CHAPTER TWO: ANALYSES OF TECHNOLOGY

As technology is becoming an integral part of our societal existence, it is important to recognize the inevitability of various opinions regarding technology and its implementation into our lives. Some love technology; others abhor it. Nevertheless, the manner in which technology is viewed is an important argument in terms of our progression as a society. To date, the three most prominent notions of technology and how it affects societal existence are: the instrumental theory, the substantive theory, and the critical theory of technology.

The Instrumental Theory of Technology

The instrumental theory of technology portrays technology as neutral and computers as neutral tools. The theory views technology as not inherently good or bad, but as a tool to be used to the social or political ends desired by the institution or person in control. Andrew Feenberg describes the instrumental theory as one that:

> offers the most widely accepted view of technology. It is based on the common sense idea that technologies are 'tools' standing ready to serve the purposes of their users. Technology is deemed 'neutral', without valuative content of its own.
>
> (5)

Technology is a "rational entity," without bias or prejudice, and universally applicable, thus allowing similar standards of measure to be applied in various situations. Due to these propositions, the only response is unreserved commitment to the employment of technology. Exceptions may be made on moral grounds, but people must also understand that the "price for the achievement of environmental, ethical, or religious goals…is reduced efficiency" (Feenberg 6).

Arnold Pacey describes the person who is partial to the instrumental theory of technology. For such a person, when technology fails them or when it has negative consequences, it is not the technology itself, but the improper use of it by "politicians, the military, big business, and others" (2).

James Carey argues "electronics is neither the arrival of the apocalypse nor the dispensation of grace. Technology is technology; it is a means for communication and transportation over space, and nothing more" (1992). This argument is typically characterized and criticized as uncritically positive about the development and use of technology. It tends to be used and to be enormously effective in situations – such as buying a computer or subscribing to the Internet - where technology is being "sold" for one reason or another (Carey 1992). For this reason, nearly everyone who takes a position of advocacy towards technologies in the use of computers for instruction finds himself or herself in this position at some point in time.

The instrumental position is successful, in part, by creating an artificial divide between technology and its human users, consumers, marketers, and designers. In what Feenberg calls "a moment of decontextualization," arguments from the instrumental position create an image of a unified human subject ruling over and benefiting from technology – a tool only (1991). This allows humans to see themselves separate from technology, and vice versa, so that we are thought distanced from the complexity of our societal involvement.

Given this understanding of technology, the only rational stance is unreserved commitment to its implementation. The fundamental law of the instrumental theory of technology is that you cannot optimize two variables. There is a price for the

achievement of environmental, ethical, or religious goals, and that price must be paid in reduced efficiency (Feenberg 1991). If technology is a mere instrumentality, indifferent to values, then its design is not at issue in political debate, only the range and efficiency of its implementation. However, if technology is the vehicle for a culture of domination, then we are condemned to pursue its advance toward dystopia or to return to a more archaic way of life. In neither case can we change it: technology is destiny. Reason, in its technological form, is beyond human intervention or restoration. In light of the information detailed above, it can be concluded that the instrumental theory of technology is not conducive to successful democratic and equitable functioning in society.

The Substantive Theory of Technology

In contrast to the instrumental theory is the substantive theory of technology. Best known through Ellul and Heidegger, the substantive theory, according to Feenberg, "argues that technology constitutes a new type of cultural system that restructures the entire social world as an object of control" (1991). In this view, the computer as a technology is seen as the culmination of a variety of cultural / ideological forces, which, depending on the context in which the technology is used or discussed, can be either positive or negative.

Heidegger claims that we are engaged in the transformation of the world and ourselves into "standing reserves," raw materials waiting to be used up in the process (17). Heidegger asserts: "the technical restructuring of modern societies is rooted in a

nihilistic will to power, a degradation of man and Being to the level of mere objects" (7). Feenberg complements this notion by claiming:

> The issue is not that machines have 'taken over', but that in choosing to use them we make many unwitting cultural choices. Technology is not simply a means but has become an environment and a way of life: this is its 'substantive' impact.
>
> (8)

Ellul makes the link between society and technology explicit, determining that the "technical phenomenon" has become a central trait of all modern societies regardless of political ideology (1977). "Technique," he asserts, "has become autonomous" (1977).

The substantive theory of technology aims for society's awareness of its cultural character. The point is not that technology has taken over, but rather that we are making ignorant cultural choices – such as allowing technology to control us - when we implement technology in our lives. In viewing technology in terms of its substantive impact, technology is no longer a means of accomplishing certain tasks; it has become a world in itself and a way of life.

Society has become technological; we are in an era of incessant change and development in terms of technology and its effects on society. The manner in which technology has and continues to transform society is such an important substantive change that it is disingenuous to claim technology merely renders the means more efficient. Efficiency, in other words, does more than just streamline our ways of getting the things we always wanted; it changes those things. Efficiency changes our social environment; it changes the goals we pursue; it changes the whole content of our action.

As we are now capable of completing tasks and achieving goals more efficiently than in the past, we are left with time to pursue other goals and interests using newer technologies. Efficiency in technology changes us; we use technology to facilitate task completion, enabling the pursuit of other goals for accomplishment. However, efficiency in technology is not necessarily beneficial. The more you accomplish, the greater the stress becomes to accomplish even more using the time saved from efficient technologies. Eventually, you will take on too much and the technology that was once deemed efficient now becomes a burden.

A Critical Theory of Technology

In arguing for a critical theory of technology, it is pertinent to first discuss critical theory itself. Critical theory builds on Hegel's notion of critique, by being critical of "one-sided positions" – such as technophobia vs. technophilia – in order to construct numerous complex dialectical standpoints that "reject and neglect oppressive or false features of a position, while appropriating positive and emancipatory aspects" (Kellner 2003). Critical theory incorporates Hegel's argument of theory by developing notions that attempt to understand all ideologies of a "given field," while also constructing links and acknowledging contradictions, to surmount "idealist or reductive theories of the whole" (2003).

A critical theory is interdisciplinary, incorporating an evaluation of "academic disciplines and fragmentation" and material from oppositional spheres to create a view on society based on various perspectives (Kellner 2003). A critical theory is one that crosses boundaries and mediates; it combines numerous facets of society in an all-inclusive

"normative and historical thinking" (Kellner 2003). The theory itself incorporates a "model of more holistic education" that offers an education based on the combination of pertinent subject material, instead of allowing the subjects to remain divided (2003).

A critical theory of technology is more complex than the instrumental and substantive theories. This definition of technology represents the theory in sum:

> Critical theory argues that technology is not a thing in the ordinary sense of the term, but an ambivalent process of development suspended between different possibilities. This ambivalence of technology is distinguished from neutrality by the role it attributes to social values in the design, not merely the use, of technical systems. On this view, technology is not a destiny but a scene of struggle.
>
> (Kellner 1991)

In proposing to re-write the "technical code" for a critical theory of technology, two other advantageous components of critical theory should be emphasized. First is the necessity for the theory to inspire action that alters technology for the better, thus the need to rewrite the technical code and construct social objectives such as equity "engineering objectives" (Feenberg 1991). Second is the need to discontinue viewing technology as separate from people, to see humans instead as "bodily subject and member of the community in the life of the objects (technologies)" (Feenberg 1991).

We are controlled and manipulated by a technological rationalism that not only blurs our reasoning by directing our critical energies away from the contradictions in our technological society but which precludes the emergence of our critical consciousness (Marcuse 1964). In terms of the contradictions created by technology, a critical theory of technology:

attempts to develop a dialectical optic that avoids one-sided approaches in theorizing and evaluating the genesis of the new technologies and their often-contradictory effects.

(Kellner 1997)

A critical theory of technology must be developed "in order to sort out positive and negative features, the upside and downside, the benefits and the losses in the development and trajectory of the new technologies" (Kellner 1997). By developing a critical theory of technology, it will counter the dream of a "technological utopia," where computers will solve all of our problems and create a perfect world in which to live (Kellner 1997). We must also "counter technological dystopia, that computers are our damnation, that they are vehicles of alienation, mere tools of capital, the state, and domination" (Kellner 1997). A critical theory of technology would balance these societal notions of technology, enabling both technophobes and technophiles to be critically aware of how technology influences societal functioning.

These principles of a critical theory of technology are important distinguishing features of arguments about computers and social functioning, differentiating between those arguments that take a substantive position and those that take a critical position. A critical theory of technology registers a difficult balance between resignation and utopia. This theory analyzes the new forms of oppression associated with modern industrialism, and argues that they are subject to new challenges. However, having relinquished the mirage of state-endorsed societal change, critical theory must surmount the cultural barrier that separates the legacy of radical intelligentsia from the modern world of technical expertise. More specifically, critical theory must surpass the friction between

19

intellectuals who form an artistic, social, or political elite and are extreme in their views, and the skilled experts of modern technology. A critical theory of technology must rationalize how contemporary technology can be redesigned to adapt to the needs of a more liberated society.

As technology becomes further infused in our society and culture, it is to be expected that a variety of opinions regarding its use will proliferate. The opinions are significant, however, in determining how we envision technology in relation to societal advancement. Presently, the three notions of technology pertaining to society and culture are the instrumental theory, the substantive theory, and the critical theory. While both instrumental and substantive theories of technology have merit, neither contends for the progression of a democratic society. The instrumental theory deems technology neutral and to be implemented as a means of control. The instrumental view also separates humans from technology, thus distancing us from the complications of our societal advancement. Conversely, the substantive theory of technology purports the notion that we are making uneducated decisions in terms of how we use technology in our lives, essentially allowing technology to dominate us.

A critical theory of technology is more comprehensive than the instrumental and substantive theories. A critical theory of technology argues for the development of technology in order to enhance our lives. Moreover, a critical theory of technology strives to create a balance between the notion that technology will create a utopian society and the belief that technology will destroy us. Finally, a critical theory of technology facilitates a more democratic society by acknowledging the need to rewrite the technical code and create more equitable social objectives.

To add relevance to a critical theory of technology, it is pertinent to incorporate the theory in all modes of societal functioning. Shifting from an analysis of the theoretical components of a critical theory of technology, the subsequent chapter examines practical applications of a critical theory of technology in literacy acquisition.