. It doesn't denote that machines have taken over but in choosing to use them we make many unwitting cultural choices. The substantive impact of technology is that it has become an environment and a way of life. (Feenberg, 1991:8) Substantive critique has affinities with determinism like for both;

technological advance has an automatic unilinear character. (Feenberg, 1999:3) Substantivist approach is not common among public because the general public doesn't agree with the substantive nature in technology. Technology is not deemed to be something that annihilates or undermines the qualities of our cultural and social life. Technology is perceived as advance and it is always welcomed by public in every sphere of our lives especially in post-industrial societies. Technology is nothing that one can give up.

### **2.3 Social Constructivism**

Social constructivism marks an important new development in the sociology of science especially after the 1970's. According to Feenberg social constructivism perceives scientific knowledge as socially constituted. When scientific knowledge is treated as a social construction it would be implying that there is nothing epistemologically special about the nature of scientific knowledge, it is simply one in a whole series knowledge cultures. The old apprehension that basic sciences generate all knowledge which technologists then apply doesn't help to understand contemporary technology. (Layton, 1977 as cited in, Bijker et al. 1989:20) Constructivism is drawn apart with the standard view which argues that society conditions the pace of progress but not the nature of technology itself. For constructivists, there are many paths that lead from the first forms of a new technology. The social alliances that lie behind technical choices are the focus of constructivism. The configuration of components corresponds both to a technical logic and the social logic of its selection. In technical development a wide variety of social groups are not disregarded. (Feenberg, 1999:9) Constructivism argues that technology is social in much the same ways are institutions. It is neither neutral nor autonomous as many technologists and humanistic critics of technology has maintained. (Feenberg, 1999:10) Social constructivism provides important assumptions such as; science and technology are importantly social and science and technology don't provide a direct route from nature to ideas about nature; the products of science and technology are themselves natural. As all human knowledge is developed and maintained in social situations, sociology of knowledge should try to find ways to understand the processes by which that a taken-for-granted reality means for the man in the street. (Berger and Luckmann (1966) as cited in, Sismondo,

2004:52) The compositions of the social world are independent of our own volition and we can't wish them away. If people act with respect to them, they can reinforce these social realities. The precondition of progress is the social reality of knowledge of the practices around knowledge. Not only science or scientists construct facts. (Sismondo, 2004:53) For social constructivism technological innovation takes place in a wide range of circumstances and historical epochs and that the import that can be attached to basic science therefore probably varies considerably. Both science and technology are socially constructed cultures and bring to bear whatever cultural resources are appropriate for the purposes at hand. (Bijker, Hughes, Pinch, 1989:20-21)

In this section I tried to present an overview of major approaches to the social analysis of technology. It is important to understand these approaches for providing a background to embody what will be betrayed in the following sections. In the next section, I will present what technology is in Ellulian terms in details since he is one of the major figures in substantivist approach to technology.

### 3. TECHNOLOGY IN ELLULIAN TERMS

Jacques Ellul was born in Bordeaux in January 6, 1912. He was raised with aristocratic virtues and as a Lycée graduate he wanted to be an officer in the navy but his father encouraged him to study law. After studying law at the University of Bordeaux he attended University of Paris and he had his doctorate degree in 1936 with a thesis entitled "The History and Legal Nature of the Mancipium". Ellul began teaching at the Faculty of Law in Montpellier (1937-1938) and when the World War Two break, he stopped teaching and moved to countryside and started farming to support his family. During World War Two he participated actively in French resistance. After the war Ellul moved to Bordeaux where he became a member of the Bordeaux city administration (October 31, 1944 - April 29, 1945). His active engagement in the events of the century created a large amount of writings consisting of almost a thousand articles and around fifty books which were translated into more than twelve languages. He taught in the University of Bordeaux until 1980 when he retired and he died in Bordeaux in 1994. (Chastenet, 2002)

Ellul has a trilogy on the technological phenomenon which are; *"The Technological Society"*(1954-64), *"The Technological System"*(1977-80) and *"The Technological Bluff"*(1988-90). It is important to read Ellul's trilogy because during the intermediate period between *The Technological System* and *Technological Bluff* there was an "explosion of techniques". (Son, 2004:518) Apart from the philosophers of technology such as Herbert Marcuse, Martin Heidegger and Lewis Mumford whom are associated with Ellul, he witnessed information technology, communication technology and bio-technology. He experienced this explosion of techniques which none of the philosophers above could. Besides the trend of philosophy of technology which is generally negative, critical, and more abstract before the 1960s, has changed during 1980s into more diverse voices.

### 3.1 Technique and Technology

Ellul's major concern about technology is not in its instrumental form and to understand the distinction that Ellul proposes between "*technique*" and "*technology*" one should figure out the difference between those terms in Ellul's philosophy of technology. (Son, 2004:519) For Ellul *technique* refers to "the totality of methods rationally arrived at and having absolute efficiency (for a given state of human activity). (Ellul, 1964, as cited in Son, 2004:519) Ellul indicates in *Technological Bluff* that American usage of technique has implanted in our minds the idea that the word technology refers to actual processes. For him this is the way the media use the term but in a strict sense technology is discourse on technique. (Ellul, 1990: xv) He continues as;

I am talking about technological bluff, about the gigantic bluff in which discourse on techniques envelops us, making us believe anything and, far worse, changing our whole attitude to techniques: the bluff of Politicians, the bluff of the media, the bluff of technicians when they talk about techniques instead of working at them, the bluff of publicity, the bluff of economic models. (Ellul, 1990: xvi)

According to Ellul the intrinsic nature of modern technique is the same as the pre-technical society. What have changed are the nature of the technical phenomenon and the characteristic of the relation between technical phenomenon and society. (Ellul, 1964:63) Jacques Ellul in his book *La Technique*, indicates that he is "in substantial agreement" with the definition of technique as: "the ensemble of practices by which one uses available resources in order to achieve certain valued ends" which was made by H.D. Lasswell. Ellul denotes that:

In the examples which Lasswell gives, one discovers that he conceives the terms of his definition in an extremely wide manner. He gives a list of values and the corresponding techniques. For example, he indicates as values riches, power, well-being, affection, and so on, with the techniques of government, production, medicine, the family. Lasswell gives to techniques their full scope. (Ellul, 1962:395)

#### 3.1.1 Technique and technology - before the eighteenth century

For Ellul there had been limitations on technology before the eighteenth century. Those limitations were; limited application, limited technical means, limited area of effect and limited control. He indicates that technique is nothing that can be explained in the context of machines, for him technique can be understood only in

the context of its interaction with the society. The first limitation that pre-technical society attributed to technology is; narrow or limited application. In the pre-technical societies, the life of the group of people was essentially non-technical. Certain productive techniques existed but they had secondary role in life. The technical effort became secondary to the pleasure of gathering together. The secondary causes; such as the obligation to work was dominated by the activity of sustaining social relations. (Ellul, 1964:65)

The second limitation for Ellul, is the technical means. There was no attempt to perfect the means that are existed which were very few. People in the pre-technical society were not trying to make the tools they had better as long as they are effective. Professional know-how was what makes a tool efficient or not. The talent's of man was making his tools efficient which was a kind of technique but had nothing to do with the characteristics of industrial technique. (Ellul, 1964:67) For Ellul, it is modern technique which tries to eliminate variation of skill. All societies were primarily oriented toward improvement in the use of the tools, they were not concerned about the tools themselves before the eighteenth century.

The third limitation for technique before eighteenth century was its local characteristic. Communities and social group relations were very strong and they were closed to outsiders. Ellul gives the Greek and Roman examples in that context. (Ellul, 1964:68) Greek art didn't spread to other communities or the Roman law was only concerning Roman people, it didn't extend beyond the Roman borders. A particular technique was an intrinsic part of a particular civilization that is why the spread of techniques from one society to another was not possible. Ellul indicates that in the past, technique was not objective; it was subjective in relation to its own culture. (Ellul, 1964:69)

The fourth limitation for technique was the choice of the human beings. For Ellul, the pre-technical societies were free to identify themselves as they want; some were warriors, some were concerned with the exploitation of the world, some were not concerned with material expansion. Man was able to isolate himself from the influence of technique by attaching himself to a given group and exerting influence on this group. Before the eighteenth century it was always human action which was decisive. (Ellul, 1964:76) The people in certain civilization confronted with certain

techniques but the individual could always break away and lead a mystical and contemplative life. For Ellul, the evolution of technology was not logic of discovery or an inevitable progression of techniques; it was an interaction of technical effectiveness and effective human decision.(Ellul, 1964:77)

### **3.1.2 Technique and technology – after the eighteenth century, modern technique**

In *The Technological System* Ellul indicates that people generally conceive of technology as a means of action allowing man to do what he was unable to achieve by his own means. For him what is more important is to consider that these “means” are mediations between man and his natural environment. With the development of the technological phenomenon and the multiplication of technologies, the overall situation has changed. (Ellul, 1980:34) Technique before the 18<sup>th</sup> century which had four limitations is different from the modern technique in 1950’s. What characterizes modern technique for Ellul is the technique emerged after the technical application of science. (Ellul, 1964:63) Technology as a means and an ensemble of means, it is obviously a mediator, an intermediary between man and his ancient environment. (Ellul, 1980:36) In *Technological Order*, Ellul denotes that technique has become the new and specific milieu in which man is required to exist, one which has supplanted the old milieu. Technology excludes any direct relationship to the natural elements or modifies those that exist like water and air and now man's environment is made up solely of technological objects but these are not the only reason why technology is the living environment. The major reason is that technology infringes directly upon man's life; it exacts adaptations like those once demanded by the natural environment. (Ellul, 1980:39) The result is that, the technological environment then serves as interpreter for the (false) relationships of men. The loss of the faculty of symbolization is one of the greatest losses of modern man. In the technological environment, symbolization, which helped man to survive in a hostile world, has become inadequate. (Ellul, 1980:40)

For Ellul the development of the individual techniques is an “ambivalent” phenomenon and since technique has become the new milieu, all social phenomena is situated in it. He gives politics as an example, stating that it is not modified by technique as one factor among others which operate upon it; the political world is

today defined through its relation to the technological society. The ideas, judgments, beliefs and myths of the man today have already been essentially modified by his technical milieu. Ellul denotes that choices and ends are both based on beliefs, sociological presuppositions, and myths which are a function of the technological society. (Ellul, 1962:395) Technique in a technical society is characterized by its broad application into all spheres of life.

In *The Technological Society*, Ellul ranges the characteristics of the modern technique as; rationality, artificiality, automatism, self augmentation, holism, universalism and autonomy. For Ellul modern technique is a rational process which is liable to bring mechanics to bear on all that is spontaneous and irrational and every intervention of technique is, in effect, a reduction of facts, forces, phenomena, means and instruments to the schema of logic. (Ellul, 1964:73) Habermas in his book *Toward a Rational Society* defines rationalization as;

Rationality means, first of all the extension of the areas of society subject to the criteria of rational decision. Second, social labor is industrialized, with the result criteria of instrumental action also penetrate into areas of life (urbanization of the mode of life, technification of transport and communication). Both trends exemplify the type of purposive-rational action which refers to either the organization of means or choice between the alternatives.(Habermas, 1971:81)

Habermas is criticized to be an instrumentalist according to his approach to the technological phenomenon. Both Habermas and Ellul perceive rationality the same way; as a force which is undermining the means of life. For Habermas, rationality is one of the characteristics of purposive-rational action while for Ellul, rationality is one of the characteristics of technique. Ellul indicates that, the second obvious characteristic of modern technical phenomena is its artificiality. The creation of technique as art is the creation of an artificial system. Modern technique destroys, eliminates or subordinates the natural world not even allowing a symbiotic relationship.

The third characteristic of modern technical phenomena for Ellul is automatism. Ellul sums up the automatism of technical choice by the :“The one best way” to a certain thing idea. (Ellul, 1964:79) For Ellul this characteristic signifies that there is no choice between two technical methods, one of them asserts itself inescapably; its results are calculated, measured, obvious and indisputable. A person can choose only

in favor of technique he stops being an agent of choice. (Habermas, 1971:80) In this context Heidegger, in his own way seems to be sharing the same idea with Ellul. In his article called *The Question Concerning Technology* Heidegger puts forward a description for the essence of technology. For him, technology is a method of revealing or poiesis which is bound up with the original meaning of techne. Techne is a bringing forth, it means as Greeks define it. Techne leads us into the same context that opened itself to us. Heidegger indicates that technology is a mode of revealing, it comes to presence in the realm where revealing and unconcealment take place, where alethia and truth happens. (Heidegger, 1977:13) Modern technology is a revealing but it does not unfold into a bringing-forth in the sense of poiesis. Modern technology is ruled by challenging. (Heidegger, 1977:14) He continues as;

...a tract of land is challenged into the putting out of coal and ore. The earth now reveals itself as a coal mining district, the soil as a mineral deposit. The field that the peasant formerly cultivated and set in order [*bestelle*] appears differently than it did when to set in order still meant to take care of and to maintain. The work of the peasant does not challenge the soil of the field. In the sowing of the grain it places the seed in the keeping of the forces of growth and watches over its increase. But meanwhile even the cultivation of the field has come under the grip of another kind of setting-in-order, which sets upon [*stellt*] nature. It sets upon it in the sense of challenging it. Agriculture is now the mechanized food industry. Air is now set upon to yield nitrogen, the earth to yield ore, ore to yield uranium, for example; uranium is set upon to yield atomic energy, which can be released either for destruction or for peaceful use. (Heidegger, 1977:14-15)

Heidegger indicates that the revealing that rules throughout modern technology has the character of a setting-upon, in the sense of a challenging-forth. Through regulating their course the revealing reveals to itself its own manifoldly interlocking paths. Heidegger denotes that, this regulating itself is, for its part, everywhere secured. Regulating and securing even become the chief characteristics of the challenging revealing. (Heidegger, 1977:16) For Heidegger everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Heidegger calls it the standing-reserve. The name standing reserve assumes the rank of an inclusive rubric which designates nothing less than the way in which everything presences that is wrought upon by the challenging revealing. (Heidegger, 1977:17) Heidegger asks the question who accomplishes the challenging setting-upon through which what we call the real is revealed as standing-reserve? And he answers as the man.

He continues as;

...but man does not have control over unconcealment itself, in which at any given time, the real shows itself or withdraws. The fact that the real has been showing itself in the light of Ideas ever since the time of Plato, Plato didn't bring about...Only to the extent that man for his part already challenged to exploit the energies of nature can do this ordering revealing happen. If man is challenged and ordered to do this, then does not man himself belong even more originally than nature within the standing reserve?...Yet precisely because man is challenged more originally than are the energies of nature, he never is transformed into mere standing-reserve. Since man drives technology forward, he takes part in ordering as a way of revealing. But the unconcealment itself, within which ordering unfolds, is never a human handiwork, any more than is the realm through which man is already passing every time he has as a subject relates to an object. (Heidegger, 1977:18)

Heidegger indicates that as an ordering revealing, modern technology is no merely human doing. (Heidegger, 1977:19) Man in the technological age is, in particularly striking way denotes Heidegger, challenged forth into revealing. (Heidegger, 1977:21) For him, this force of technology makes man a standing-reserve for technology. Like Ellul, Heidegger believes that human action is no merely in the control of modern technology.

Technical process becomes self-determining which always moves toward to the most efficient. The choice among methods, mechanism, organizations and formulas are carried out automatically inside the technical circle. (Ellul, 1964:82) Ellul indicates that all non technical activity eliminated or transformed into a technical one automatically. (Ellul, 1964:83) Self augmentation is another characteristic of modern technical phenomenon which specifies that technique has arrived at such a point in its evaluation that it is being transformed and is progressing almost without decisive intervention by man. (Ellul, 1964:85) It is the people who help the progress of technique but not by choice, there is an automatic growth of everything which concerns technique. For Ellul, this is a self-generating process which technique engenders itself. (Ellul, 1964:87) The cause of self-augmentation is the principle of the combination of the techniques. Ellul formulates self-augmentation in two laws; first one is that in a given civilization, technical progress is irreversible and the second one is, technical progress tends to act, not according to arithmetic but according to a geometric progression. With self augmentation the individual's role is less and less important in technical evolution. (Ellul, 1964:92) It is the technical

necessity of production which forces itself on the consumers not the wishes of the producers. (Ellul, 1964:93)

The other characteristic of modern technological phenomena for Ellul is monism which means that the technical phenomenon forms a whole by embracing all the separate techniques. Everywhere and essentially the technical phenomenon present the same characteristics. (Ellul, 1964:94) There can be many different material techniques but the identity they share is the same. Despite the extreme diversity of its appearances, Ellul denotes, this identity is the primary mark of that thoroughgoing unity which makes technical phenomenon a single essence. (Ellul, 1964:95)

Technical universalism, the other character of technological phenomenon presents itself geographically for Ellul. This characteristic signifies that technique is constantly gaining ground, country by country and that area of action is the whole world. The tendency to apply the same technical procedures is the same in almost every country despite their degree of civilization. Man doesn't need to be civilized in order to use technique, whatever hand uses it; technique produces its effect more or less totally in proportion to individual's moral absorption in it. (Ellul, 1964:116) For Ellul the historical reasons for technical invasion of the world are war, commerce, and the export of technicians. (Ellul, 1964:118-120) He continues as:

Without exception in the course of history, technique belonged to a civilization and was merely a single element among a host of non technical activities. Today, technique has taken over the whole civilization. Certainly technique is no longer the simple machine substitute for human labor. It has come to be the "intervention into the very substance not only of the inorganic but also of the organic". (Ellul, 1964:128)

The last characteristic Ellul identifies is the autonomy of technique. This characteristic for Ellul is the essential condition for the development of technique. Technique is autonomous with respect to politics, economics, morality, spirituality. It is a closed system and only obeys its own rules. (Ellul, 1964:133) The only thing determinative in technique is its own internal necessities. With its own determinations and its special laws, technique has become a reality in itself. (Ellul, 1964:134) The man of today is forbidden to choose his destiny by the autonomy of technique.

### 3.2 Technology as a System

In his book *The Technological System*; Ellul indicates that the view of technology as a system leads to an essential conclusion that it is useless to regard one technology or one technological effect separately. He gives the TV as an example stating that it exists only in terms of a technological universe, as an indispensable distraction for people living in this universe and as an expression of this universe. It is not "raw" or "cultural" or anything else because it quite simply does not exist in and of itself. It is TV plus all the rest of the technological actions. (Ellul, 1980:107)

When every aspect of human life is subjected to control and manipulation, to experiment and observation the total technization occurs. A demonstrable efficiency is achieved everywhere. (Ellul, 1980:82) Ellul denotes that, this technological system exists not only because of its intrinsic relationship, but also because the objects to which the technologies are applied are systems themselves. Technology applied to separated, specified, differentiated aspects of nature and society and has finally covered them in their entirety since they have existed as systems like ecosystem for example. (Ellul, 1980:83) The existence of technology rests upon human beings because they are the ones participating in it, making it function, inventing or choosing. We cannot see the technological system because it is purely imaginary what we see are men using the instruments. (Ellul, 1980:84)

Ellul continues as;

That is man in relation to what is known as technology; it is he who, in the final analysis, is called upon to act and to choose. Even if there is a certain reality of technology, it is erroneous to claim we can analyze it by disregarding the human presence. The technological system is a qualitatively different phenomenon from an addition of multiple technologies and objects. We cannot absolutely understand them if we consider them separately or isolate one field of action from technology; we have to study them inside of, and in terms of, the overall technological system. (Ellul, 1980:85-89)

There are features of the system which characterizes it and the first one is that; the system is composed of subsystems such as; rail, postal, telephone, and air systems, a production and distribution system for electric power, industrial processes of automated production, an urban system, a military defense system, etc. They cannot be treated spontaneously; they have become so complex that everything has to pass through an analysis of the objectives, the structure and the flow of information from

the ensemble. The second feature Ellul defines is the flexibility of the overall system. (Ellul, 1980:108) The ensemble is self regulative and tends to function more flexibly. The strength and stability of technology reside in that ability to adapt. The technological system produces more and more efficient mechanisms to bring about conformity. (Ellul, 1980:109) The flexibility that is discussed concerns the apparent independence of man and it is also in this time a feature of the system with respect to the subsystems. The subsystems have independence which causes them to be considered in themselves; such as having their own existence unrelated to technology, their own originality, even origin, and their own laws of functioning with no reference to technology. (Ellul, 1980:110) The third feature of the system is that it elaborates its own processes of adaptation, compensation and facilitation. (Ellul, 1980:111)

Ellul explains this feature as:

Whenever technology creates, say, desperate social situations because of the complexity, the demands (which make countless young, old, and semi-capable people powerless and marginal, etc.), the free motion of technologies-it instantly establishes a social service, technologies of prevention, adaptation, readjustment, etc. These are actually technologies and hence represent the system, being meant to facilitate life in this inhuman universe. Thus, an ensemble of reparation technologies is formed. (Ellul, 1980:112)

If the system faces with difficulties of human adjustment it produces satisfactions and compensations to facilitate the growth and functioning of the system. (Ellul, 1980:113) The technological system produces its own compensations, it reproduces its conditions for existing and developing; this is a way of removing an obstacle to development and reducing the contradictions. The system obeys a law which is the indefinite evolution of technology; it cannot stabilize. It includes within itself its own expansion. It permanently expands and this expansion keeps challenging both the adaptation of man and the very structure of the system itself. If technology wouldn't tend to endlessly reproduce its own reorganization it would not be technology. It has no intention, no objective it just rolls along and it's the servants of it believe that they are working for the good of man. Their intentions make the technological system more and more humanized which is through the absorption of the human into technology. (Ellul, 1980:116-117)

According to Ellul, the technological system lacks one of the characteristics generally regarded as essential for a system which is the feedback. Feedback is the mechanism intervening when an ensemble, a system in movement, makes a mistake and rectifying that error but acting at the source, at the origin of the movement. (Ellul, 1980:117) A mechanism of feedback would react to the source or cause of malfunctions, deviations and negative effects and correct them in order to present order and balance in growth. (Ellul, 1990:100) The technological system has no intention of modifying itself when it develops obstacles. It is given to pure growth and it causes increase of irrationalities. (Ellul, 1980:117) Ellul denotes that the system functioned in such a completely anarchical and spontaneous way that no one could control or direct it. (Ellul, 1990:100)

In *The Technological Bluff*, Ellul discovers that between the periods he wrote *The Technological System* and *The Technological Bluff* there has been a change in the context of the feedback. He indicates that when we consider the technical system now, spontaneously, by the very pressure of things two types of feedback have appeared which are negative and a positive feedback. One of them tends to check the acceleration of technique in every direction, the other one tends to increase it. (Ellul, 1990:101) There are two positive feedbacks which are politics and science. Technique provides politicians with extraordinary means to achieve their projects without considering if they are from right or left. Even Liberal or federated states are liable to unification because it is easier to govern a unified whole and technique serves as an extraordinary means of unification. Ellul gives media as an example stating that media is essential in order to know all that is taking place within the nation and also to control the public. He indicates that media field is a great assistant of the state because it is a means of control and no political power can be exercised without the means of control. (Ellul, 1990:102) The legitimacy of the state is no longer religious or democratic Ellul says; its legitimacy rests in science and technique. Science validates power, power asserts itself scientifically. The public perceives science as the great goddess which cannot be questioned and which validates those who serve it. Politics function as positive feedback for science and technique. Science is the second positive feedback for the system. It can advance only by technical improvements no matter what the field is. (Ellul, 1990:103) For Ellul there is a strict circle between science and technical progress; science speeds up

technical progress by this way technical progress makes the new discoveries possible. Since science is the ultimate justification in the Western world, Ellul says, money that spent to the technical exploits seems to be legitimate. Negative feedback on the other hand tries to put serious limits on technical growth and by saying that Ellul refers to economy and finance. (Ellul, 1990:104) Economic growth is made possible by technique but technique demands large amounts of funding from the economy and economy reacts to this situation by putting a brake on it through forcing it to make choices. Ellul draws the reasons as;

First, technique takes up projects concerning which no one can say whether they will have any economic value. Second, the growth of techniques means diminution for the secondary sector and temporary gain for the tertiary. Third, technique has external effects and its costs are thus much more complex. The more it progresses, the more it creates global problems, pollution, potential dangers, the exhausting of nonrenewable resources. Fourth, techniques produce increasingly powerful and expensive armaments. (Ellul, 1990:105) Economy acts as a brake or buffer in its relation to technique and this represents negative feedback. (Ellul, 1990:106)

### **3.2.1 Technology as a system - characteristics of the technological phenomenon**

In *The Technological System* Ellul ranges up the characteristics of the technological phenomenon different from the range he made in *The Technological Society*. The characteristics of technological phenomenon in *The Technological System* are as follows; autonomy, unity, universality and totalization and the characteristics of the technological progress are lined up as; self-augmentation, automatism, causal progression and absence of finality and the problem of acceleration.

First one of the characteristics is autonomy as it is said above. An autonomous technology means that technology ultimately depends only on itself, it maps its own route, and it is a primary not a secondary factor. It must be regarded as an organism tending toward closure and self-determination; it is an end in itself. For Ellul autonomy is the very condition of technological development. (Ellul, 1980:125) Technology does not obey to any judgment or restraint from the outside. The technological system is embodied in technicians and accepts no other law, no other rule than the technological law it prescribed to itself. Ellul denotes that the important aspect of the autonomy of technology is that technology radically modifies the objects to which it is applied while being scarcely modified in its own features. Here

he gives the example of open and closed data, stating that open data relates to still unsettled questions, it has an indeterminate content, it implies the participation of interested parties while closed data concerns a well defined object, it can be coded and diffused instantaneously and it is closed to participation. Only closed data can be rapidly transmitted and only it can take the advantage of all the technological means. The transmission of data necessitates the absolute usage of technology, the faster data can be transmitted because of its closed nature, and the more data becomes closed. (Ellul, 1980:126-127) Technology has no limits, it is by its nature; nothing is impossible or prohibited for it. This is the very essence of technology. Technology is a phenomenon located in a potentially limitless universe because itself if potentially limitless. Ellul indicates here that when we call technology autonomous, we are not saying that it is neutral; it is just the opposite as it contains its own law and its own meaning. (Ellul, 1980:154) Technology intrinsically has a certain number of consequences; it represents a certain structure, certain demands, certain modifications of man and society. The consequences technology is that it has force over people without considering they like it or not. For Ellul technology goes on its own direction and people have to become aware of this independence of the technological system which is opposed by the reassuring conviction of technological neutrality. (Ellul, 1980:155)

The second characteristic of the technological phenomenon is unity. The technological is an ensemble whose parts are closely united with one another says Ellul, which are interdependent and obedient to a common regularity. The technologies are dependent in every way, they exist only in terms of one another, and they are tied to one another. (Ellul, 1980:156) All the technologies have mutual action upon one another. Urbanization, industrial growth or mass consumption would not be possible if rapid transports wouldn't exist. The emergence of dozens of new technologies in all sectors-materials is demanded by each of these sectors. (Ellul, 1980:159) The synthesis between countless diverse technologies has altered social bodies and human life and because of this for Ellul technology is a sociological object. It is known that the family, the factories, the offices, the associations have been going through huge changes for the past century. When people encounter a technological enterprise, it doesn't seem to have practical consequences for society or for the individual. Technology modifies all forms of life; it creates new kinds of

behavior, beliefs, ideologies, political movements and it determines the factors of life; the levels and modes of existence. (Ellul, 1980:160) The appearance of a certain apparatus or certain method was not the cause of this on the opposite there was a necessity for a new environment, a new reference system, a new overall complex of modes of action and for Ellul this is what the technological system is. Technological undertakings are long-term ventures so this unicity, Ellul mentions operates in time. (Ellul, 1980:161)

The third characteristic of technological phenomenon is universality. Ellul indicates that universality refers to the fact that people now encounter technology everywhere and that the technological system is spreading into all domains. There are two points of view to regard the universality of technological phenomenon which are the universality concerning the environment and the areas human activity and the geographical universality where the technological system extends to all countries on earth. (Ellul, 1980:169) Technologies modify social behaviors and tend to bring their identification under the mask of divergent ideologies so that it doesn't fit into any one class. (Ellul, 1980:171) According to the application areas technologies can be divided into mechanical technologies which is a very wide term also covering things that are not strictly speaking mechanical like computers, economic technologies which is research and intervention, organizational technologies for all types of social organisms including government and administration, and human technological which are for the individual or non-institutionalized groups, advertising, propaganda, group dynamics, psychoanalysis and so on. For Ellul the system is quite universal and in the Western world, no activity of any sort can claim to be non technological. (Ellul, 1980:176) The technological system is developing throughout the entire world in spite of the differences among race, economy or political regime and this is the second aspect of the universalism which the geographic one. Ellul indicates that the machine is still itself no matter where it is shipped to. But the machine is merely one element in the technological system; it is not the machines that are shipped to all the countries on earth; it is in reality, the ensemble of the technological world, a style of life, a set of symbols, an ideology. (Ellul, 1980:178) For Ellul, the interdependence of all countries in the world today comes from the "mechanical and obligatory solidarity" that technology imposes. The universalization of technology and the coherence of the technological system produce the interdependence which causes

each event to have side effects everywhere. (Ellul, 1980:186) Aside from these the existence of the universality of technology doesn't necessarily mean that the technological system is transforming society into a mega machine. The universality of technology involves an ideological and sociological remodeling which is almost the same everywhere. (Ellul, 1980:187) The technological system as a system; established itself everywhere more or less completely. But the technological system doesn't guarantee peace or good feeling among countries even if it produces the breaches that people know which are powerless against universalization. (Ellul, 1980:188) The universality of the technological system brought rupture of human world not the unification and this is one of the basic features of the system. New fragmentations replace the old ones as a result of the competition produced by the system because of different rates of development in the technological sectors. (Ellul, 1980:189) Ellul indicates that when we speak of universality in the technological society, we are not saying that there is identity in all countries and on all social strata. (Ellul, 1980:190)

Fourth characteristic of technological phenomenon for Ellul is totalization which appears like science itself, both specializing and totalizing. (Ellul, 1980:199) Nothing is lost in technology because when a technology disappears, it is replaced by another of the same kind, only superior. It must be understood that totalization is a respond to a deep technological desire of man. Ellul indicates that man has more desires than walking on the moon; they have a wish for unity, to reduce everything into one, to destroy exceptions and aberrations and technology, little by little has solved many of the problems that humankind was faced with. Unity is now assured and given in the technological system it is no longer a metaphysical question and that is what resides in that totalization. For Ellul, men do not intentionally bring technology to this totalizing point; he is not aware that this system exists as a system and the elaboration of the system as "specialization-totalization" is an intrinsic process in itself. An ensemble of mechanical actions has established this phenomenon which can only be observed after it has taken place. But this creates a twofold problem for Ellul which are; the transition to a per se and then to a reflexive per se. (Ellul, 1980:200) Technology has a double effect on society and human existence, the totalization of it covers all the elements making up the social body and that gradually all expressions of human life are becoming technological. Technology disintegrates

and tends to eliminate anything that is not technicizable for example merriment, love, suffering, joy and it tends to reconstitute a whole of society and human existence on the basis of technological totalization. A new totality is being established and it is no longer the subordination of man to technology; it is the process that causes vast malaise in man and such a keen sense of frustration. Technology binds with all the elements of life and the totalization of technology produces a veritable integration of all the human, social, economic, political and other factors. (Ellul, 1980:203) Because of this, this society, this human being for Ellul, while not becoming technological objects, robots and so forth, now receive their unity from the totalizing technology. (Ellul, 1980:204)

### **3.2.2 Technology as a system – characteristics of technological progress**

In *The Technological System* Ellul range four characteristics of technological progress. Different from *The Technological Society* some of the characteristics Ellul attributed to technological phenomenon, are attributed to the characteristics of technological progress. Ellul quotes Hans Freyer as:

By technological progress, we mean all the innovations resulting from the application of science and technology to the economic process . . . . The object of these innovations is either to create new products and/or services, and/or to improve those already existing, or to augment the efficiency of economic operations, normally in order to lower their costs. (Ellul, 1980:207)

The characteristics of technological progress can be lined up as; self-augmentation, automatism, causal progression and the absence of finality and the problem of acceleration.

The first characteristic is self-augmentation; by this Ellul means the fact that everything occurs as if the technological system were growing by an internal, intrinsic force, without decisive human intervention. By saying that, Ellul does not mean that man doesn't intervene or play a part, what he means is that; man is caught in a milieu, in a process which causes all his activities, even those apparently having no voluntary direction, to contribute to technological growth whether or not he thinks or wishes about it. Technology feeds on everything that people can want, try or dream, it represents a center of polarization for all the 20<sup>th</sup> century mankind and self-augmentation signifies this side of technology. There are two phenomena encompassed in self-augmentation; on the one hand, technology has reached a point

of evaluation at which it keeps changing and progressing with no decisive human intervention. It grows and necessarily entails nonstop development by a kind of inner force. On the other hand, technology is the thing that all people are passionate about in our time so its superiority is assured and engulfed in the technological environment. Everything without exception oriented toward technological progress. Technology progresses with the efforts of all people and there are two phenomena identical about this. (Ellul, 1980:209) First for Ellul is that man was assimilated into the technological system which develops only by human acts. No one can escape and each individual's activity is ultimately integrated because human acts are precisely caused, defined, determined, summoned and elicited by the system. The individual's small deed does not count because everybody is working in this direction and the anonymous product is nothing but the technological augmentation. Technology induces each person act in this direction and the result comes from an addition that no one deliberately, distinctly wanted and this is self-augmentation. Ellul indicates that twenty years ago when he first pointed out that technology develops by a process called self-augmentation his idea was put down as "mythical exaggeration" and "unfounded artifice". But he admits that since then, it has been more and more frequently accepted and demonstrated. (Ellul, 1980:210) It should be realized that no innovation exists in itself; it responds to a certain number of needs. Technological innovation occurs within the dynamics of a certain number of tensions relative to time, in relation to a certain socioeconomic milieu whether or not favorable to this innovation and finally in an overall technological context which can be receptive or prohibitive. (Ellul, 1980:212) What confirms the trait of self-augmentation is that the obvious things people note today such as walking on the moon have always been a trait of technological progress. But, Ellul continues as; there has never been a clear human intentionality able to direct it, man has never chosen to make innovations where they are really needful. The innovations occurred in places where the technological system had in itself its reason for progressing. Innovation has been integrated into the process of self-augmentation which is not the marvelous, dazzling sort of innovation that causes growth in this new domain, but rather the individualism of this growth that defines innovation. (Ellul, 1980:215) For Ellul, there is no conflict at all between innovation as a triumphant act of the individual and the blind self-augmentation of a system; the system has perfectly assimilated, gained

control of, and integrated the innovation. There would be no growth if there weren't any innovations, but these results more and more from applying technologies to technological areas that correspond exactly to the necessity of self-augmentation. (Ellul, 1980:216) There are consequences of self-augmentation; one of them is that self augmentation occurs because everything functions by combinations of thousands of small discoveries, perfecting the ensemble. Progression results from this reality of the system too which makes repercussions vast. (Ellul, 1980:226) People don't need to be intelligent or educated for technology to progress, any average student or diligent professional helps technology to progress. Progress takes place through research by thousands of people on each issue and the quality of these researchers is insignificant. For Ellul, thousands of small discoveries that happen throughout the world ultimately add up to a technological step forward which will be deemed extraordinary at a given moment. An individual's qualification is less urgent to the extent that technological progress depends on its own structure. In the evolution of technology toward its constitution as a system and toward the gradual formation of the trait of self-augmentation man does not intervene. It is not man's wish to make a technological system or move toward autonomy of technology but technology's particular entity, its life is independent of our decision-making. (Ellul, 1980:227) For Ellul the last consequence of the self-augmentation of technology is the thrust of technological growth toward to the concentration of businesses. Only certain size of businesses can make research. (Ellul, 1980:229) He quotes himself as: "Thus technology is gradually organizing itself as a closed world" (The Technological Society). For him technology utilizes what the mass of people doesn't know. The domination of the ensemble is not in the hands of technicians any more. The internal laws of technology connect the notions of men and their incoherence. Those laws coordinate and rationalize; not man. Ellul indicates that self-augmentation gives technology a strange barrenness; it always resembles itself but anything else. Technology alters anything that touches it; there is nothing else in nature or in social or human life that may be compared to technology. Technology remains exactly identical, in both its traits and its course no matter what adaptations nature or circumstances demand of it. (Ellul, 1980:231)

The second characteristic of technological progress for Ellul is automatism. For him, automatism of the system is the application of technologies according to choices

which are exorted by previous technologies and only with great difficulty they can be shunted and diverted. (Ellul, 1980:232) There is no single and obvious decision when a new technology arrives, the choice is among several possibilities, and, the person who obeys technological reasons exclusively will make the best choice, which is a choice imposed by the technological result. Technological phenomenon obeys a certain number of automatisms and chooses itself by its own route. There is no influence of human decision, choices, hopes and fears on this development. If self augmentation of technology has produced by man, he did so by assuming not a creative but an occasional role. He is conditioned, determined, destined, adjusted and performed to produce this self augmentation. (Ellul, 1980:233) Technology develops in all directions and the fundamental law of automatism lies here which is; anything that can be done must be done. (Ellul, 1980:234) Technological growth has manufactured an ideology, a morality, a mystique which rigorously impels the choices of man toward this growth, which we can assume that it is him who decides. (Ellul, 1980:235) If there should be a choice between two possible technologies for the same operation, the choice occurs for the efficiency or the dimension of the results achieved which can be said to be automatic. (Ellul, 1980:238) Ellul continues as:

The surgical operation that could not be done and now can be done is not debatable, it is not the object of choice: it exists. Here we have a decisive aspect of technological automatism: it is now technology that makes the choice ipso facto, with no remission, no possible discussion, among the means to be used. Man is absolutely not the agent of the choice. He is an apparatus registering the effects, the results obtained by various technologies, and the choice is not based on complex or in any way human motives; man decides only in favor of whatever gives the maximum efficiency. This is no longer a choice. Any machine could perform the same operation. (Ellul, 1980:239)

A certain adjustment of individual, the social structures, the economic factors and the ideologies are needed when a technology develops in a sector.

Although technological development is both necessary and good, any possible resistance must be wiped out, everything and everyone must be adjusted in order to promote it. (Ellul, 1980:240-241)

These adaptations are desired, hoped for and believed; they don't come along in a non-human fashion. (Ellul, 1980:242) A perfectly malleable social organization is what is actually desired because technology demands a great social mobility for

progress. Because of technological automatism, when a technological procedure enters a new domain, it is confronted with older ways of doing things which tend to be eliminated because nothing can compete with anything technological. Following a road that is not technological can be decided by neither man nor group. (Ellul, 1980:250)

The third characteristic of technological progress for Ellul is the causal progression and the absence of finality. The general perception which is technology develops because human beings want to reach a certain goal is common among people; it imputes technology as an ideal agent. Ellul disagrees with this notion stating that; technology develops not in terms of goals to be pursued but in terms of already existing possibilities of growth. The question should be asked here for him is that whether technology obeys finality, an objective? (Ellul, 1980:256) Finalities emerge during the progress of the technological system, they are not determined. (Ellul, 1980:257) All modern studies for Ellul, tries to dissociate growth and development; the former is a simple increase of power, means and the latter is a development of both balanced social organization and man's intellectual, moral being. He agrees that technology brings growth but it doesn't guarantee development moreover it can cause underdevelopment. If technology causes development, it is not because it is its aim, it is because of chance and if technology brings growth, it is not because its goal is that, it is just a result of it. Perceiving growth as a finality of technology for Ellul is just confusing the end and the means. (Ellul, 1980:265) In these days, the development of science seems to be dependent on technology, but most of the specialists of various sciences indicate that most of the research done is not about scientific interest. Development of certain technologies brings new scientific questions for the scientists and these questions can only be answered by technological means. (Ellul, 1980:266) Because of all of these above Ellul concludes that there is no finality possible for technology. The ideal objective of eighteenth century which is happiness was transformed into a series of technological improvements by the nineteenth century and it had been reduced and assimilated to well-being. The spiritual and moral satisfactions that human beings seek deemed to be impossible. The material is possible and technology can provide it to them, therefore technology can obey its causality and substitute the goals it makes which are ideally proposed. (Ellul, 1980:272) Technology is ambivalent for Ellul in the

sense that it causes new problems right at the moment when it solved the old ones and the problems it raises makes it grow. Only after a technology is developed, its use can be discovered. (Ellul, 1980:273) Then Ellul continues there should be two principles to be set; first one is that there is no technological research if the previous elements can't make it possible. (Ellul, 1980:274) The second principle is that whatever element that is produced, it will be used for later research. The element that is discovered may seem useless at the time it was discovered but it never goes waste, there will be a time for that element in the circulation of technologies. For Ellul this is the characteristic of a system which contains its own causality. (Ellul, 1980:275) The procedures of the technicians cause technological growth. Every technology progresses experimentally and each of it must be successful from the basis for a subsequent practice. Technicians must know about the processes, comparable methods that are related to their field.

The fourth and final characteristic of technological progress for Ellul is the problem of acceleration. The acceleration of technological progress means the possibilities of predicting the evolution of the entire system. (Ellul, 1980:283) To analyze the technological phenomenon throughout the history, the invention itself or its application in the laboratory doesn't count, what counts is its diffusion, its application through large-scale consumption. (Ellul, 1980:285) The question is forecasting possible for technological growth has two aspects for Ellul which are; the predictability of technological growth and the second one is the predictability of human and social development. For him that forecasting is impossible and the concept one should focus on is the problem of acceleration. Technological progress accelerates faster when people have technologies at their disposal. Every technological discovery causes progress in several branches. (Ellul, 1980:292) Technological growth doesn't necessarily bring the capacity to use it to man. The more technology grows, the more the gap between man and the environment which adapted technology grows. (Ellul, 1980:294-295) For Ellul, rather than increasing the individual's will or faculty of reasoning, technological rationality causes man to be less and less capable of reorganizing society or revamping scientific research. Technology creates a new type of man who is incapable of maintaining the process of growth. (Ellul, 1980:296) There can be no forecasting about true acceleration or

stagnation in technological progress for Ellul. There can be slowdowns, but the technological system never tends to stabilize. (Ellul, 1980:308-309)

### **3.3 Jacques Ellul as a Technological Essentialist**

Ellul is perceived as a technological essentialist for this understanding of the technological phenomenon by Feenberg. The question should be asked is what is technological essentialism and why is Ellul a technological essentialist. Feenberg calls Ellul's perception to technological phenomena essentialist because for him Ellul is one of the most important theorists of substantive critique which has affinities with determinism like for both; technological advance has an automatic and unilinear character. (Ellul, 1999:3) For Feenberg this view is essentialist. Feenberg indicates that for determinism, technologies have an autonomous functional logic that can be explained without reference to society. Essentialism holds that there is one and only one essence of technology and it is responsible for the chief problems of modern civilization. According to essentialism technology reduces everything to functions and raw materials. Practices which embody a human meaning are replaced with goal oriented technological practices. Any proposition that tries to inoculate technical with meaning happens to be an external interference in a rational field with its own logic and laws. (Ellul, 1999:vii) Technical disciplines are made up around devices conceived as essentially functional and because of that they are essentially oriented toward efficiency. Technical disciplines systematically abstract from social aspects of their own activities in the pursuit of efficiency. Like technocratic point of view; essentialism perceives technologies as devices which are oriented toward efficiency. According to essentialists ordinary people encounter technology as a dimension of their life-world it is the technological master who relate technology through rational planning to a world reduced to raw materials. (Ellul, 1999:x) The paradox of essentialism for Feenberg is that it ends up agreeing implicitly with technocrats that the actual struggles in which people attempt to influence technology can accomplish nothing of fundamental importance. (Ellul, 1999:xiv) The path of development is dictated by technical necessity and that path is discovered by the pursuit of efficiency. For Feenberg determinism is based on two premises which are unilinear progress and technological determinism. Unilinear progress indicates that technical progress follows a fixed track from less to more advanced configurations, a unilinear

course. Every stage of technological development causes the next development and they don't constitute the branches off the main line. Unilinear progress is based on two claims of unequal plausibility which are first; technical proceeds from lower to higher levels of development and second; that development follows a single sequence of necessary stages. For unilinear progress the advance of societies is not in question. The second premise of determinism for Feenberg which is technological determinism indicates that social institutions must adapt the imperatives of technology from the base. When a certain technology is adapted, it necessarily brings constraints to adapt certain practices which are connected with its employment. (Ellul, 1999:77) The stream of influence is not unidirectional but the practices and devices are consistent. Feenberg denotes that these two theses of technological determinism present technology as the foundation of modern life which is self-generating and decontextualized. (Ellul, 1999:78) For Ian Thomson, Feenberg's criticism of essentialism is addressed by three particular kinds of technological essentialism which are ahistoricism, substantivism and one-dimensionalism. Thomson indicates that for being a technological essentialist, one should believe that technology has an essence. He denotes that Feenberg proposes his own "theory of the essence of technology" which has particular kinds of technological essentialism which among Albert Borgmann, Jacques Ellul, Martin Heidegger and Jurgen Habermas commits himself to at least one of three particular claims about the essence of technology which makes their technological essentialisms unacceptable. (Thomson, 2000: 430) Thomson indicates that according to Feenberg, an ahistorical technological essentialist interprets the historically specific phenomenon of technology in terms of a transhistorical conceptual construction. For Feenberg says Thomson the problem about this kind of technological essentialism is the attempt to fix the historical flux of technology in a singular essence which causes ahistorical essentialists to abstract their understanding of the essence of technology from the socially and historically specific context in which particular technologies are embedded. The consequence is that these ahistoricist theories fail to understand the essence of technology as a social phenomenon and their complete abstraction from sociohistorical context submits an essentially unhistorical understanding of the essence of technology. Thomson continues by Feenberg's definition of substantivism which claims that the essence of technology comes from beyond us and it is out of control. Technology is understood

by substantivists as there is an autonomous force apart from society which impinges on social life from the alien realm of reason. According to substantivists, the essence of technology shapes history from outside and imposes itself as though from a metaphysical realm that entirely escapes human control. (Thomson, 2000: 432) One-dimensional thinking aside from substantivism and ahistoricism is the belief that all technological devices express the same essence denotes Thomson. The problem for Feenberg is that one-dimensional technological essentialists should either reject or embrace technology as a whole. Thomson indicates that Feenberg's objections go to three specific kinds of technological essentialism which are ahistoricism that elide technology's embeddedness within socio-historical currents that continue to shape it, the substantivism that adopt a politically dangerous fatalism by perceiving technology as a force completely beyond our control and one-dimensionalism that treat all technological devices as of a kind and thereby preclude any balanced critique of technology's benefits as well as its harms. (Thomson, 2000: 432) Does Ellul fit in any of the definitions of technological essentialism as assumed by Feenberg?

First of all, we should look if Ellul is an ahistoricist. For Ellul, there was a difference between pre-technical society and modern technical society. The intrinsic nature of modern technique is the same as the pre-technical society. But for him, the characteristic of the relation of technical phenomenon and the society has changed in the modern era. In pre-technical societies the meanings attributed to technique was not toward efficiency but in modern societies, it is efficiency which is the most important characteristic of technique. Philip Brey indicates that Ellul defines modern technology as any method that is conditioned by the demand for efficiency. (Brey, :92) In this context, It can be said that we cannot claim that Ellul is an ahistoricist because for him, the essence of technology is not the one that has changed; it is its relationship with the society. Secondly, is Ellul a substantivist? Ellul indicates that if there has been, for man, a change in modern technique in relation to the old, one must assess, not the internal characteristics of the technique but the actual situation of technique in human society. (Ellul, 1964:63-64) He may seem to share the same idea with the social constructivists in that context but what differs Ellul from social constructivists that his belief about the autonomy of technology. For Ellul, technology depends only on itself, it maps its own route and it should be regarded as an organism tending toward closure and self-determination. (Ellul, 1980: 125)

Judgments from outside or any restraints are not taken into consideration. (Ellul, 1980: 126) So, looking at his approach we can conclude that Ellul can be defined as a substantivist about the technological phenomenon. On the other hand, Langdon Winner in his article *The Enduring Dilemmas of Autonomous Technique* indicates that the critics of Ellul commonly agree that by saying that technique (technology in American usage of the term) has become autonomous, Ellul fails to notice what is plainly true, and that all technologies are social. For the critics of Ellul, a closer look at the technologies shows that they are consist of social and political choices and their detail and complexity is limited only by the observer's effort to uncover them. Winner indicates that the response of social constructivists to the autonomy of technology is superficial and he advocates Ellul because for him, Ellul doesn't say that technique springs from anything other than social aggregates and activities. For Winner, what Ellul asks people to notice is that in modern society those social groups are surrounded by the technical phenomenon. (Winner, 1995:67) Thirdly we should ask is Ellul a one-dimensionalist thinker? Ellul believes that the technological system is an ensemble whose parts are closely united with one another; they are interdependent and obedient to a common regularity. Technologies are tied to one another in such way that they cannot exist without each other. (Ellul, 1980:156) For Ellul, technology modifies all forms of life, it creates new kinds of behavior, beliefs, ideologies and political movements and these are just for perpetuating itself. Technology determines, changes, transforms all modes of life in for the benefit of itself, for its growth. (Ellul, 1980:161) These expressions can lead us to think that Ellul is a one-dimensionalist thinker.

Feenberg seems to be true while claiming that Ellul is a technological essentialist. Aside from not being an ahistoricist, Ellul's thought includes substantivism and one-dimensionalism. After concluding that Ellul can be perceived as a technological essentialist, in the next section I will try to analyze how social constructivists perceive technology. I will be observing in the next section how did social constructivist approach to technology started, and within the purpose of the thesis, I will try to show where agency stands in the social constructivist approach.

#### 4. TECHNOLOGY IN SOCIAL CONSTRUCTIVIST TERMS

Social constructivists, doesn't believe that technology is autonomous, or has one singular essence moves directly for efficiency. Principle of symmetry is one of the characteristics of social constructivist approach to technology. Feenberg indicates that this principle derives from under determination which refers to the inevitable lack of compelling reasons for preferring one competing scientific theory to another. (Feenberg, 1999:78) For constructivism, the choice between alternatives ultimately depends on the fit between devices and interests and the beliefs of various social groups that influence the design process not on the technical or economic efficiency. If an artifact is brought, it is not because of some intrinsic property, it is because its relationship to the social environment. (Feenberg, 1999:79) For constructivists, technology cannot be determining because the different interpretations by social groups of the content of the artifact are lead through different chains of problems and solutions to further different developments. (Bijker, et all, 1989:80) Feenberg indicates that;

The constructivist position has very different implications for the humanistic study of technology. They can be summarized in the following three points;

1. Technical design is not determined by a general criterion such as efficiency, but by a social process which differentiates technical alternatives according to a variety of case-specific criteria.
2. That social process is not about fulfilling natural human needs, but concerns the cultural definition of need and therefore of the problems to which technology is addressed;(83)
3. Competing definitions reflect conflicting visions of modern society realized in different technical choices. (Freenberg, 1999:83-84)

Social constructivism is a flourishing tradition within the sociology of science and it presents every promise of wider application. (Bijker, et al. 1989:47) Well-known social constructivist thinker Wiebe Bijker indicates in his book *Of Bicycles, Bakelites, and Bulb: Toward a Theory of Sociotechnical Change* that; technology and society is both human constructs. Engineers working alone in groups, marketing

people who make the world aware of products and process and consumers who decide to buy or not to buy and who modify what they have bought in directions that the engineer hasn't imagined are the ones who create technology. (Bijker, 1997:3-4) For Bijker, societal structures, power relations and ingenuity and emotional commitment of individuals shape technology. (Bijker, 1997:4) Feenberg indicates that social constructivists affirm the "principle of symmetry" which indicates that all contending beliefs are subject to same type of social explanation regardless of their truth or falsity. (Bloor, 1991, as cited in Feenberg and Hannay, 1995: 6) For constructivism, theories and technologies are underdetermined by scientific and technical criteria. (Feenberg and Hannay, 1995: 6) The meaning of a technical artifact or technical system should not be taken as dwelled in technology itself, what should be done is to study how technologies are shaped and acquire their meanings in the heterogeneity of social interactions. Bijker uses the metaphor of the "seamless web" of science, technology and society which means not accepting at face the value distinctions between such as, the technical and the social as these present themselves in a given situation. (Bijker, 1997:6) Langdon Winner claims that the social constructivist mode of inquiry aims to look carefully at the inner workings of real technologies and their histories in order to understand what is actually taking place. Social constructivists suggest that we need to look very closely at the artifacts and varieties of technical knowledge in question and the social actors whose activities affect their development. (Winner 1993:364) Technology is treated as a "black box" whose contents and behavior may be assumed to be common knowledge but it should be understood from inside both as a body of knowledge and as a social system. (Layton, 1977 as cited in, Bijker, et al; 1989: 21-22) Winner indicates that the term "black box" both technical and social science parlance is a device or system that is described only in terms of its inputs and outputs. Understanding what goes on inside such black boxes is not necessary for one who simply brackets them as instruments that perform certain valuable functions. (Winner, 1993: 365) As social constructivists go about opening the black box, they follow methodological guidelines established for 20 years within the sociology of science in particular an approach that studies the sociology of scientific knowledge. (Collins, 1983 as cited in Winner, 1993:365) For Winner, there is a strong tendency to regard technology as the lesser relative of science because science deals with the fundamentals of human

knowledge. (Winner, 1993: 365) Bijker indicates that the technical is socially constructed and the social is technically constructed. Technical and social bounds together all stable ensembles, like social classes, occupational groups, firms, professions, machines...they are all held in place by inmate social and technical links. (Bijker, 1997:273) Society is not determined by technology and technology is not determined by society, during the construction process of artifacts, facts and relevant social groups, they both emerge as two sides of sociotechnical coin. (Bijker, 1997:274) According to Feenberg determinism is a species of Whig history that makes it seem as though the end of the story was inevitable from the very beginning. It projects the abstract technical logic of the finished object back into the past as a cause of development. Our understanding of the past is confused and the imagination of a different future is stifled by this approach.

For Feenberg, constructivism can open up that future despite the hesitations of its practitioners for engaging larger social issues implied in their method. (Feenberg and Hannay, 1995: 7)

There are three lines of work which can be distinguished within the constructivist research program; first one is the systems approach, second one is the actor-network approach and the third one is social construction of technology approach. (Bijker, 1997:6) In order to introduce in detail the social constructivist approach to technology I will examine in detail the three lines of work within the constructivist research program.

#### **4.1 The Systems Approach**

In the systems approach, Technology is analyzed as heterogeneous systems that during their development they acquire a technical momentum that drives them in a specific direction with certain autonomy. Bijker indicates that Hughes argued against a priori distinctions between the social, the technical and the scientific and it was Shrum who studied large technical systems and networks from a more sociological perspective and combined qualitative and quantitative methods. The Deltaplan which took place in Netherlands constitutes an example for such a system. (Jasanhoff et al. 1995:250) After the 1953 disaster, political discussions were accelerated about the deterioration of the dikes. A law was passed which is specifying “the Deltaplan” which includes all tidal inlets in the Zeeland delta, where the Rivers Rhine and Maas

flow into the North Sea, were to be closed except the Westerschelde, connecting Antwerp to the sea, and the Waterweg, connecting Rotterdam to the sea. (Jasanhoff et al. 1995:242) Heterogeneous set of elements constitute the Deltaplan like dikes, flood barriers, channels, lakes, water-levels, salt and freshwater regimes, navigation routes, and rules for closing and opening sluices and barriers. “Technological momentum” concept shows the so-called autonomous nature of technological systems and shows that it is slowly built up during the system’s development; it is not an intrinsic property. This approach indicates Bijker, was developed while analyzing physically large systems such as railway systems, but it can be applied to physically small systems such as space shuttles. (Jasanhoff et al, 1995:250)

#### **4.2 The Actor-Network Approach**

This approach is developed by Michael Callon and Bruno Latour. It has its origins to understand technoscience in Latour’s terms which is technology and science. Sismondo indicates that the actor-network approach represents the work of technoscience as the creation of larger and stronger networks. It claims that scientists and engineers act like just as the political actor who tries to put together alliances that allow him or her to maintain power. The actor-network theory consists of both human and non-human actors, with no important distinction between them. Technical objects are perceived as nodes in a network that contains both people and devices in inter-locking roles, not as things in the usual sense. (Feenberg, 1999:114) In that sense the actors of actor-network theory are heterogeneous, both humans and non-humans have interests that need to be accommodated, and that can be managed and used. Sismondo gives Michael Callon’s description of the efforts of a group of engineers in Electricité de France (EDF) for introducing an electric car in France. Engineers working in EDF acted like engineer-sociologists by articulating a vision of fuel cells for these new cars, of French society into which electric car would rather fit, and of much better between the two. (Sismondo, 2004:65) According to actor-network theory indicates Feenberg, social alliances in which technology is constructed are bound together by the very artifacts they create. (Feenberg, 1999:114) This approach suggests that the actors build networks and science and technology must work by translating material actions and forces from one form into another. (Sismondo, 2004:66-67) According to this approach science and technology

creates situations where humans and non-humans affect each other by engaging in crossing back and forth between objects and representations. (Sismondo, 2004:67) Sismondo indicates that while being thoroughly materialistic, actor network approach is also built on relational materiality which means that objects are not defined in isolation but defined by their places in networks, and their properties appear in the context of tests. Social groups and technoscientific objects are products of network-building besides, social interests are not fixed and internal to actors, but they are changeable external objects. Sismondo quotes Callon, Latour and Law while they are defining actor-network approach as “supersymmetric” because it represents both human and non-human actors and treats them in the same relational terms, so they produce a full analysis, an analysis which doesn’t discriminate against any part of the ecologies of scientific facts and technological objects. (Sismondo, 2004:69) There are criticisms about this approach and the first one object it on the basis of practices and cultures. It indicates that it doesn’t pay attention to distinctively human and apparently subjective factors as cultures and practices because it treats humans and non-humans on the same footing and it adopts an externalized view of actors. The second objection is on the basis of the problems of agency. According to this view actor-network theory may encourage analyses centered on key figures like Latour’s examples of heroic scientists and engineers or failed ones but a centering like that may make the world appear to revolve around these people. (Sismondo, 2004:71)

Although being symmetrical around the human/non-human divide in principle, with its externalized perspective, non-humans can appear to act in exactly the same way as do humans like having interests and enrolling others denotes Sismondo. Actor-network approach’s all actors are things made to act or actants. Because of this agency is an effect of networks, it doesn’t exist before them. For Sismondo this is a difficult distinction to sustain and the ends of actor-network approach’s analysis seem to rest on the agency of non-humans. The third objection is on the basis of the problems of realism. According to this view, artifacts cannot be said to have any technical properties to do anything before their public circulation. Sismondo indicates that because of this character, actor-network approach is blurring constructivism with the notion of what is constructed by network of actors. This kind of constructivism doesn’t help scientists to create, and it runs against the arguments

of realists which indicates that things have real and intrinsic properties independent from where in any network they sit. (Sismondo, 2004:72-73) The fourth and final objection to this approach is on the basis of the problems of stability of objects and actions. For actor-network approach, the power of science and technology rests in the arrangement of actors, by this way they form literal and metaphorical machines which combine and multiply their powers. All similar actions can be delegated to the object and it is trusted to behave similarly in all similar situations once it has been defined and characterized. The translation of forces from context to context brings power to science and technology, and these translations can only be achieved by formal rules. Despite, indicates Sismondo, rules have to be interpreted and no statement of a rule can determine its interpretations. (Sismondo, 2004:73) For Sismondo, the success of the actor-network approach is in its relational materialism. It explains intuitively the success and failures of facts and artifacts as a materialist theory and it suggests novel results and promotes ecological analyses as a relationalist theory by indicating humans and non-humans are bound up with each other, and features on neither side of that apparent divide can be understood without reference on the features on the other. Although this approach is important within the study of social constructivist approach, for the purpose of the thesis, I will be focusing on especially SCOT approach within the social constructivist approach which will be defined below.

### **4.3 Scot**

In social construction of technology approach<sup>1</sup> indicates Bijker and Pinch, the developmental process of technological artifact is described as an alternation of variation and selection. Contrary to the linear models which have been used in many innovation studies and in much history of technology, this results in a multidirectional model. For Bijker and Pinch this kind of a multidirectional view is essential to any social constructivist account of technology. They indicate that the only possible stage in a development is not the successful stages. (Bijker et al. 1989:28) The development of the bicycle constitutes a great example for this approach. The problems and solutions presented by each artifact at particular

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<sup>1</sup> Will be mentioned further as SCOT

moments are considered to show the selection part of the developmental process. By this way, Bijker and Pinch indicate that one can expect to bring out more clearly the interpretive flexibility of technological artifacts. (Bijker et al. 1989:29) To decide which problems are relevant, the social groups concern with the artifact. Relevant social groups mean institutions or some specific industrial company or organized or unorganized groups of individuals. The meanings that are given to the artifact by those groups play a crucial role in the context that, a problem can be defined as a problem only if there is a social group for which it constitutes a problem. All members of a certain social group should share the same set of meanings for the artifact and for deciding which social groups are relevant, the question should be asked to the social group under investigation is that does the artifact has any meaning at all for the members of the social group. This requirement can be fulfilled with the social group of “consumers” and “users”. (Bijker et al. 1989:30)

For Bijker and Pinch, it is necessary to mention the “anticyclists” as a social group in the case of the bicycle. For the anticyclists, bicycle had a meaning which causes them to act from derisive cheers to more destructive methods. (Bijker et al. 1989:32) When the relevant social group is identified, it can be described in more detail. Homogenous meaning given to a certain artifact is the only defining property but the intention indicates Bijker and Pinch is not just retreat to worn-out general statements about consumers and producers. In order to define better the function of the artifact, there should be a detailed description of the relevant social groups. (Bijker et al. 1989:34) For instance, young men of means and nerve which can be professional men, clerks, school masters and dons were the ones in the social group of cyclists riding the high-wheeled ordinary bicycle and the function of the bicycle for them was primarily sport rather than transport. (Bijker et al. 1989:33) There are different social groups defining problems for bicycle and there are different kinds of solutions to their problems. (Bijker et al. 1989:35) For example, for the groups of women and of elderly men, the meaning given to a high-wheeler was different from the young men group. For them, the most important characteristic of high-wheeler was its lack of safety. (Bijker et al. 1989:42-43) The meaning given by women and elderly men gave rise to lowering the front wheel, moving back the saddle and giving the front a less upright position and artifacts like Lawson’s bicyclette and Xtraordinary were produced. (Bijker et al. 1989:43) Bijker and Pinch indicates that, following the

developmental process in this context, they saw growing and diminishing degrees of stabilization of the different artifacts and by using the concept of stabilization they saw that the invention of the safety bicycle was a nineteen-year process (1879-98), not an isolated event (1884). By the end of the period of 1879-98, a low-wheeled bicycle was given the name of “safety bicycle”. It was consisting of rear chain drive, diamond frame, and air tires. After the stabilization in 1898, the qualifications of the safety bicycle didn’t need to be specified because those qualifications were taken for granted. (Bijker et al. 1989:39) For Bijker and Pinch, the bicycle case show the multidirectional and interpretive flexibility of technological artifacts and the role that different closure mechanisms may play in the stabilization of artifacts. Bijker uses the term “closure” to describe the process by which interpretative flexibility decreases and leaving the meanings attributed to the artifact less and less ambiguous. For him, this process can also be described in terms of the artifact reaching higher levels of stabilization. (Jasanhoff et al. 1995:270-271) The SCOT method of describing technological artifacts is to focus on the social meanings given to them by relevant social groups and it can be seen that the sociocultural and political situation of a social group can influence the meaning given to an artifact. Bijker and Pinch suggest that SCOT’s descriptive model shows how different meanings can constitute different lines of development and it offers an operationalization of the relationship between the wider milieu and the actual content of technology. (Bijker et al. 1989:44)

#### **4.4 Langdon Winner’s Critique on Social Constructivism**

Langdon Winner in his article *Upon Opening the Black Box and Finding It Empty: Social Constructivism and the Philosophy of Technology* criticizes social constructivist approach on four aspects which are;

- a) Social constructivists is in total disregard for the social consequences of technical choice
- b) It is narrow in the conception of the social process
- c) It disregards the possibility that beyond the displayed immediate needs, interests, problems and solutions of specific groups and social actors, there may be dynamics evident in technological change

- d) It is lack of consideration of anything that resembles an evaluative stance or any particular moral or political principles which might help people to judge the possibilities that technologies present.

Langdon Winner indicates that he finds the social constructionist approach valuable in the contexts of its conceptual rigor, its concern for specifics, and its attempt to provide empirical models of technological change that better reveal the course of events. (Winner, 1993:367-368) For Winner, the most obvious lack in social constructionist writing is an almost total disregard for the social consequences of technical choice. This approach doesn't answer the question what the introduction of new artifacts means for people's sense of self or for the texture of human communities or for qualities of everyday living or for the broader distribution of power in society. (Winner, 1993:368)

The second defect of this approach is for Winner that it's narrowness of its conception of social process. Relevant social actors engage in a process of defining technical problems, seeking solutions and having their solutions adopted as a dominant pattern of social use. Winner indicates that social constructivists' pluralist framework of politics brings questions like who says what are relevant social groups and social interests? What about the groups that have no voice but will be affected by the results of technological change? How can one compose an account for potentially important choices that never come into existence as matters for debate and choice? To notice which issues are never or rarely articulated or legitimized, to observe which groups are consistently excluded from power is a way to understand the enduring social structures upon which more obvious kinds of political behavior rest. For Winner, if one fails to do this, social scientists would be offering an account of politics and society that is implicitly conservative. According to Winner, the modeling of the relationship between social interests and technological innovation conceal as much as they reveal. (Winner, 1993:369) Social constructivism is careful to avoid the technological version of the Whig history as a program of inquiry.

Whig history, reads past as a sequence of steps leading inevitably to the accomplishments of today. For Winner social constructivism escapes the binds of Whig history but it doesn't notice the problem of elitism, which even a broad, multicentered spectrum of technical possibilities are distorted in ways for the benefit

of some social interests while excluding others. Despite the rejection of this approach to the “great man theory” of technological development, it still attends to the needs and problems of the powerful persons and groups who have resources to enter the game and define its terms. It is successful in finding contingency not necessity in the course of technological change but it has little to say about the deep-seated political biases that can underlie the spectrum of choices that surface for relevant social actors.

The third problem of social constructivism for Winner is that it disregards the possibility that beyond those revealed studied immediate needs, interests, problems and solutions of specific groups and social actors, there may be dynamics evident in technological change. (Winner, 1993:370) Social constructivists didn't choose to explore the idea that the possibility that the ebb and flow of social interaction among social groups may reflect other, more deeply seated processes in society. For Winner social constructivists usually find it enough to find evidence of social activities in order to connect them to technological change. The social constructivists didn't choose to reveal the existing deeper cultural, intellectual or economic origins of social choices about technology or deeper issues which surround these choices.

The final problem of this approach for Winner is that its lack of consideration of anything that resembles an evaluative stance or any particular moral or political principles which might help people to judge the possibilities that technologies present. (Winner, 1993:371) The methodological posture of social constructivism according to Winner is unwilling to engage in argument about the aspects of technology that now weigh heavily in key debates about the place of technology and social change which is similar to the unwillingness of technological societies to examine the underlying patterns that characterize the quality of life. All the emphasis is given to the specific cases and how they show a standard, often repeated hypothesis which is that technologies are socially constructed. (Winner, 1993:374) Winner indicates that, despite opening the black box and showing a colorful array of social actors and processes and images, the box social constructivists reveal is a hollow one. (Winner, 1993:374-375) While surveying the evidence, they notice that some technological projects succeed; some failed, new forms of power arise, some forms decline but they offer no judgment on what it all means. (Winner, 1993:375) For Winner this perspective doesn't explore or in any way call into question the basic

commitments of modern technological society. What is missing in this approach when it is compared to any of the major philosophical discussions of technology is that a general position on the social and technological patterns under study. According to Winner, the social constructivist approach doesn't show inclination to reach further or to fashion conceptual links to the larger questions about technology and the human condition. (Winner, 1993:376)

Although Winner's criticisms on the social constructivist approach are worth for taking into consideration, I do not agree with him on many aspects. My approach will be different from Winner's approach in the context that I will be taking into account more recent research and theory including the systems approach and SCOT. In the next section I will study "social media" in the context of the development of information and communication technologies and I believe this study will reveal my difference of opinions with Winner.

## 5. EMPIRICAL IMPLICATIONS AND ASSESMENTS

Of course there had been tremendous changes in communication technologies since the early 1980's. Internet had become indispensable in our lives; the flow of information became costless and accessible for every individual who has access to a computer. Before internet, the tools of media were just the TV, radio, newspapers and magazines. "Internet" refers to the electronic network of networks that links people and information through computers and other digital devices allowing person-to-person communication and access to information. The Internet did not emerge until 1982; it spread rapidly after the early 1990s. (DiMaggio et al. 2001:307) The Internet is unique in the context that it integrates different modalities of communication such as reciprocal interaction, broadcasting, individual reference-searching, group discussion, person/machine interaction and different kinds of content like text, video, visual images, audio in a single medium. (DiMaggio et al. 2001:308) J.C.R Licklider as a key employee in the Advance Research Projects Agency of the Department of Defense, helped conceive and fund what became the ARPAnet, which in turn led to the Internet. After a decade a few pioneers started beginning to spend time in such online communities. Usenet begun in 1979 and it was the first service on the Internet which captured substantial numbers of nontechnical users long before the invention of the World Wide Web. Usenet enabled people to post messages to groups which are dedicated to specific topics. Besides, Usenet still functions today. Aside from this, Stewart Brand and Larry Brilliant and a couple of others established an electronic bulletin board called The Whole Earth 'Electronic Link, or Well, in 1985, in San Francisco. Howard Rheingold who is a big user of Well, in 1987, published an essay where he created the term *virtual community* to describe this new experience. (Kirkpatrick, 2010:66-67) According to him, a virtual community is a group of people who may or may not meet one another face to face and who exchange words and ideas through the mediation of computer bulletin boards and networks. (Winter, 1987 as cited in

Kirkpatrick, 2010:67) By commenting in online groups and chat rooms, more and more people became familiar with electronic communication. These concepts was first brought together by the French postal service Minitel in 1982, then America Online started in 1985, later changed the name and in 1988 IBM and Sears created a commercial online service called Prodigy. People typically invented or had assigned a quasi-anonymous username for themselves, which they used for interacting with others on these services. Ordinary people began using electronic mail by the early 1990s, again typically using addresses that did not correspond to their names. These services maintained email address books inside but members did not identify their real-life friends or establish regular communication pathways with them. In the early years of the World Wide Web, the notion of an online community has flourished.

With the spread of internet and the digital media, the old limitations of traditional media are elaborated and by these new communication technologies, the way we communicate have changed. Not so long ago, we were only communicating by direct telephones and with the invention of mobile phones, all the communication habits we have has changed. We started texting and we all became accessible any time because of our mobile phones. Then the internet provided us a tremendous flow of information. If we become curious about something we just Google it, don't have to spend hours looking for books in libraries. We don't even need to buy newspapers because every newspaper has a website showing all its content online. With the digital communication technologies we changed the way we communicate; now we are capable of processing information at a degree that no one had imagined. Digital communication technologies provide freedom to anyone to express themselves and change our world in many ways. Clay Shirky, in his book *"Here Comes Everybody"* indicates that, when we change the way we communicate, we change society. (Shirky, 2009:17) Nowadays, the Internet becomes the world's largest social network that contains many sub-networks which cater to individual interests or online desires. The emergence of new societies based upon niche interests such as auctions, literature and hobbies is one of the impacts of the Internet in our lives. (Snyder and Slauson, 2006:1) Aside from the Internet network, the sub-networks it consists have effected and changed the way we communicate. The Globe.com, Geocities and Tripod emerged as services to set up a personal home page that could in some cases link to pages created by other members. In 1994, the popular fee-based dating site

Match.com was launched filled with personal information, but for a very specific purpose., in 1995, Classmates.com debuted, as a way to help people, identified by their real names, find and communicate with former school friends. Modern social networking era began in early 1997. Social Network Sites constitute are the most effective reason for us to enter into modern social networking era. Social network sites are defined by Danah M.Boyd and Nicole B.Ellison in their article "*Social Networking Sites: Definition, History and Scholarship*" as; web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system. For Boyd and Ellison, social network sites are unique in the context not only because that they allow individuals to meet strangers but also they enable users to articulate and make visible their social networks. With these sites, people can both make connections that would not be possible without those sites and connect to the people they have offline connection with. Many of the participants of SNSs, don't look for meeting new people besides, they primarily communicate with people who are already a part of their social network. (Boyd and Ellison, 2007:1) SNSs have applied various technical features and their mainline includes visible profiles which display an articulated list of Friends who are also users of the system. When one joins an SNS, him/her is asked to fill out forms which contain series of questions. The answers of those questions compose the profile that the users will have and they typically include descriptors such as age, location, interests and an "about me" section. Boyd and Ellison indicate that most sites encourage users to upload a profile photo and some sites allow users to enhance their profiles such as adding multimedia content or modify their profile's look and feel. Users of the SNSs determine the visibility of their profile, for example if one chooses to open a profile on Friendster, his/her profile will be visible to anyone by default, even if that person don't have a profile on that site. But sites like LinkedIn for example controls what a viewer may see according to the payment he/she made for an account or for example Facebook allow its users to determine who can see what part of information one reveals in their profile. In Facebook, indicates Boyd and Ellison, by default, users who are part of the same "network" can view each other's profiles, unless a profile owner has decided to deny permission to those in their network. One of the ways that SNSs

differentiate themselves from each other is their structural variations around visibility. One of the crucial components of SNSs is the public display of connections. The Friends list consists of links to each Friend's profile and those links enable viewers to traverse the network graph by clicking through Friend lists. The list of Friends is visible to anyone who is permitted to view on most SNSs and they provide a mechanism for users to leave messages on their Friends' profiles or enables users to send their Friends private messages. (Boyd and Ellison, 2007:2) SNSs differ greatly in their features and user base aside from their profiles, Friends, comments and private messaging. Some SNSs built-in blogging and instant messaging technology while some have photo-sharing or video sharing capabilities even some SNSs like Facebook, Myspace and Cyworld support limited mobile interactions. For Boyd and Ellison, many SNSs target a person from specific geographical regions or linguistic groups which doesn't always determine the site's constituency. Many of the SNSs attract homogeneous populations initially while they are often designs to be widely accessible. It is possible to find groups using sites to segregate themselves by nationality, age, educational level, or other factors that typically segment society even if that was not the intention of the designers. The first recognizable social network site denotes Boyd and Ellison was launched in 1997 which is SixDegrees.com. The site allowed users to create profiles, list their Friends and in 1998 it enabled users to surf the Friends lists. SixDegrees was the first site to combine the features such as supporting lists of Friend, allow people to affiliate with their high school or college. SixDegrees introduced itself as tools to help people to connect with and send messages to others and attracted millions of users but it failed to become a sustainable business and in 2000, the service closed. (Boyd and Ellison, 2007:3) Between the years of 1997 to 2001 some community tools began supporting various combinations of profiles and publicly articulated Friends. For example, AsianAvenue, BlackPlanet and MiGente allowed users to create personal, professional, and dating profiles where those users could identify Friends on their personal profiles without seeking approval for those connections. Just like AsianAvenue and BlackPlanet, LiveJournal was launched in 1999 and it listed one-directional connections on user pages. In 2001, the next wave of SNSs began denotes Boyd and Ellison with the launch of Ryze.com which was designed to help people leverage their business networks but it never acquired mass popularity. (Boyd

and Ellison, 2007:4) Many new SNSs were launched starting from 2003 onward. Most of them took the form of profile-centric sites which try to replicate the early success of Friendster or target specific demographics. Socially organized SNSs attracted various audiences while Professional sites like LinkedIn, Visible Path and Xing focus on business people. As the user-generated content phenomena and social media grew, websites like Last.FM which shares music listening habits of YouTube which is a video sharing website began implementing SNS features and become SNSs themselves. (Boyd and Ellison, 2007:5)

### **5.1 Minitel**

Feenberg in his well-known example of Minitel shows the “interpretive flexibility” of technology. In the early 1980’s millions of Minitels were distributed by the French telephone company which were designed to look and feel like an adjunct to the domestic telephone with the intention of the access for information services. (Feenberg, 1995 as cited in Feenberg, 1999:126) Minitels aimed to provide a network for the users to talk to each other on the network. The aim was the distribution of information but soon the Minitel was redefined by its users, it gained a further redefinition at their hands as they employed it for anonymous on-line chatting with other users in the search for amusement, companionship, and sex. The functioning of the network was altered and inserted by its users where they introduced human communication. The engineers of Minitel designed it for improving the flow of information in French society but Minitel invited communications applications and those applications in turn connoted the Minitel as a means of personal encounter, the very opposite of the rationalistic project for which it was originally designed. The problem which Minitel was designed to solve was the distribution of technology, but it was addressed to another problem by its users; which is human communication. Through design changes, the new interpretation of the technology was combined into Minitels’ structure and that ultimately caused a change in its very definition. (Feenberg, 1999:126)

## 5.2 The Facebook

Facebook, unlike any previous SNSs indicates Boyd and Ellison, was designed to support distinct college networks only. In the early 2004 Facebook began as a Harvard-only SNS. A participant ought to have a Harvard.edu email in order to join. When Facebook began supporting other schools, new users also required to have university email addresses associated with those institutions and the requirement the site requested made users' perceptions of the site as an intimate, private community. In September 2005, Facebook widened its limitations and included high school students, professionals inside corporate networks, and, eventually, everyone in the fall of 2006. Facebook differ from other SNSs in the context that, its users are unable to make their full profiles public to all users and it has the ability for outside developers to build "Applications". Applications allow users to personalize their profiles and perform other tasks like comparing movie preferences and chart travel histories. (Boyd and Ellison, 2007:7) David Kirkpatrick in his book "*The Facebook Effect*" indicates that despite its modest beginnings as the college project of a nineteen-year-old, Facebook has become a technological powerhouse with unprecedented influence across both public and private modern life. The membership of Facebook spans generations, geographies, languages, and class. (Kirkpatrick, 2010:15) If one uses the Internet, it is highly possible that he/she is a Facebook user. After Google, Facebook is the second-most-visited site and claims more than 400 million active users as of February 2010. Facebook is being used regularly over 20 percent of the 1.7 billion people on the Internet worldwide. Users around the world now, spend around 8 billion minutes every day where the average user spends almost an hour each day on Facebook. It doesn't stop growing either, the growing rate of Facebook shows that it enlarges 5 percent a month. If the growth rates of Facebook and the Internet remains steady like this, by 2013, everyone online worldwide will be on Facebook. Even though this is an overblown prevision, the Facebook already operates in seventy-five languages and around seventy five percent of its active users are outside the United States. Facebook has about 108 million active American users which is the 35.3 of the entire population according to the *Facebook Global Monitor*, published by InsideFacebook.com. The largest number of Facebook users is in the United States but the next ten countries are a global mix which can be ordered as, United Kingdom, Turkey, Indonesia, France, Canada, Italy, the Philippines, Spain,

Australia and Colombia. According to the *Facebook Global Monitor*, the ten countries in which Facebook grew fastest in the year ending February 2010 were Taiwan, the Philippines, Vietnam, Indonesia, Portugal, Thailand, Brazil, Romania, Lithuania, and the Czech Republic. (Kirkpatrick, 2010:16) Social networking has now spread all over the world and Facebook is the world's largest such network. Social network sites became so pervasive that especially young people barely use email anymore. (Kirkpatrick, 2010:85) Facebook provides numerous features to its users such as the wall or the groups. The wall's purpose was to keep users even more transfixed by giving those more to see inside the service and after its creation it became Facebook's most popular feature. The other feature Groups, allow any user to be able create a group on Facebook for any reason. Every group can have its own page including its own wall-like comment board. (Kirkpatrick, 2010:93) The other feature of Facebook which is The News Feed enabled very large groups to form on Facebook almost instantly. (Kirkpatrick, 2010:192) For Kirkpatrick, aside from other features of Facebook, the News feed is the harbinger of an important shift in the way that information is exchanged between people. When one wants to get information about him/herself to someone, he/she had to send them something, like making a phone call, sending a letter or even sending an instant message. But with the News Feed indicates Kirkpatrick, this process had been reversed. People only had to indicate something about them on Facebook and Facebook would push the information out to their friends, who according to Facebook's calculations of what was likely to interest them, might be interested in the activity you were recording. While looking at their Facebook homepages, the recipients of this information are able to stay in touch with many people simultaneously with a minimum effort. For Kirkpatrick, this feature of Facebook makes the big world smaller. Facebook created a way to gather information about a friend, but with this feature by friending with someone, you tell Facebook that you want to hear about them, and Facebook pulls their information to your page. (Kirkpatrick, 2010:193) Facebook, for better or worse, is causing a mass resetting of the boundaries of personal intimacy and a large number of its users especially the younger ones; revel in the fullness of disclosure. (Kirkpatrick, 2010:200) On March 2009, the Nielsen Company research firm announced that time spent on social networks by Internet users worldwide had for the first time exceeded the amount of time Internet users spent on email. This research

was great evidence that a new form of communication had gone main stream. In 2008, a total time spent on social network sites grew sixty three percent around the world. But Facebook was apart from these statistics. It outdistanced itself from every other service Nielsen measured with the growth of the time spent on Facebook for 566 percent in a year, to 20.5 billion minutes. (Kirkpatrick, 2010:274)

Since Facebook opened up to nonstudent users in fall 2006, English speakers around the world began to stream on board. According to the *Facebook Global Monitor*, in seventeen countries around the world, more than 30 percent of all citizens are on Facebook. The countries can be lined up as; Norway (46 percent), Canada (42 percent), Hong Kong (40.5 percent), the United Kingdom (40 percent), Chile (35 percent), Israel (32.5 percent), Qatar (32 percent), and the Bahamas (30.5 percent) and Iceland, 53 percent of people are on the service. Facebook is the top social network in countries like Brunei, Cambodia, Malaysia, and Singapore, among other countries. (Kirkpatrick, 2010:275) Kirkpatrick indicates that the fundamental characteristic of Facebook is that its appeal in country after country where you only see friends. Identity-based nature of Facebook differentiates it from the beginning from most other social networks and that nature enabled it to become a unique global phenomenon. Kirkpatrick defines Facebook as the least American-feeling of American services. For example, he continues, Italy's Facebook-using hordes could grow too many millions without often seeing anyone who wasn't Italian. Users in Turkey, Chile or the Philippines experience the same values, interests, tone and behavior in Facebook as in their offline world. (Kirkpatrick, 2010:276) The language people speak on Facebook is increasingly becoming the language they speak offline too. Facebook operated in seventy-five languages representing 98 percent of the population by early 2010. On the other hand, the Americannes revealed by Facebook because of its intrinsic assumptions about how people ought to behave are carried around the world and that can create problematic situations from the citizens of countries apart from the U.S. For example, a father in Saudi Arabia caught his daughter interacting with men on Facebook, and he killed her. (Kirkpatrick, 2010:279)

It is clear that SNSs and other digital communication technologies have potential to create virtual realities rather than reality itself. What can be the consequences of such a virtual reality is a question which cannot be answered now. But as the people of a

global modern social networking era which faces various virtual realities we can ask the question how are we going to react to the SNSs? Below, the thesis will try to introduce how Ellul and Social Constructivists would react to the SNSs especially the Facebook phenomenon.

### **5.2.1 The facebook– Ellul on facebook**

As it is clear from the previous chapters Ellul is a technological determinist and he is an essentialist. His lifetime did not let him to see the technological explosions we have been facing especially for twenty years. Ellul, in his book *The Technological Bluff* indicates that, there has been tremendous technical change, but there has been no global technical change and no change in the technical system. For him, no particular technique challenges or opposes the global movement of technique and even the most dazzling innovations are within the system. (Ellul, 1990:14) For Ellul, every technical development is within the system, a system which has its locus in society. He doesn't believe in change, for him every new technology is just a transformation of the existing technique. He indicates that;

The ideal goal is a marrying of people and machines. The system has its locus in society. It controls almost all social orientations and structures, but it does not incorporate everything. That is, society remains outside the system; its institutions are not rigorously technical; society carries within it a whole ensemble of ideologies, of survivals of the past, and of myths. Most of the malfunctioning in the technical system results from the maladaptation of the social body to technique, which otherwise would function without breaks or adverse effects. (Ellul, 1990:16)

Ellul would be devastated if he was able to see how we are married to our computers. He believes that technology encircles us, and this encirclement is possible only through the prodigious development of modern techniques. These modern techniques give us the sense that they are closer, more familiar, more individualizing and more powerful. Ellul indicates that here lies the true technical innovation, for it is by this basic support of the whole social body and of each individual that the system can develop without any difficulty. With the development of modern techniques, society does not need myths or a great project, the transformation happens in the everyday world. The success of the encirclement is in its very ordinariness for Ellul. (Ellul, 1990:18) Technique produces the most reassuring and innocent ordinariness, this doesn't necessarily mean that the society is better adapted to technical growth, but it

means that we are neutralized in a way that there can no longer be any open or secret conflict. Society and people, for Ellul, is integrated into the technical world but there is still a gap between the two which is constantly narrowing. (Ellul, 1990:19) A fictional world has been created where our religious sense incarnates itself. Television, computers, bikes and such objects acquire a fabulous dimension by reason of the sense of their power, their ubiquity, their domination; the unlimited access that they give, their secret indicates Ellul. For him, the religious and the sacred that we have chased out of nature are now transferred to objects. In the past we used to relate religious feelings to the natural like the tree or the fountain, but the things that compose our human environment now play this role such as television or computer. People have not changed, they still relate their sense of the sacred to what constitutes their environment but the environment has changed. For Ellul, this is what technology makes us closer and closer to the dedivinization of the world. (Ellul, 1990:121) In this world he indicates, knowledge gives us our place in society. One can develop knowledge only through information. But the information in this era is not a thing we can trust for Ellul. Wha-Chul Son, in his article *“Reading Jacques Ellul’s Technological Bluff in Context”* forcibly analyzes that the techno-logical bluff for Ellul has many forms; it manifests itself via technology, policy, education, and media and so on. (Son, 2004:520) All of these institutions generate information for the consumption of people. Ellul denotes in his article, *“Information and Propaganda”* “that, the most serious problem for most of the people is that when difficulties concerning the organization of information is resolved, everything will be resolved. But he obviously doesn’t believe in that and says that where the problem regarding information lies is, within the close relationship between information and propaganda, which for him, cannot be separated from one another. The means that propaganda uses are the same with the means that information uses which are; material means, newspaper, radio, television, movies, lectures. (Ellul, n.d: 62-63) Aside from those, propaganda uses psychological means because one must be able to pass on information; it must be made known and in such a way as to capture public’s attention. Information for him, limits itself to a mere exposition, presented objectively with bare facts and that practically would reach nobody and would weary an audience immediately. (Ellul, n.d:63) The relationship between propaganda and information is complex and difficult to assess because their boundaries are vague and

undefined. Information inevitably turns into propaganda while making it possible, feeding it and rendering it. Information for Ellul creates a need for propaganda in man, which leads to psychic aggressions and to sentimental political seductions. (Ellul, n.d:77) But why Ellul believes in such a complexity between information and propaganda? The answer is that for him, information becomes a technique in this era, every information turns into propaganda. All the institutions mentioned above produces so much information that, actually there is no information. Man, is exposed to advertisements, TV shows, newspapers full of information during his daily life, he cannot choose but to put all of them in his mind, at the end of the day he has nothing, no information that counts. He is paralyzed in the density of the day and the flow of information and he watches TV, to make himself relaxed which paralyzes him again.

Ellul indicates that propaganda itself is a technique, and it is an indispensable condition for the development of technical progress and the establishment of a technological civilization. (Ellul, 1973:x) For him, modern propaganda could not exist without the mass media the inventions that produced press, radio, television, and motion pictures, or those that produced the means of modern transportation and which permit crowds of diverse individuals from all over to assemble easily and frequently. (Ellul, 1973:89) Two complementary qualities are necessary for propaganda to succeed in a society; it must be both individualist and a mass society. If individuals are not held together by local structures, they can only live together in an unstructured mass society; similarly, a mass society can only be based on individuals, that is, on men in their isolation whose identities are determined by their relationships with one another. (Ellul, 1973:90) Mass society indicates Ellul is characterized by a certain uniformity of material life. (Ellul, 1973:93) The other basic condition for propaganda for Ellul is the existence of mass media and communication tools in order to make the organization of propaganda possible. The media must be concentrated, the number of new agencies reduced, the press must be brought under single control and radio and film monopolies must be established. (Ellul, 1973:102) But the intimidating fact for Ellul is that, the mass media creates their own public, there is no need for the propagandist to work on creating a mass opinion. This happens all by itself through the effects of communication media which have their own power of attraction and act on individuals in such a fashion as to transform them into a collective, a public, a mass. If this dual process of

concentration of the sources of propaganda and wide diffusion of its recipients does not take place indicates Ellul, modern propaganda cannot function in a society. (Ellul, 1973:105) But it does function, only by itself, without any need for interruption. The essential reason for such a success of modern propaganda is the information technologies which outspread our daily life.

In his book *“The Technological Bluff”* Ellul concentrates on the importance of telematics by which he mentions satellites, TV, computers, etc... Telematics in Ellul’s sense corresponds to information technologies in contemporary use of the term. (Son, 2004:523) For Ellul, the data that information networks make accessible for the guidance is far beyond what can be assimilated. One can extend the breaking point of the integration of information but it will no longer function, it won’t be reliable. With this explosion of information, ignorance becomes chronic which can be seen in even the best journals. Here with the concept of the “integration of information” Ellul means that we now know only the data relating to our own area because human brain cannot master the whole of the information that reach our hands today. The chronic ignorance of people is not because of the absence of data or to lack of access, but because of the disproportion between our limited mental capacities and the unlimited complexes that we think we can daily assimilate. (Ellul, 1990:90) Information technology has a significant role in the formation of technological bluff for Ellul. W.C.Son, indicates that; in *“The Technological System”* Ellul presented a utopian expectation about how computer could be used for widespread feedback systems which regulates technological progress. But in *“The Technological Bluff”* Ellul admits that what he suggested had turned the opposite.

Instead of mastering the technical system, computers entered into the system, adopted its features, and simply reinforced the power and incoherence of its effects. In fact, I think that the game is lost. With the help of computer power, the technical system has definitively escaped from control by human will. (Ellul, 1990 as cited in, Son, 2004:523)

W.C.Son continues criticizing Ellul by indicating that he undermined the idea that computer technique could enhance human freedom and democracy while Ellul saying that it might be true on a micro level, not on a macro level. For Ellul, the hope for the control of technique has disappeared with the computer. As mentioned above, the flood of information prevents people from making reasonable decisions for Ellul.(Son, 2004:523) For him, there is no purely rational human thinking because

even our most rigorous thinking is inevitably meddled with opinions and sympathies and antipathies and feelings. Computers on the other hand are always pure if it is not programmed to consider a specific feature. Even if it was programmed, its thinking would still be rational. When a problem is posed to a computer by humans, computers break them down into simple questions and when they do that they do much better than any of us. There is not a possible comparison between man and computer for Ellul. When a problem arises because of what is called artificial intelligence, we grant that problem. (Ellul, 1990:164)

Thanks computers and to the Internet now the information is anytime, anywhere. As it is clear, Ellul doesn't trust computers and he wouldn't trust the Internet either. He would react to the Internet as a devil tool of technology, created for the brainwashing of masses and he would admit that it done its job well. As mentioned before, new communication technologies created a new kind of society, a new kind of culture. Ellul must have foreseen this coming otherwise he would not write that culture is simply the transmitting and organizing of information, and since everything is changing in this domain, there must also be a change of culture. For him, the basic structures of the technical culture are, first, the use of machines and the access to knowledge, and, second, communication with others. (Ellul, 1990:133) A new organization of the whole world in the form of networks is necessary. For him, the logic of networks is closer to that of language than to that of territory. With the computer, everything is now is not flux but a network of information. The most important thing to realize here for Ellul is that, to learn the new rules of the game, to create a new culture. If we succeed in learning the rules of this game, we will be citizens of this new world, if we can't, we will be its slaves. I believe we succeeded in this, but of course Ellul would indicate that we are the slaves. The technical inventions should be translated into social practices and new modes of thinking which for Ellul seek to make every relation transparent. Transparency is necessary because it is correlative to an information society and it brings all information and all knowledge within the reach of all. (Ellul, 1990:134)

He indicates that;

...the culture which is being created is not a direct human product. It results from the interfacing of the group and the machine. This culture cannot remain enclosed in a limited world, in the circle of a province. Transmission and processing take place everywhere with a

startling speed. A culture of networks is possible only on an international scale. Based on the universality of knowledge, which is accessible to all and in all places, and also on the speed of relations, this culture has to be international. (Ellul, 1990:135)

For Ellul, thinking that we can maintain the existing culture and superimpose techniques upon it is an illusion. Traditional values cannot be infused into technique. Of course techniques have always been a part in culture but not in that size, number, speed of development, omnipresence and omnicompetence which now makes them impossible to insert into a stable culture. Since all culture is of necessity the culture of a group, it implies a group dimension and interrelation between group members. For Ellul, technique collides with this on two levels; on the one hand everyday technique tends to increase loneliness through the means of communication and makes it unnecessary to establish contacts. (Ellul, 1990:145-146) On the other hand, the new techniques form themselves into a network that can be self-sufficient and exclude us altogether because networks are abstract, invisible and imperceptible. Ellul indicates that networks impose themselves on real life and condition it. For him, they evolve with a speed that is beyond us and they eliminate any possibility of culture, because any culture that might be set up cannot express human life or stability. (Ellul, 1990:146) Culture is necessarily humanistic because, humanity is its central theme and sole preoccupation; it is simply an expression of human. On the other hand, technique functions because it functions, because it is self-reproductive. According to Ellul, each technical advance serves first to produce new techniques. It only interests in itself, it is not interested in what serves humanity. (Ellul, 1990:148) In the technical society and world, things are occurring without human intention. (Ellul, 1990:151) Because of this, mastering a technique or techniques is becoming increasingly difficult in reality. According to Ellul, we are unaware of the problem globally, and the subordination of people to machines is just as great as before with one difference; people are no longer the glorious conductors of the orchestra; the machines are in sole control. (Ellul, 1990:153-154) We are all convinced that technique can do anything says Ellul, and if it can do anything, we cannot stand up to it. Humanity discovered in this time that we can master power with power for Ellul. (Ellul, 1990:156) What is lacking is that we have not become the masters of the computer. If mastery doesn't mean the ability to dispose at will one's potential, it means nothing. It is necessary to know in what direction we are going for mastery indicates Ellul, but the polydimensional nature of modern technique is such that an

absence of possible orientation rules out all mastery. (Ellul, 1990:157) In his article "*Western Man In 1970*" Ellul draws the portrait of man, in the era of modern technique. He indicates that in all western men, whatever their nationality, class or occupation, a series of common traits and the "common factor" between western men is tending to increase rather than decrease. (Ellul, 1963:28) The theoretical portrait is a result of tendencies towards socialization, equality, certain standardization in ways of life and a generalization of the middle-class mentality; as result of the spread of education and military service, the granting of equality of status and employment to women and the increased flow of information. With these factors, individual peculiarities have been smoothed away like, different class, nationality and religion which have been drawn steadily closer together. (Ellul, 1963:29) For Ellul, western man of 1970 seeks happiness in material things, he is a specialized worker, he is a passive impotent of politicalization, and he is depoliticalized. He realizes vaguely that political decisions do not rest with him, and he cannot influence them. (Ellul, 1963:29-38) He is socialized but manipulated; his actions are not related with the inner life, although everything calls him to act on something, the action he is supposed to do should be correlated with the action of everyone else. According to Ellul the action of this man is the result not of an individual decision but of a collective plan. (Ellul, 1963:41-46) The man of 1970 for Ellul is both rational and irrational. He is rational in the sense that he is positive and bases himself on facts. (Ellul, 1963:49) What is important for the man of 1970 is the things he can see but he suffers from a strange irrationality while being completely rational. For Ellul there are three reasons for that irrationality; first he has a very bad memory. (Ellul, 1963:50) He lives in the moment with a little foresight, he can no longer connect present with the past. The second reason for his irrationality is that the gap he has between his thought and action. He doesn't act according to what he thinks. He doesn't think by himself, he thinks in the context of the mass, and acts with the mass. (Ellul, 1963:51) The third reason for the irrationality of the man in 1970 for Ellul is the fact that man is perhaps more than ever before a prey to collective myths and assumptions. (Ellul, 1963:52) His whole life is based on beliefs such as fundamental myths of science and history, secondary myths of progress, happiness, work, nation and youth. These beliefs according to Ellul are often unconscious and they are not questioned or criticized by men because their whole life, opinions and actions are

vindicated. Aside from these qualities, western man of 1970 is both culturalized and deculturalized. With the television, he can get to know the great artists of the theatre, he is always aware of the real problems of the world and these facts are based upon the assumption that the television is used for a good purpose like educating man, not to debase him. (Ellul, 1963:53-54) The man of 1970, for Ellul has knowledge in every sphere; from life of the film stars and politicians to that of microbes, from the organization of the universe to the evolution of the human race. (Ellul, 1963:54) He has far more knowledge than man in any century. The practical intelligence the man of 1970 has much greater than before which does not necessarily means that he has become more intelligent, but he has more capacity for logical reasoning at the practical level. (Ellul, 1963:54-55) According to Ellul, the man of 1970 participates in the culture of the masses; he has more taste and a fairly wide range of skills. What this culture for Ellul is;

A culture of mass consumption of manufactured articles produced and reproduced by industry before being supplied to commerce... and a systematic creator of dreams, escapism and substitutes, cultivating them as required by constructing somewhat sketchy fictions. (Ellul, 1963:55)

Ellul adds that if one should make a definition of what a traditional culture means, he would say that;

Culture is the sum total of the outward expressions of man in a particular society searching for the meaning of the value of his life and resulting from a reflection connected with the physical facts of the life of the community. (Ellul, 1963:56)

From this point of view Ellul indicates, the man of 1970 is deculturalized. The culture that the man of 1970 is living in has no connection with the problem of the meaning of life and of its value. When metaphysics are eliminated by the ready-made mythical answers provided by society, this dimension of culture is excluded indicates Ellul. (Ellul, 1963:56) Aside from these qualities, although the western man of 1970 enjoys a certain material happiness, he is not happy according to Ellul. (Ellul, 1963:61) The rapid change of the environment he lives in produces temporarily abnormal conditions of life. There is over-rapid change in every sphere of life, such as being “informed” all the time. He is given a changing, flickering flow of news about political and social facts. Ellul indicates that the man of 1970 is drowned in a flood of news which he is not equipped to grasp. The man of 1970 indicates Ellul is

no longer a metaphysical being. The absence of the metaphysical speculations and any religious significance in the world deeply influences man's subconscious nature. Science cannot give him any satisfactory answers about the role of him in this universe. According to Ellul he suffers from distress because he is not by nature a purely rational being, because he no longer has the means of choosing his significance, in a world which has ceased to have any meaning. (Ellul, 1963:64) The man Ellul portrays in his article would be a more negative portrait of man in the 21st century if he would draw one. The man he betrays is incapable of subjective thinking accepted his chains-without being aware of them- and hypnotized by the rapid changes technique imputed on him. Although he doesn't define himself as a pessimistic philosopher, I believe he is one. I believe, by nature man cannot be that paralyzed, cannot be that irrational. For Ellul, modern technique has bereaved human beings from a large part of their freedom. But for him, W.C Son argues, freedom is also the only hope that human beings can exercise. Son quotes Ellul while he is saying;

Following Hegel, Marx, and Kierkegaard, I have often said that we show our freedom by recognizing our nonfreedom. But this is no longer a philosophical or theoretical matter of the mind. It is no longer a matter of debate between the servile and the free will. Our back is to the wall. We must not cheat or think that we can extricate ourselves by talk. Seeing the Hydra head of trickery and the Gorgon face of hi-tech, the only thing we can do is set them at a crucial distance, for it is by being able to criticize that we show our freedom. This is the only freedom that we still have if we have at least the courage to grasp it. Nothing is more certain. (Ellul, 1990 as cited in, Son, 2004:529)

According to Ellul, indicates Son, we are not free, because we can neither escape from the situation, nor change it. We can be free when we can take our distance from the whole affair and reflect on the situation of nonfreedom because as the citizens of the technological society we are stuck. One is free only if one sees personal nonfreedom. When one realizes that it is impossible to change the circumstances, he can do something to change them. (Son, 2004:529) The reason why Ellul believes that one can be free only when he realizes that he is not capable of changing the circumstances is that Ellul suggests a personal spiritual revolution to be free. For Ellul, we consider the accelerated transformation of our world to be real because that is what we are told, that is the fabric and spectacle of our daily existence and that is what feeds our unrest. (Ellul, 1971:262) There are many apparent changes but the

basic elements and structures of which remain intact, the changes are only transformations, they are modified aspects of institutions or ideologies. (Ellul, 1971:263) According to Ellul, technology never retreats and it is never challenged on the other hand, revolution must be against the technological society, not technology. (Ellul, 1971:264-281) This revolution implies decreased efficiency, a total yield in all areas, a lowered standard of living, the reduction of large-scale public programs and the erosion of mass culture. For Ellul the revolution is the rediscovery of individual autonomy. (Ellul, 1971:281) One should be aware of himself and this awareness as an individual concern must be associated with another attitude which is contemplation which would represent a vital breach in the technological society. (Ellul, 1971:285) Ellul indicates that contemplation is the key to individual survival today; an attitude of profound contemplation allows actions to redeem their significance and to be guided by something other than systems and objects. Man can recover himself with this way. (Ellul, 1971:286) Son indicates that the paradox of non freedom is not a new expression of his pessimism. For Son, Ellul urges us to take courage, his pessimism stems from the fact that he knows the price to be paid. Ellul is often depicted as attributing a complete autonomy to technique or as underestimating human potential indicates Son, thus not giving any hope for a better future. (Son, 2004:529)

It can be said that, Ellul would not be happy about the society we live in today. His suggestion of inner spiritual revolution would be harder to make in today's world because the man of today's world would seem more eroded, more paralyzed and more irrational to him. He would object the idea of "SNSs" in the first place. He would believe that while SNSs' make people more lonely, they also make people a part of a mass society which in this case is a virtual one. He would add that SNSs' detach us from the realities of the outside world. While not believing in media, in any tools of it, he would not believe in the Internet too. He would accept the idea that virtual communities make communication easier but he would not believe that this convenience would help people to exchange ideas or ideally they make people closer. He would perceive the Facebook as one of the schemes of technology which was designed to make people more paralyzed, more apart from each other. The more online communication increases Ellul would say, the lonelier we are offline. Since "change" was not possible for Ellul twenty years ago, its impossibility would be

stronger today in his thought. But even man has been exposed to too many rapid changes, adaptation can be hard and painful, virtual societies or digital communication technologies may detach us from the offline world, but these do not paralyze us. First and foremost, my confrontation to Ellul is on the portrait of man. If man is that incapable of changing anything, if man should accept the fact that he can do nothing, how can he be able to have the inner spiritual transformation, the revolution Ellul suggests? He cannot. What man should banish himself from is not the technological society, but the belief that he is just sandstone in the ocean and sandstone can change nothing. Man can redefine, reshape its environment. Man is capable of giving new meanings to existing ones, man can change anything. In the beginning of 2011, we faced public revolutions in Middle East. The people whom were defined as passive, paralyzed, incapable of anything made revolution in their own countries. We faced the redefinition of values, redefinition of societies and challenges to dictators, to the state. How did those people in Egypt in Tunisia reacted to the development of the SNSs'? If they were incapable of making a change, how would they do revolution in the countries of dictators? With those revolutions, I believe the definition of SNSs' has changed and expanded throughout the Middle East and inspired many other countries' citizens. I will try to demonstrate in the following section that "Facebook" may constitute a great example for the social construction of technologies. I will try to examine how social constructivists would react to Facebook and how it can become a social construction.

### **5.2.2 The facebook - social constructivists on facebook**

According to social constructivists, the meaning of a technical artifact or technical system should not be taken as dwelled in technology itself, what should be done is to study how technologies are shaped and acquire their meanings in the heterogeneity of social interactions. (Bijker, 1997:6) For me, following the definition above, Facebook may in time constitute a great example for the social construction of a technology in the light of the new expanding events. When Facebook was launched the aim was simple; making communication easier among Harvard students. In the early 2004 Facebook began as a Harvard-only SNS. A participant ought to have a Harvard.edu email in order to join. When Facebook began supporting other schools, new users also required to have university email addresses associated with those institutions and the requirement the site requested made users' perceptions of the site

as an intimate, private community. In September 2005, Facebook widened its limitations and included high school students, professionals inside corporate networks, and, eventually, everyone in the fall of 2006. The first change in the definition of Facebook made by people, as, it was only a Harvard-only SNS; it expanded through all of the people from all over the world. The demand of people made Facebook accessible for them too. Through the development of Facebook, it acquired a technical momentum and changed the context of its users. Following the events that occurred in Tunisia and Egypt, social constructivists would argue that SNSs and especially Facebook is being reshaped by those societies. In his article named "*Social media and political revolutions: fact and fiction*" in hurriyetdailynews.com, Shields indicates that many journalists and democracy activists believe that without the Internet, Twitter and Facebook nothing revolutionary would have happened in Egypt or Tunisia and he adds that a lot of people even think these technologies caused those revolts. According to him, those new technologies helped people to get on streets but they were not the underlying cause of the protests which I agree. The regimes in Tunisia and Egypt denotes, Shields suffered from deep legitimation deficits for decades, experiencing periodic displays of mass protests earlier. For him, this time social media created a tipping point in Tunisia; the success of the Tunisian revolt inspired those in Egypt who had prepared a resistance strategy for months. (Shields, 2011) If we look at the background of the revolt in Tunisia we can see that the anti-government protests began in Tunisia's interior in mid-December 2010. An analyst in African Affairs Alexis Arieff wrote a research "*Political Transition in Tunisia*" for Congressional research service. He indicates in his research that; public demonstrations had previously been very rare in Tunisia because of state repression and the close surveillance of dissidents have traditionally been effective at curbing the expression of anti-government views. The initial reason of the demonstrations for him seemed to be stemming from the discontent related to high unemployment which later gained an unprecedented popular challenge to Ben Ali's authoritarian regime. (Alexis, 2011) Again, in Egypt, the case was similar. Jeremy M.Sharp, a specialist in Middle Eastern Affairs wrote a research named "*Egypt: The January 25 Revolution and Implications for U.S. Policy*" for the Congressional Research Service. He indicates that a purely popular revolution that started only 10 days ago has forced President

Hosni Mubarak to announce his intention not to stand for reelection for president this fall after 29 years in power. According to him, experts have described simmering discontent among the urban Egyptian masses for years and a host of socio-economic factors that may breed instability. Sharp indicates that the “Jasmine Revolution” which took place in Tunisia has inspired popular protests against entrenched dictatorships across the Arab world, and it resonated strongly in Egypt. On January 25, young protestors using social media started to organize which came out in far greater numbers than initially envisioned, creating a self-sustaining momentum that culminated in ever larger nationwide protests. Only 3 days after, thousands of protestors throughout the country clashed with riot police and central security forces controlled by the widely unpopular Ministry of Interior. Only in Cairo denotes Sharp, the estimated number of the people was 100,000. For Sharp, the protestors represented a broad and unexpected cross-section of Egyptian society. Most of the protestors were young men; media accounts showed a significant number of women, children, and older Egyptians who appeared to represent various social classes joining in their demand for President Mubarak’s ouster. Sharp lines up their goal aside from Mubarak’s immediate resignation as;

- To form a more representative interim national unity government.
- To amend the constitution or form an assembly to rewrite it entirely.
- To remove corrupt Egyptian leaders responsible for repressing protestors.
- To dissolve parliament and hold new free and fair parliamentary and presidential elections.(Sharp, 2011)

The protests continued, resulted in bloody clashes but on February 11, 2011 Mubarak has resigned and the Supreme/Higher Council of the Egyptian Armed Forces has taken control of the country. (Sharp, 2011) The riots took place in Tunisia and Egypt resulted in the resignation of the persona non grata leaders. Another result of those riots and mass demonstrations is that they showed that SNSs can be used for the gathering of people who share a common purpose even in authoritarian governments. Jennifer Preston in her article “*Movement Began with Outrage and a Facebook Page That Gave It an Outlet*” indicates that, there is a significant effect of Facebook on the riots that took place in Egypt. When an anonymous human rights activist created a Facebook page called “We Are All Khaled Said” for protesting the unfair death of Khaled Said, a 28 year old Egyptian businessman on June and by mid June, 130,000

people joined the group. It happened to be the biggest Facebook page in Egypt with 473,000 users and it has helped spreading the word about demonstrations in Egypt for Preston. The Facebook page set up around the death of Khaled Said offered Egyptians a rare forum to bond over their outrage about government abuses. For her, it is almost impossible to isolate the impact of social media tools from the general swirl of events that set off uprisings across the Middle East. It is clear that they provided a new means for ordinary people to connect with human rights advocates, offered a way for the discontented to organize and mobilize and allowed secular-minded young people to seize the momentum from Egypt's relatively neutered, organized opposition. Preston summarizes the case of Mr. Said as follows:

Mr. Said, who was from a middle-class family and worked in the import-export business, was not an activist or involved in politics. But human rights advocates said he was killed because the local police believed he had shot a video showing officers with illegal drugs. Such a video did eventually show up on YouTube. The police had told Mr. Said's family that he was involved in drugs and died of asphyxiation from swallowing a package of marijuana while in police custody. But witnesses denied that account, telling their stories in YouTube videos. (Preston, 2011)

For Gamal Eid, a 47 years old lawyer, Khaled Said was just an ordinary person who found evidence of corruption and published it, and for that he died. Gamal Eid indicates that it was Facebook and Twitter and other social media tools where people talked about the death of Khaled Said where freedom of speech and the right to assemble were limited and the government monitored newspapers and state television. Preston indicates that Facebook has been the social networking tool of choice for human rights activists in Egypt. Five million of people are using Facebook in Egypt which is the highest number in any Middle Eastern or North African country. Preston continues as;

Last June, besides providing regular Facebook updates about the stalled police investigation into Mr. Said's death, the anonymous administrator of the Facebook page began posting invitations to join street protests and silent protests in Alexandria and Cairo, which spread to nine other cities. With the conversation on social networks translating into street protests — and with the well-documented evidence of the police abuse posted online for hundreds of thousands to see — prosecutors were forced to arrest the two police officers in early July in connection with Mr. Said's death. But the case remains unresolved.(Preston, 2011)

Preston indicates that there were protests before the Facebook page about Khaled Said's death, but it was "We Are All Khaled Said" Facebook page and "April 6

Youth Movement” Facebook group who invited and gathered Egyptians to protest on January 25. (Preston, 2011)

The people of Egypt and Tunisia successes in overthrowing their authoritarian leaders and of course it should be accepted that SNSs, especially Facebook played an important role for their political purposes. Social constructivists on this issue can accept that the role of Facebook on those countries has changed. The meaning Facebook has for a western person is not the same with an Egyptian. Although Facebook has no political standing, has no political saying on the authoritarian governments in Tunisia and Egypt, with the usage of its users in those countries, it became the platform for political debates, a common point for sharing ideas about the government actions and helped protesters gather. The Facebook is not used for political purposes or anti/pro-government protests worldwide but who knows? May be the evolution of Facebook with time and the historical, cultural values added to its existence will evolve it into an effective political tool.

### **5.3 Internet and Democracy**

Another important point related to the revolts in Tunisia and Egypt is the debate about the democratizing effect of the Internet. It is clear that technologies helped to mobilize masses in Egypt and Tunisia to overthrow the old regimes, indicates Mark Shields in his article called “*Social media and political revolutions: fact and fiction*”. But what he adds is that in neither country have protests resulted in a united opposition with effective leadership, for him there are worrisome signs those elements of the old regimes are resisting basic reforms. According to Shields, no successful political revolution has ever been spearheaded by information or communication technologies and there is no good reason to think that the current wave of Arab revolts will be different. I agree with Mr. Shields on this, what I was trying to emphasize before was the capability of man to change the current situation and it is this very technologies which helped man to change that. I don’t believe- regarding the historical background of the societies- that these revolts are caused by SNSs or simply communication technologies. (Shields, 2011) Those revolutions caused a “change” in the society which was demanded by the public but this change doesn’t necessarily bring democracy. Among the contemporary interpretations of the Internet I believe I should give an example of the public opinion. In late-February

and early-March 2011, “*The Economist*” hosted a provocative online debate on the following motion: “This house believes that the internet is not inherently a force for democracy.” (Url,1) Defending the motion was Evgeny Morozov the author of “*The Net Delusion: The Dark Side of the Internet (2011)*”. Morozov’s summary statement read: “While the internet has the potential to both oppress and liberate, which side dominates depends on the social and political context in which it is used rather than on some internal ‘logic’ that derives from its architecture or culture.” Against the motion was John Palfrey, Henry N. Ess Professor and Vice-Dean, Library and Information Resources, Harvard Law School. His summary statement read: “The internet is inherently a force for democracy. That will not necessarily always be true, but it is the case today, given its present architecture and the way that people use the network.” The Economist editor who is also the moderator of the debate Mark Johnson indicates that tech-savvy youngsters in Tunisia and Egypt pushed aside their ageing despots and their rhetoric grew louder. For him it is certainly true that the internet alone will not foment a revolution but the extent to which it can help, or even hinder, democratic movements remains hotly contested. He continues as;

For the optimistic, unprecedented internet shutdowns in Egypt and elsewhere demonstrated every dictator's fear of the web. In Wael Ghonim, the Google marketing manager whose anti-government Facebook pages led to incarceration and fame, Egyptian protestors found a convincing internet advocate. Without Facebook and Twitter, he announced to American audiences, their revolution "would never have happened". Others drew more pessimistic conclusions. The internet suspension in Egypt and elsewhere proved how easily governments can pull the plug, and led observers in many rich countries to consider the vulnerability of their own internet access. If some Egyptians used loopholes to spread news within and outside the country, in China authorities confirmed their complete mastery over internet discourse by ensuring that searches for "Egypt" returned no results.(Url,1)

Morozov and Palfrey elaborated on their views three times in response to contributors’ and each other’s remarks. Most of the posted comments were thoughtful reflections on the issue; only a few people contributed more than one comment; and there were no dominating contributors. In short, it’s a good sample of mostly well-educated professionals, reflecting The Economist’s fairly elite readership profile. (The Economist self-describes its readers, correctly, as “affluent, well-educated, and influential.”)

In his opening remarks Morozov indicated that there are many things to admire about the internet. For him the Internet makes it easier and cheaper to publish, distribute and access information, it allows like-minded people to find each other and it greatly reduces the costs of collective action. According to Morozov, democracy is not just about granting freedoms; it is also about accepting responsibilities and erecting barriers. He believes that the internet allows us to skirt these responsibilities and ignore the barriers all too easily. For him, anyone can shout fire in our crowded digital theatre as many did like hate speech has flourished on the internet, sensitive personal information is stolen and traded over counter; and all sorts of extremist groups have found a comfortable home online. Morozov indicates that the Internet can do wonders and accepts this but what he emphasizes is this ability of the Internet doesn't automatically cancel out its darker side. He continues as;

Clearly, the internet unleashes processes that strengthen and weaken democracy simultaneously; often these processes are so qualitatively different that it is impossible to evaluate them next to each other, let alone decide which of the two is the more dominant. To believe that the internet is an inherent force for democracy would be to assume that the web's pro-democracy side would prevail in all possible cases. Technology-worship aside, there seem to be few good reasons to believe this. The debate about the impact of the internet on authoritarian states often falls into a similar intellectual trap, with cyber-pessimists assuming that the web is bound to favor dictators, who will use it for propaganda and surveillance, and cyber-optimists assuming that it is bound to favor their (usually democratic and pro-Western) opponents, who will use it for social mobilization.(Url,1)

For Morozov, the Internet will favor both sides; according to him if smart dictators do not use the web to strengthen their grip on power, it would be silly for them. On the other hand, smart dissidents would be equally silly not to use the Internet to carve out more autonomy. Morozov emphasizes that arguing that the Internet is not an inherently democratic force is simply to point out that while it has the potential to both oppress and liberate, which of these two sides dominates depends on the social and political context in which it is used. For Morozov, the effect that Internet pose on strong authoritarian governments change in the context of the economic stability in those countries. He emphasizes that a strong authoritarian government that enjoys fast economic growth and domestic legitimacy would not be affected by the prospects of internet-enabled civic mobilization to the same extent as a government that is weak and beset by unemployment. Likewise he adds a strong authoritarian government would profit from online surveillance than a weak one, but no amount of

internet control can contain the anger of unemployed youths does not automatically make the internet a technology of liberation, even if this is what these youths use to organize themselves. Morozov accepts the fact that the Internet has the potential to make a useful contribution to promoting democracy but for him, to make the most of that potential we need to maximize its liberating side and minimize its repressive side. (Url,1)

Contrary to Morozov, John Palfrey, Henry N. Ess Professor and Vice-Dean, Library and Information Resources, Harvard Law School indicates that the internet is inherently a force for democracy. He accepts that this might not always be the case but it is the case today with its present architecture and the way that people use the network. (Url,1) Palfrey continues as;

Uprisings in Egypt, Tunisia and across the Middle East and North Africa this month offer the most recent manifestation of the power of the use of internet. To start with the obvious limitations of the argument: no technology will make people take to the streets. There must be a reservoir of anger at the state of affairs and desire to improve society. There must be baseline levels of literacy, education, infrastructure and technological skill among would-be protestors, and so forth. With these conditions present, the use of the internet cuts in favor of democracy. (Url,1)

For Palfrey, the clearest evidence in favor of this premise is that the Egyptian president, Hosni Mubarak's regime fell although he told the big internet service providers and mobile telecommunications companies to shut down the network which was effective as a technical matter. His attempt caused a 90% drop in the network traffic but the still couldn't stop the protests. According to Palfrey, if the internet fundamentally somehow favors autocrats over dissidents, Mr. Mubarak would have made a different decision in his moment of crisis.

He continues as;

One of the most important ways in which the internet favors those who seek to advance democracy is the effect of people in one geographic location seeing clearly what is happening elsewhere in their region. This particular story is still unfolding. After dramatic events in Tunisia and Egypt, people are in the streets in Libya and Bahrain. Smaller, sympathetic protests are taking place throughout the region and in social spaces online. Part of what is powerful about the network is the connection of people who share a common language and relationships to their state, religion and social norms. (Autocrats presumably might use social

media to connect with one another and to co-ordinate their resistance, but their numbers are, of course, much smaller.) (Url,1)

Palfrey denotes that if one argues that the Internet is primarily a tool for tyrants, he have powerful arguments on his side because the most sophisticated non-democratic regimes have become extraordinarily proficient in their use of the Internet to preserve their power and to banish free speech. For Palfrey the tools in the toolkits of tyrants include technical internet filtering, network- based surveillance, the spread of fear, strategic releases of malware and the propagation of false information online. Palfrey continues as;

There is a more fundamental, but ultimately misleading, argument on the other side of the debate. As some are quick to point out, bits and bytes have no chance in the face of bullets and tanks. There are plenty of examples—consider Iran in 2009—that make the recent events in the Middle East and North Africa look like anomalies, where the use of force overcame protests in the streets supported by internet technologies. But the fact that classic forms of power can overcome protests, whether or not supported by the use of internet, does not mean that the internet is not a helpful tool for the activists. It simply means that force still works. (Url,1)

For Palfrey, the optimistic premise is that we can bend the arc of the Internet towards democracy. He adds that it is not the technology itself, but the way we use it and built it, that matters. For him, the way that skilful activists are using the internet and digital media today, especially mobile technologies, favors those who are seeking to express themselves and to organize their peers, not those who are seeking to close down debate and to prevent crowds from gathering in the streets. (Url,1) It can be said that the debate and the opening remarks of the parties is important on two aspects for the purpose of the thesis. Firstly, this debate constitutes a great example for the comparison of technological essentialist and social constructivist thoughts on the issue of the Internet and democracy. Secondly, the result of the debate is important on redefining technological essentialism. As the reader profile of *The Economist* is defined by itself as “affluent, well-educated, and influential.” the outcome of the debate which anyone could vote on, was 42% in favor and 58% against the motion. This is probably a somewhat disturbing outcome for historians of technology and other STS scholars. How could sensible people possibly reject Morozov’s sound contextualism in favor of Palfrey’s soft determinism?

One of the comments made by the readers was as such;

Popa Eng wrote:

Dear Sir,

Internet is the harbinger of democracy, if we take the case with the present "Arab early spring" uprising .Democracy was invented 3000 years b c, and consisted in ...peer citizens coming down in the public square to vote public decisions regarding their city. That is the basis of the present democracy, with all the elements that Arab nations today claim to accede to.

What they want today, in the public places where they have gathered and resisted to all threats?

All that the first Greek democracy invented:

- 1 the right to free speech and public opinion.
- 2 the right to cast a vote on the public policy
- 3 the right to be there to elect or to be elected
- 4 the right to be informed with the public decisions

All the internet media have facilitated people to gather and enforce their right to have a say. In this respect, internet is inherently democratic as all the 4 (and many others) items important for democracy are well served by it. I read a lot of skeptical comments about the Internet being democratic, but please tell me one thing: why not to use the same tool (internet) to decide where to go next with their society? They must use the internet now to poll the numerous participants about the new society they want to build up. I know ,there are many tens of millions more to have a say in the process ,but to have a reformist ,educated and collaborative mass public to select the best of them for political reforms is the best protection against all the biases and the best legitimacy for the new committee. As we, Romanian people know best, the best way to deal with the arthritic societies is to rejuvenate the leadership and provide them the democratic tools to work a new society. The number one of the regime is gone, but all the society must be reformed and that requires information, mass polls and mass communications .All of these are the very attributes of the Internet, then I wish them good luck! (Url,1)

As can be seen from the comment, it is against the motion. It should not be argued against the Internet and media facilitated people to gather and enforce their right to have a say, but this aspect of the Internet does not make it inherently democratic.

Another comment made by the readers is as follows:

Endema wrote:

Dear Sir,

If a nation wants to make a revolution, it doesn't necessarily need a social network like FB or Twitter etc. Past revolutions were made and were effective also without internet and new

technologies. Internet helps the revolutions to make them more contagious from country to country, from city to city etc. But in the end, what really count are the maturity, readiness and dynamism of that country's society. FB and Twitter are useful to share information like videos, news, opinions that in a particular country under a despotic regime would be otherwise censored. Take Italy for example (my country): we are one of the major users of FB, we share important information and videos on it, we report news from all over the world in order to get a different perspective on what is going on in our country and how our government is perceived abroad, we would have all the reasons to make "our own revolution" and take down our corrupted, ridiculous and laughable government and change its sclerotic politics but nothing happens. Why? Because I think the Italians are socially underdeveloped, democratically immature (maybe brainwashed by TV)...maybe still too rich and comfortable with their ordinary life. (Url,1)

Another example of the comments which is for the motion is as follows:

C. Daniel Andrade wrote:

Dear Sir,

There so many strong reasons to be for the motion, such as the ones presented by the proposer, that even the opposition's opening remarks can be used better not against, but actually in favor of, the motion.

According to John Palfrey, the idea that "[t]he internet is inherently a force for democracy [...] will not necessarily always be true, but it is the case today, given its present architecture and the way that people use the network".

Unless the word 'inherent' isn't used quite precisely, a property inherent to something is actually one that will always be true and of which it isn't the case only today. Of course, you must understand 'always' and 'necessarily' through a gelatinized perspective, since strictly speaking you can seldom or never be sure of the purported eternal or necessary quality of anything.

So, it is not because of a would-be inherent democratic property of Internet that it has its current architecture and that it has been used in many different ways, including for freedom. (Url,1)

Mr.Morozov's position seems more likely to be a social constructivist perspective to the motion and Palfrey's position seems more likely to be a technological essentialist perspective. It can be assumed that there is nothing "inherent" about the Internet or any technology. Suggesting that the Internet is inherently democratic is; believing that there is something in the Internet which is not related to its context, its usage and indicating that it is not neutral but embodies specific values which are democracy in this case. This constitutes an essentialist position and it doesn't explain anything about the Internet. In his article "*Social Media and Political Revolutions: Fact and Fiction*" on hurriyetdailynews.com Shields asks the question; Why, then, do so many people want to believe that social media can launch new democratic revolutions?

What deeper sociological currents underlie such beliefs? (Shields, 2011) Two seem most significant. For him, the first reason is that the Internet is the only technology in history to have been created, pioneered and adopted largely by younger more than older age groups. He indicates that in societies like Tunisia and Egypt, where as much as 50 percent of the population is under 25, it's completely predictable to see protests led by young, well-educated, Internet-savvy (and unemployed) activists. For Shields, social media are now the Internet's leading edge and it would be liberating to discover that Tweets and Facebook posts can fuel democratic aspirations and not just fill the empty spaces of everyday life. Shields find this admirable impulse is also disturbingly naïve. For him, the belief that the Internet, which makes so many tasks easier, can do the same for revolutions is naive. (Shields, 2011) The second reason for this kind of thought is the powerful symbolism of the new technologies for Shields. He indicates that;

Twitter, Facebook and indeed the Internet at large were invented and propagated in the United States and have come to symbolize eminently "Western" technological projects. It seems, then, only somehow natural for those technologies to serve that most Western of political impulses: democracy. "Information wants to be free," claimed cyberspace theorists in the 1990s. Many now believe that the Internet is an inherently democratic technology; eventually, autocratic leaders who come to rely on it for economic growth will be compelled to liberalize their politics. It's no surprise that U.S. Secretary of State Clinton has anointed "connection technologies" as democratic tools whose development in other nations must be actively supported by U. S. foreign policy. That kind of technological utopian thinking, coupled with missionary foreign-policy objectives, has been at the heart of U.S. modernization thinking for more than 60 years. The globalization of the Internet has given new inspiration to this vision. (Shields, 2011)

The important thing to point out here is the evolution of Jacques Ellul's technological essentialist position. It was mentioned before that he would not believe in Facebook or any SNSs. Of course Mr.Palfrey's position is not like that but, his position is some kind of a technological essentialism too. For essentialism, there is an essence of technology. Mr.Palfrey attributes a kind of logic to the Internet declaring it is inherently democratic. Palfrey seems to believe that the current political interpretive flexibility of the internet-sometimes used for anti-democratic means and ends but mostly favoring pro-democratic values which will soon be stabilized on a solidly democratic platform as autocrats exhaust their options for using it for repressive purposes. In the long run, the design of the internet will fulfill its intended telos but

only as relevant democratic social groups actualize that inherent design for democratic means and ends. Can we relate Palfrey's essentialism with Ellul? Is there anything common? For Ellul the technological system is quite universal and in the Western world. The technological system is developing throughout the entire world in spite of the differences among race, economy or political regime. People now encounter technology everywhere and that the technological system is spreading into all domains. For him technologies modify social behaviors and tend to bring identification under the mask of divergent ideologies so that it doesn't fit into any one class. (Ellul, 1980:171) With this characteristic, technologies spread to the world a style of life, a set of symbols, an ideology. (Ellul, 1980:178) For Ellul, technology depends only on itself, it maps its own route and it should be regarded as an organism tending toward closure and self-determination. (Ellul, 1980:125) According to Ellul, technology modifies all forms of life, it creates new kinds of behavior, beliefs, ideologies and political movements and these are just for perpetuating itself. (Ellul, 1980:161) The only difference of Ellul's essentialism from Palfrey's essentialism is that while Ellul attributes "the search for efficiency" as an essence of technology, Palfrey attributes "democracy". By indicating that there is something "inherent" in the Internet, Mr.Palfrey betrays a technological essentialist position.

On the other hand, Morozov's position gives the Internet its earned benefice, but he doesn't claim anything inherent about the Internet. What Morozov repeatedly emphasizes about the Internet is the "ambivalence" of it. Just like the social constructivists would emphasize. In his book "*The Net Delusion*" Evgeny Morozov indicates that the Internet excites so many seasoned and sophisticated decision makers who should really know better. For him, those decision makers view the Internet through the prism of the Cold War and they endow it with nearly magical qualities indicates Morozov, and according to them it's the ultimate cheat sheet that could help the West finally defeat its authoritarian adversaries. According to Morozov it is the only ray of light in an otherwise dark intellectual tunnel of democracy promotion, the Internet's prominence in future policy planning is assured and at first sight it seems like a brilliant idea. He continues as;

After all, Internet users can discover the truth about the horrors of their regimes, about the secret charms of democracy, and about the irresistible appeal of universal human rights on

their own, by turning to search engines like Google and by following their more politically savvy friends on social networking sites like Facebook. In other words, let them tweet and they will tweet their way to freedom. By this logic, authoritarianism becomes unsustainable once the barriers to the free flow of information are removed. (Morozov, 2011:xii)

For Morozov the idea that the Internet favors the oppressed rather than the oppressor is marred by what he calls “cyber-utopianism” which is a naive belief in the emancipatory nature of online communication that rests on a stubborn refusal to acknowledge its downside. (Morozov, 2011:xii) According to him, cyber-utopians failed to anticipate how authoritarian governments would respond to the Internet and they did not predict how useful it would prove for propaganda purposes, how masterfully dictators would learn to use it for surveillance, and how sophisticated modern systems of Internet censorship would become. Instead of regarding these, cyber-utopians indicates Morozov, stuck to a populist account of how technology empowers the *people*, who, oppressed by years of authoritarian rule, will inevitably rebel, mobilizing themselves through text messages, Facebook, Twitter, and whatever new tool comes along next year. For him, in their refusal to see the downside of the new digital environment, cyber-utopians ended up belittling the role of the Internet, refusing to see that it penetrates and reshapes all walks of political life, not just the ones conducive to democratization. (Morozov, 2011:xv)

As it can be seen from the above, the contextualism of Morozov can be related to social constructivist approach to technology. For constructivists, the meaning of a technical artifact or technical system should not be taken as dwelled in technology itself, what should be done is to study how technologies are shaped and acquire their meanings in the heterogeneity of social interactions. The Internet of course helped to gather people in Tunisia and Egypt, and may help people gather in other countries where people are ruled by authoritarian governments. “Facebook” may evolve into a political discussion site, gain a political standing on the political matters. But this can only happen if people give that meaning to it. The cases of Tunisia and Egypt are important in that context because those revolts are the true indications of the social construction of a technological artifact. Of course “Facebook” should have to be redefined by most of its users by using it only for political purposes but who knows? Maybe it will be the case. On the other hand, this change in the meaning of Facebook, and the revolts in Tunisia and Egypt will not necessarily bring democracy. The Internet is an important tool for people under authoritarian governments but

people decide what that technology will bring in their country. It is the people who made Facebook an important tool in their revolts, it is the people who demanded change and it will be that people again demanding democracy or changing the structural institutions in their countries. Revolts in Tunisia and Egypt does not constitute an example for there is something inherent in the Internet which is democracy, they constitute an example of people whom are reshaping, redefining technologies.

## **6. CONCLUSION: REFLECTIONS ON AGENCY AND TECHNOLOGY**

Through the theories mentioned in this thesis, I tried to develop a frame which looks to the question of technology from two aspects. First one is substantivism, which was represented by Ellul in this thesis and the other one is social constructivism. I tried to show contemplation about the question of technology consisting different political ideologies and different perceptions of technology. In the second and third chapters I tried to show how technology was perceived by two schools of thought. In the context of the thesis, Ellul's main arguments about technology constitute can be lined up as follows;

First; Ellul's idea of autonomy attributes a characteristic to technology which means that technology ultimately depends only on itself and it maps its own route. This idea makes technology an independent organism which resists to judgments or boundaries from outside. According to this characteristic attributed to technology by Ellul, technology is limitless and nothing is impossible for it. For Ellul, technology is not neutral; it contains its own law and its own meaning. (Ellul, 1980:154)

Second; Ellul's idea of universality refers to the fact that people now encounter technology everywhere and that the technological system is spreading into all domains. For him technologies modify social behaviors and tend to bring identification under the mask of divergent ideologies so that it doesn't fit into any one class. (Ellul, 1980:171) With this characteristic, technologies spread to the world a style of life, a set of symbols, an ideology. (Ellul, 1980:178)

Third; Ellul's idea of self-augmentation means the fact that everything occurs as if the technological system were growing by an internal, intrinsic force, without decisive human intervention. This means that man without having no voluntary intention to contribute to technological growth, his actions result in the contribution of technology's growth. For him, self augmentation occurs because everything

functions by combinations of thousands of small discoveries, perfecting the ensemble. (Ellul, 1980:226)

Fourth; Ellul's idea of totalization comes from the great desire of man to reduce everything into one in order to destroy exceptions. For Ellul, a new totality is being established and it is no longer the subordination of man to technology; it is the process that causes vast malaise in man and such a keen sense of frustration. Technology binds with all the elements of life and the totalization of technology produces a veritable integration of all the human, social, economic, political and other factors. (Ellul, 1980:203) Because of this, this society, this human being for Ellul, while not becoming technological objects, robots and so forth, now receive their unity from the totalizing technology. (Ellul, 1980:204)

The points that should be outlined in the social constructivist approach to technology can be lined up as follows;

First, social constructivists don't believe that technology is autonomous rather they attribute the principle of symmetry to technology which derives from under determination. It refers to the inevitable lack of compelling reasons for preferring one competing scientific theory to another. (Feenberg, 1999:78) For constructivism, the choice between alternatives ultimately depends on the fit between devices and interests and the beliefs of various social groups that influence the design process.

Second, social constructivists don't believe that technology is determining because for them, technology cannot be determining because the different interpretations by social groups of the content of the artifact are lead through different chains of problems and solutions to further different developments. (Bijker et al. 1989:80)

Third, for social constructivists, societal structures, power relations and ingenuity and emotional commitment of individuals shape technology. (Bijker et al. 1989:4) There is no intrinsic force of technology which disregards human intervention.

Fourth, for social constructivists social interactions are not homogenous, rather their heterogeneity gives shape to technologies. Bijker uses the metaphor of the "seamless web" of science, technology and society which means not accepting at face the value distinctions between such as, the technical and the social as these present themselves in a given situation. (Bijker, 1997:6)

In the fourth chapter I tried to emphasize the evolution of technology and the Internet and how they are vital in our lives. It can be said that large-scale technological systems paradoxically expand and restrict agency. Socio-technical practices idea captures this dialectic. This seems true of large-scale technological systems in general. One more or less has to adopt them (electricity, television, print, transportation, energy and the Internet) to participate "normally" in modern life; but they don't dictate how or what you'll use them for. The revolutions in Egypt and Tunisia constitute a great example for my objection to Ellul. People can change anything and technology can help them to do that. This case shows that technologies are not determining, they do not dictate how and what they will be used for. If that was the case Egyptian and Tunisian people would not be able to converge the Facebook into a political tool for anti/pro government groups. This case shows that technology do not disregard human intervention, Egyptian and Tunisian people showed it really well that technologies gain their meanings culturally by the use of their users. Technologies do not "totalize" the actions of man; they do not homogenize the society, the heterogeneity of societies which bring different interpretations to them. With the help of those technologies, people can change the very environment that they live in and attribute new meanings to existing technologies.

As a result of the chapters summarized above, I tried to show that the substantivist thinking of technology excludes technology from categories that are real in our lives such as class, value and culture. The relationship between politics, society and technology are very telescopic and excluding one party in this picture by suggesting that it has its own thinking, its own essence is not realistic. The world we live in necessitates the assistance of technology and technological artifacts which have no dependence to a particular ideology, culture or economy.

The effects of a technical or technological system are brought about by the technologies used in that system. Agency is a moral problem because more and more of everything that people do will be shaped by technological systems. Essentialists open up this debate but constructivists seem to give more importance to agency. The purpose of the examples elicited in the thesis was to show agency is effective and crucial in defining technologies. Digital communication technology is unique in the context of its effects on society. Information flows like a wind thanks to that

technology, the way people communicate have changed, the society we live in have changed. But as mentioned before, digital communication technologies like any other technology are defined, structured by the context of its users, by the values attributed to them. Indicating that there is something inherent in the Internet and it is democracy is naïve and not realistic. Excluding human agency in questioning technology is not a path I would follow. Technology should be understood in the context of the relationship to us, to society and within history.

## 7. APPENDIX

I believe that it is important for us to understand the philosophical approaches within the study of science. Because as people perceive technology as the application of science it would be fruitful to understand what science is and how it was formulated within the study of science. Science is perceived as a formal activity that accumulates knowledge by directly confronting the natural world. The methods of science causes it to make progress and those methods allow the natural world to play a role in the evaluation of theories. There are two important philosophical approaches within the study of science which are logical positivism, which is associated with the Vienna Circle, and falsificationism, associated with Karl Popper. (Sismondo, 2004:1) Sergio Sismondo defines the approach of logical positivists as:

Logical positivists maintain that the meaning of a scientific theory (and anything else) is exhausted by considerations, logical and empirical, of what would verify or falsify it. A scientific theory, then, is in some sense a mere summary of possible observations, in a logical structured language. This is one way in which science can be seen as a formal activity: scientific theories are built up by the logical manipulation of observations. The process of creating scientific theories is therefore an inductive one. As a result, positivists tried to develop a logic of science that would make solid the inductive process of moving from individual facts to general claims. For example, scientists might be seen as creating frameworks in which it is possible to unequivocally generalize from data. (Sismondo, 2004:2)

Another view articulated as falsification which is a position developed by Popper. This view is more loosely positivist and it indicates that one can by purely logical means make predictions of observations from scientific theories, and that the best theories are the ones that make all the right predictions.

Sismondo defines Popper's position as;

For Popper, the key task of philosophy of science is to provide a demarcation criterion, a rule that would allow a line to be drawn between science and non-science. Genuine scientific theories are falsifiable, making predictions that are open to question. The

scientific attitude demands that if a theory's prediction is falsified the theory itself is to be treated as false. According to Popper, scientific theories are imaginative creations, and there is no method for creating them. As such, they are free-floating, their meaning not tied to observations as for the positivists. However, there is a strict method for evaluating them. On this view, progress is probably best seen as the successive refinement and enlargement of theories to cover increasing data. (Sismondo, 2004:4)

While Popper defines scientific change as evolutionary Kuhn defines it as revolutionary. Kuhn demonstrated a focus on the activities around scientific research. Scientific areas which are not mature yet are differentiated with the clashes between competing schools. There is no compromise on any subject among the practitioners of those schools. This competition ends when a group of practitioners bring a solution to a research problem. Kuhn, indicates that this solution shares two essential characteristics;

Their achievement was sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity. Simultaneously, it was sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve. (Kuhn, 1970:10)

Kuhn defines the achievements that share these two characteristics as "paradigms" which is for him a term that relates closely to "normal science". (Kuhn, 1970:2) For Kuhn indicates Hacking normal science is the combination of nine points which are;

1. Realism which perceives science as an attempt to find out about one real world. Regardless of what people think, truths are true and there is one unique description of any chosen aspect of the world.
2. Demarcation which indicates that there is a pretty sharp distinction between scientific theories and other kinds of belief.
3. The perception which is; science necessitates the belief that science by and large builds on what is already known.
4. The distinction of observation-theory indicates that there is a fairly sharp contrast between reports of observations and statements of theory.
5. The idea of foundations necessitates the thought that observations and experiment provide the foundations for a justification of hypotheses and theories.
6. The idea that there is a deductive structure in theories and tests of theories proceed by deducing observation-reports from theoretical postulates. (Hacking, 1981:1)
7. The terms used in science have fixed meanings and scientific concepts are rather precise.

8. The context of justification and a context of discovery necessitates for one to distinguish the psychological or social circumstances in which a discovery is made from the logical basis for justifying belief in the facts that have been discovered.
9. The unity of science indicates that there should be just one science about the one real world. (Hacking, 1981:2)

According to Kuhn normal science is what is done when members of a field share a recognition of key past achievements in their field. (Sismondo, 2004:12) When a specific science acquires originality, it characteristically passes through a sequence of normal science-crisis revolution-new normal science. (Hacking, 1981:2) For him, scientists doing normal science share a paradigm. A paradigm's theoretical side serves a worldview, provides categories and frameworks into which to slot phenomena. (Sismondo, 2004:12) The practical side of a paradigm serves a life form, provides patterns of behavior or frameworks of action. For Kuhn, normal science is like puzzle-solving, because the problems are being solved within the terms of the paradigm, if a researcher fails to solve a problem it reflects badly on him not on the theories or the methods of the paradigm. In the normal science period; hypotheses, experiments and theories are developed and these are always in conformity with the existing set of rules. During normal science, the existing paradigm is not questioned. Kuhn indicates that;

Despite occasional ambiguities, the paradigms of a mature scientific community can be determined with relative ease...Scientists can agree that a Newton, Lavoisier, Maxwell, or Einstein has produced an apparently permanent solution to a group of outstanding problems and still disagree, sometimes without being aware of it, about the particular abstract characteristics that make those solutions permanent. They can, that is, agree in their *identification* of a paradigm without agreeing on, or even attempting to produce a full *interpretation* or *rationalization* of it. (Kuhn, 1970:43-44)

According to Kuhn, indicates Hacking, normal science is conservative, and its researchers are praised for doing more of the same, better. The most essential part of scientific activity occurs in this period. (Hacking, 1981:2) When there is no way with coping with the anomalies in some branch of knowledge, crisis happens. Crisis is the shift from one paradigm to another. Kuhn indicates that

crises are a necessary precondition for the emergence of novel theories. For him, scientists do not treat anomalies as counter instances. He continues as;

...Once it has achieved the status of a paradigm, a scientific theory is declared invalid only if an alternate candidate is available to take its place...The decision to reject one paradigm is always simultaneously the decision to accept another, and the judgment leading to that decision involves the comparison of both paradigms with nature and with each other. (Kuhn, 1970:77)

Hacking indicates that a revolution doesn't occur because the new paradigm answers old questions better it also doesn't occur because there is better evidence for the theories associated with the new paradigm than for the theories found in the old paradigm. The revolution occurs because the old discipline is increasingly unable to solve pressing anomalies and because new achievements present new ways of looking at things, and then in turn create new problems for people to get on with. The only way to suffice this crisis is the complete rethinking of the material and this produces revolution. (Hacking, 1981:2) During revolutions, people start seeing another ways guided by the new paradigm instead of sticking in one way. (Sismondo, 2004:16) Kuhn, against positivism argued that changes in theories are not driven by data but by change of vision. (Sismondo, 2004:18) For him, anomalies are typically set aside that only during revolutions are they used as a problem challenging an established theory hence his position is neither verificationist nor falsificationist. Against all of these, Kuhn argues that the large scale history of science cannot be defined not as a story of progress but as a story of change. For Kuhn, science is shaped by solidarities built around key ideas, not around behaviors. (Sismondo, 2004:19)

Some of the social constructivist thinkers believe that Kuhn is against the logical positivist approach of the philosophy of science. It can be said that they are inspired from the theories of Kuhn and they converted his ideas for composing a model for their perception of technology. For example social constructivists don't believe in technological determinism and they assume that the concept of "unilinear direction" of technological determinist approach has connections with the affirmations of logical positivists for science. Social constructivists position Kuhn against logical positivists, for this reason,

understanding the dynamics in philosophy of science is essential to understand the technological phenomenon. Technology, is often conceived of as something comes out of science, or creates scientific interests, or in some sort of dialectical interaction with it. (De Solla Price, 2010:554) Although technology shares with science the same high growth rate, it shows quite complementary social phenomena. (De Solla Price, 2010:568) I believe that technology should not be recognized as applied science because technology would be limited by the limits of scientific knowledge if it was applied science. The common view on technology is that science plays a central role in determining the shape of technology. Defining technology as applied science is toward a form of technological determinism. When modern technology is accepted by a society, they find themselves going down a path of increasing efficiency, allowing technique to enter more and more domains. (Sismondo, 2004:9-11) It is inevitable to recognize the mutual relationship between science and technology. But it would be an aggravation to indicate that science derives the patterns of technology.

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