ACKNOWLEDGEMENTS

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PREFACE

Drawing on the postphenomenological perspectives developed by Don Ihde and Peter-Paul Verbeek, this thesis will deal with the cultural translation of technological modernization and the technological mediation of cultures. Postphenomenology radically departs from classical phenomenology (as developed by Edmund Husserl, Martin Heidegger and Maurice Marleau-Ponty) by conceptualizing the field of human-world relation as a relation of mutual constitution and coshaping. Technological artifacts are part and parcel of this relation. In mediating this relation, technological devices actively modify or coshape it. This thesis will try to expand on this posphenomenological theory by extending its interpretive framework to a cross-cultural context where technologies get new cultural meanings while also actively mediating or coshaping culture.

The paper has got four chapters. The first chapter deals with the conceptual framework and defines the research questions. Chapter two, after reviewing literature that deal with cultural preparation of technological modernization, presents the postphenomenological theory of technological mediation. This chapter also discusses the cultural mediation of technologies with particular emphasis on Ihde's theory of technology transfer. Chapter three presents how technologies could be reconstituted into new cultural frameworks. This chapter critically reviews Ihde's theory of technology transfer. The second part of the chapter is devoted to discussing a few examples from Ethiopia in light of the postphenomenological theory of technology. This section especially discusses how technologies Ethiopia imported during the end and beginning of the twentieth centuries was reconstituted into the social and cultural reality of the country. The fourth chapter focuses on the role of technologies in shaping culture. This chapter has also both theoretical and empirical analyses. Finally, we have a conclusion. Here, in addition to further critiquing various theories of technology transfer, I will present my own views and suggest that phenomenology calls for an elaborate theory of culture.

CHAPTER I

INTRODUCTION

This chapter introduces the conceptual framework of the thesis and the research questions that it will be dealing with in subsequent chapters. As the title is suggestive of, the conceptual framework of the paper is the postphenomenological perspective. The whole project is an attempt to build on the postphenomenological perspective on the basis of philosophical discussion of the various forms that the perspective takes within cross cultural transfer of technological artifacts. In this respect, the first two subsections will try to provide us with preliminary definitions. An attempt will be made to define concepts such as postphenomenology and cultural translation.

Equally central concern of this chapter is formulating the research questions of the study. Thus, the second section of the chapter will discuss the research questions. The third section third section will focus on methodological considerations. It will be here that we will discuss how to go about answering the research questions. We shall preview how to combine the theoretical discussions with the cases. Finally, we will embark on the organization of the remaining part of the paper.

1.1 Conceptual Framework

This thesis aims at expanding the postphenomenological philosophy of technology and applies it to the cultural level of technological mediation. The postphenomenological theory has been developed by the American philosopher Don Ihde. This theory was later elaborated by Peter-Paul Verbeek within the broader context of other traditions and theories of philosophy of technology. In this section, I will introduce key concepts that I will use in this thesis. Section 2.1 deals with the meaning and development of postphenomenology. Section 2.2 will deal with the concept of cultural translation of technology and with a few preliminary questions related to technology transfer.

1.1.1 Postphenomenology

In his book *What Things Do*, Verbeek traces back the roots of postphenomenology to classical phenomenology. For Verbeek one of the things that overshadowed classical phenomenology's career was its attempt to describe reality itself. Verbeek argues that this could be

understandable in light of phenomenology's reaction to the scientific claim that it is the only intellectual enterprise to fully describe and explain reality. Phenomenology then contended that while science can only provide a rational explanation of the world, phenomenology chose itself as a method that brings in the description of reality in its *original* form.

> It [phenomenology] correctly pointed out that the scientific disclosure of reality is not a disclosure of "reality itself" but always that of a quite specific kind – but from this fact it failed to draw the conclusion that no final contact with "true reality" is possible at all, and that therefore even "lived reality" is always liven in a specific way. (Verbeek 2005a: 105)

Phenomenology can only surpass this futile search for the description of an original world if it comes to terms with the postmodern understanding that there is no such thing as *one* point of view. It must endorse the view that there are multiple points of view instead. The antidote for this phenomenological tendency to look for something residual is found in Maurice Merleau-Ponty's philosophy of perception. Like other phenomenologist philosophers before him, Merleau-Ponty is in fact known for presenting phenomenology as a method used to describe the world and he presented this method as an alternative to the scientific approach. This therefore might still leave him in the camp that claims for having true or original access to the world. "Where then does the remedy lie in Merleau-Ponty's philosophy?" one might ask at this point. Verbeek argues here that Merleau-Ponty's understanding of the word "describe" was not actually used in Merleau-Ponty's *Phenomenology of Perception* in the sense of claiming a "representation" of reality as something separate to humans.

> Merleau-Ponty does not, then, describe the world, but rather the way in which human beings comport themselves to it. The "things themselves" that he addresses appear to be not the things of the world but rather the *relations between human beings and the world*. (Verbeek 2005a: 108).

For Merleau-Ponty the act of description is tantamount to examining the structures of the relations humans have to the world. His theory is therefore relational. In his theory, we have only a hyphenated relation in between humans their world. We have human-world, and not humans on the one hand and the world on the other. Merleau-Ponty writes:

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My body is geared into the world when my perception presents me with a spectacle as varied and as clearly articulated as possible and when my motor intentions, as they unfold, receive the responses they expect from the world. (Quoted in Ihde 1990: 39)

This Merleau-Pontean understanding is therefore one of the starting points for developing the postphenomenological perspective. But we still need to go a little further to bridge the gap between classical phenomenology and postphenomenology. Verbeek finds this connection in Edmund Husserl's conception of intentionality and he takes the concept "intentionality" as a key word in converging the phenomenological understanding as one larger tradition in which we can find a common line of interpretation. Consciousness for Husserl exists as consciousness *of* something. And it is this "other-directedness" of consciousness that Husserl refers to as intentionality. Both Ihde(1990: 37) and Verbeek (2005a: 108-109) relate that Husserl has eventually hinted that his interpretation could further be extended way beyond the realm of consciousness and use it to describe human-world relations. In this human-world relation, consciousness seems to be only one aspect of the relation. And as Husserl's concept of "life-world" speaks for itself, the world is surely not a mere collection of objects for knowledge but it is a world in which humans live. Phenomenology, Verbeek concludes, by avoiding the subject-object distinction, is consolidating its position that human existence is relational. Humans exist in relation to the world in which they live.

More than Husserl, Heidegger has come up with a more explicit interpretation of intentionality as relational:

Heidegger asks us to think intentionality more radically. How is it possible for the subject to escape the confines of its immanence and relate to the other? Or, even, why does a subject "require" an object, and conversely? This relating must belong to the ontological constitution of the subject itself. Intentionality must belong to the existence of Dasein. It is in the nature of Dasein that it exists in such a way that it is "always already with other beings." (Mohanty 2006: 73)

Classical phenomenology has therefore been able to overcome the subject-object distinction of traditional metaphysical thinking and conceived human beings only in terms of their relation with the world. Classical phenomenology was therefore successful in bringing in a

radical interpretation of human-world relation. With Heidegger this was even further pushed in such a way that technological artifacts are assumed to have a role in mediating this relation. Verbeek relates:

> In Being and Time Heidegger saw the relations between human beings and equipment as occupying a center stage – or rather, he saw the role of tools and equipment as occupying center stage in the relation between human beings and their world. Heidegger showed that tools and equipment give shape to the encounter between human beings and their world. Things make daily practices possible while withdrawing from the explicit field of attention. Only when human beings cease occupying themselves with their tools themselves, but rather with what they set themselves to do with the help of these tools, are these tools present as tools. The tools are then, in Heidegger's words, "ready-to-hand." (Verbeek 2005a: 114)

Postphenomenology then goes beyond this relation of humans to the world and established the view that the relation is one of constituting or coshaping each other.

1.1.2 Cultural Translation

By cultural translation of technological modernization, I am here referring to technology transfer from one cultural context to another. I employ the term "translation" in order to indicate, on the one hand, that my research follows the logical development of the phenomenological theory of mediation, and, on the other hand, it will "translate" or extend this discourse of mediation to the context of, to use Ihde's term for "developing" countries, "minimalist" technological cultures. The assumption at work in this thesis is that when a certain technological artifact is being introduced to a new cultural geography, the artifact is not a mere piece of equipment or knowledge; it is rather a cultural fabric that affects and will be affected by the cultural fabric that it is thrown into.

Now, the question I would like to pose at this point is: What is the value of reflecting on the phenomenon of technology transfer? I consider two things. First, I believe that the non-neutrality and multistability of technology that post-phenomenological analysis argues about could best be expressed when technological artifacts are examined against the background of cultural contexts other than where they were produced. When, for example, guns are introduced into a society where they have never been everyday artifacts, it is

possible to *see*, and to see clearly, the kind of impact this very phenomenon has brought about. In this regard, the cultural hermeneutic (or, to use what Ihde himself employs, macroperceptual) context in which we examine the place of technological artifacts would enable us to shed more light on the mediating role of technologies at the human perceptual (or microperceptual) level.

Secondly, I believe that much of the discussion on the issue of 'technology transfer' do seem to have little clarity as to what is the phenomenon of technology transfer and what it involves. In the majority of cases, it is conceived as if it is simply the transfer of a set of equipment[1]. Such a misconception would in turn lead to practical problems on the ground. Bad technology policy can be cited as an example here. Ihde, apparently cognizant of this problem, notes that highly complex technologies might easily be introduced to countries that do not have either the infrastructure or the knowledge to run it. But, he continues, the fact that they can easily be introduced does not mean that the recipient country is trouble-free: "To the contrary, precisely because they are often easily introduceable, the deeper problems of technology transfer emerge" (Ihde 1990: 128). Thus, the philosophical perspective under discussion combined with certain local narratives would surely help me to problematize the phenomenon of technology transfer from an entirely new angle.

Much of the literature on international technology transfer flows from economics, economic geography and business studies. That is why much of the literature on the issue under discussion seem to be greatly interested on channels of technology transfer and not much on the impact of these transfers. When writers are interested on the latter, much of it would revolve around markets and policy matters. In this respect, my research project, emphasizing on the philosophical or phenomenological perspective, could help me to deal with matters such as the manner in which technologies are culturally appropriated

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[1] Dealing with "international diffusion of new technologies," Richard Perkins and Eric Neumayer (2005), for example, seem to be confined to the specific technological artifacts, namely continuous steel casting, shuttles textile weaving looms, and digital mainline telephones. Much of their analysis is preoccupied with tabulations on how, when, and which country adopted one of these technologies. In fact, there is nothing wrong in taking up particular technological products for the very approach they employ could dictate the very analysis itself. However, the kind of conclusion they draw (i.e. "latecomer" or developing countries have the relative advantage of diffusing technologies in a greater scale than those countries where the technology was produced at first) wouldn't get adequately support unless they characterize these technologies as more than hardware. Similarly narrow approaches can also be witnessed in papers that employ economic analyses. See, for example, Pack and Saggi 1997; Watson *et al* 2003 and many working papers and articles coming from the World Bank and other international financial institutions.

and how these very technologies would in turn impact on the cultural frames into which they would be a part.

1.2 Problem Statement

At the centre stage of post-phenomenological interpretation of human experience is technological mediation. Ihde's analysis begins from the assumption that there is little or, no, condition in which humans could experience the world unmediated. He writes: "Virtually all human activities implicate material culture, and this in turn forms the context for our larger perceptions." (Ihde 1990: 18) Taking technology in the broadest sense, Ihde concludes, "in contrast to the non-technological Garden, human activity from immemorial time and across the diversity of cultures has always been technologically embedded." (Ihde 1990: 20)

Ihde deals with technological mediation at two levels: the first concerns the way humans (notwithstanding the historical and cultural variation in which they might find themselves) perceptually relate themselves to technological artifacts; the second concerns the cultural, or "macroperceptual" level. It is the latter level that this study takes up as its focal point. As Peter-Paul Verbeek (2005) points out, Ihde's "post-phenomenological" approach shows that the relation between technological artifacts and cultural contexts is one of constituting one another rather than 'interaction'. In developing this point of view, Verbeek relates:

> Precisely because technologies are always interwoven with culture, they are always in a position to transform that culture – not "in themselves," but from the position that the cultural definition has given them. When a cultural relation with an artifact is initiated, there arises a "cultural intentionality" within that relation, a cultural space mediated by technology, thanks to which technology is able to give indirect form to the interpretations and experiences of human beings, as well as directly mediating sensory perception. (Verbeek 2005a: 138)

On the basis of this understanding, Ihde, unlike many other philosophers of technology, has been able to develop a philosophical framework for technology transfer. Drawing on the works of historians of technology and cultural anthropologists, he conceives a philosophical perspective that best accounts for what it takes to 'transport' a given technological artifact from its context of creation to

a context in which it will be used. With reference to the introduction of steel axe and knife into the New Guinean highlands in the 1930s, Ihde notes that the New Guineans did not simply receive a mere artifact. By receiving the artifacts, they had rather been taking in "a set of cultural relations." (Ihde 1990: 126). In fact any artifact might be adopted creatively or received passively with the consequence of a great deal of dependency on those who produced or manufactured it, or, on the other way round, it may be rejected right away. But, whatever its mode of adoption (or rejection), there are always "cultural-perceptual" changes that go with such technology transfers.

Nonetheless, in addition to his selectivity of nearly "primitive" settings, there is too little detailed analysis of Ihde's analysis of the micro- and macro-perceptual aspects of mediating technologies. This study will therefore try to analyze cultural (macro-perceptual) impacts on the basis of micro-perceptual mediations in specific cultural contexts. Put it differently, this thesis will attempt to expand on the postphenomenological philosophy of technology and applies it to the cultural level of technological mediation. The major research questions are:

1. *How can the postphenomenological philosophy of technology be expanded and translated to the cultural level?*

2. *How does this expanded version of postphenomenology help us to conceptualize and analyze the implications of technology transfer from one cultural context to the other?*

3. *How can this postphenomenological theory be used to explain the technical mediation of cultures?*

1.3 Methodology

The principal concern of this study is to inquire into (and expand) the post-phenomenological approach in philosophy of technology and analyze its major tenets and concepts as developed by Don Ihde and Peter-Paul Verbeek. In order to shed light on the phenomenology of technology transfer, an excursion into what historians of technology and other social scientists have to say is very crucial. The works of historians of technology such as Lewis Mumford, Lynn White, Arnold Pacey, and John M. Staudenmaier will be works of special importance for the study.

Subsequently, the study will deal with each of the research questions just mentioned. Answering the first question calls for examining and analyzing theories of technological mediation. As repeatedly pointed out already, this thesis draws on the postphenomenological perspectives that Ihde and Verbeek present. Moving these perspectives to the cultural or macroperceptual level will wrap up our effort to answering the first research question.

Once we deal with the postphenomenological theories of technological mediation and technology transfer, we will be dealing with the second research question: How does the expanded version of postphenomenological theory help us to conceptualize and analyze the cultural appropriation of technologies in cross-cultural context? Here in addition to working on the theories in question we will select a few empirical cases in order to demonstrate how technologies could be culturally reconstituted. Sources from Ethiopia have been consulted in order to document examples for the cultural translation of technological mediation. Examples are newspaper narratives, historical accounts, and novels that touch upon the 'biographies' of new technological artifacts that enter into the country sometime in the past. For example, when tap water was for the first time introduced to Ethiopia (this was for Emperor Menelik's palace) around the beginning of the twentieth century. Chroniclers had been able to record how people felt about it. There are similar narratives on the introduction of train, telegraph, telephone, and other new technologies of the time. During Emperor Hailesellasie's period, 1930 to 1974 (including the time he was a regent), was the golden age of the expansion of modern education. The Emperor, who had been considered as the "Sunny King," was able to introduce aircrafts to the country and subsequently establish the Ethiopian Air Force and the Ethiopian Airlines. An inquiry into such historical documents and other kind of narratives would enable us to see how new technologies are appropriated or "transformed" culturally and how these technological artifacts in turn shape human-world relations.

Finally we have the third question which focuses on how technologies impacted changes on the cultures in which they were reconstituted. In order to answer this question, two theories of mediation will be used: namely philosophy of script from Latour and Akrich and the theory of the materialization of morality from Verbeek. A few empirical cases are introduced here again in order to demonstrate what I mean by technological mediation of cultures.

1.4 Outline of the Thesis

The thesis consists of five chapters. Chapter I being the existing chapter, we have to describe the remaining four chapters. Chapter II, "Philosophy of mediation and its cultural translation," attempts to do two things. First it provides an overview of the literature around the issue of technology transfer from one cultural context to the other. But since the area is unmanageably vast and simply a constellation of various fields and perspectives, I have limited my review to a few works of historians of technology. The works of Lewis Mumford (1934), Lynn White (1978), Arnold Pacey (1990), John M. Staudenmaier (1985), and other works related with these will be taken up for the purpose at hand. The second and most important concern of the chapter is to discuss theories of mediation within the phenomenological tradition. In connection to this, an attempt is also made to employ these theories at the cultural or macroperceptual level.

Chapter III, "Cultural translation of technological modernization," is an attempt to broaden the postphenomenological theory and show how culture can appropriate or reconstitute technological devices. The context here will be cross-cultural because we are going to discuss at some point (in the same chapter) how certain artifacts were "transported" to a new spatio-cultural framework and get reconstituted in new cultural meanings. Chapter IV, "Technological mediation of cultures" focuses on the impacts of technologies on culture. This does not however mean that these two, technology and culture, are two separate spheres. It is clear that technologies do get constituted by culture right at the time they impacting change on culture. But we need to discuss these two aspects one after the other instead of doing it at once for the sake of emphasis. The last chapter, "Summary and conclusion" will not claim much other than what the title says.

CHAPTER II

PHILOSOPHY OF MEDIATION AND
ITS CULTURAL TRANSLATION

The first level of discourse that this chapter looks into is philosophy of mediation at the microperceptual[2] phase. By philosophy of mediation we are here referring to the phenomenological philosophy of technology as formulated and developed by Don Ihde and later by Peter-Paul Verbeek. This postphenomenological philosophy of technology mainly argues that technological artifacts mediate intentionalities and hence actively mediate and shape ways of life.

The rationale behind reflecting on the microperceptual aspect of technological mediation is to establish a theoretical or philosophical basis for the second stage that this chapter will be considering, namely the cultural hermeneutics of technological mediation. I have called this aspect the "cultural hermeneutic" level following what Don Ihde coined as the program of "cultural hermeneutics" (Ihde 1990).

According to Ihde, when technological artifacts are moving from one cultural context to the other, what is being moved or transported is not a mere artifact. It is also a cultural ensemble. At the other end, the "recipient" culture does not simply receive or absorb this new technological artifact (which is at the same time a cultural piece) as it is. The culture acquiring the technologies appropriates or transforms the new artifacts in its own way. As we shall see in more detail under section 2.2, Ihde relates that this is a level where we can discuss "the ways in which cultures *embed* technologies" (Ihde 1990: 124). Questions such as, "How do cultures appropriate technologies?" "How do cultures embed technological artifacts?" could be answered or discussed from the vantage point of the theory of technological mediation translated or transported to the level of cultural meanings.

Before going to Ihde's analysis, we will review literature that discuss the cultural preparedness for technological development. We will review central ideas from Lewis Mumford, Lynn White Jr., Arnold Pacey and John M. Staudenmaier. The remaining two sections will discuss theories of mediation and the idea of cultural translation respectively.

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[2] Ihde formulates a distinction between microperceptual and macroperceptual levels of experience following Edmund Hussrels's "two levels of praxes." (Ihde 1990:29).

2.1 Review of Related Literature

This literature review is organized around the issue of the cultural preparation of technological development. Our point of reference will be the history of technology. We need to focus on the issue of cultural preparation of technological modernization because the theme of the thesis is technology transfer across cultures. The field of history of technology is pin pointed as our frame of reference because of two reasons. Firstly, some of the cases we are going to analyze existed about a century ago and hence call for historical perspectives. Even though most of the works focus on Europe and Asia, the accounts and analyses they offer can be used as background for creating parallels or analogies for the materials we discuss in this thesis. Secondly, accounts and reflections in the history of technology will provide us concepts and perspectives that would enable us to explore if there are common features between our material in the thesis and other cross-cultural technology transfers in history. This will lend us additional conceptual tools other than what we draw on the postphenomenological theory.

This review is divided into four sections. The first section will discuss what Lewis Mumford's calls "cultural preparation" of technics in his book *Technics and Civilization* (1934 [second ed. 1962]). The second section will also discuss the idea of cultural preparation. This time, however, our reference is Lynn White's much focused discussion of the place of religion in technological development. The text we draw on will be his anthology *Medieval Religion and Technology: Collected Essays* (1978). We have an additional reason for discussing these two works in particular in addition to the reason just pointed out: Don Ihde's phenomenology of technology transfer draws on these two works for examples. I assume that when drawing examples, though these could be very few, Ihde has shared – at times unconsciously – some of the premises of these authors.

As we shall see soon, these two historians focus on the technological development of Western Europe. Although both acknowledge the flow of certain skills and tools from non-Western to Western countries, they do not believe that these have made any meaningful contributions to technological modernization as we see it now in the Western world and a few Eastern countries. In fact, Mumford's position gives a great allowance to the contribution of other cultures to technological modernization in the West. He believes that civilizations are "not self-contained organisms" (1934: 107). He stresses that there is always

"technical syncretism." (We shall come into this point in more detail in the first section.)

However, Mumford still discusses the participation of other countries or regions of the world in the development of technics to the extent that he believed it contributed to nourishing *the machine*. In fact, the fact that Mumford looked at developments in China or other parts of the world only marginally may not make his position any weaker. As I look it now, his interpretation does not seem to be as stringent as it looks.

And yet, we still need an account of the history of technology in a wider framework. In this regard, the third section will discuss Arnold Pacey's view of technological "dialogue" of cultures (in his *Technology in World Civilization*, 1990) because it provides us a broader basis of interpretation. Pacey's approach is descriptive unlike what we see in the first two.

Finally, we will have a brief look at John M. Staudenmaier's review of accounts of technology transfers by historians of technology and other social scientists in his text *Technology's Storytellers: Reweaving the Human Fabric* (1985). As a review of articles by historians of technology, Staudenmaier's book also provides us with an account of studies on technology transfers. In addition to the conceptual tools it lends our discussion, the pertinence of reviewing this book lies in its authoritative validation that there is lack of historically based studies of technology transfer.

2.1.1 Lewis Mumford and his Idea of Cultural Preparation

As noted earlier in the introduction, one of the key points that Mumford's *Technics and Civilization* introduces is the idea of cultural preparation of technological development. Mumford stipulates that every technical innovation or technological adaptation around the world must have always been preceded by cultural, or social and ideological preparation. He therefore suggests that our understanding of technics in the modern world must be based on our understanding of "the culture that was ready to use them and profit by them so extensively" (p. 4). In this regard, Mumford has drawn a line between cultures that have machines or technologies, and cultures that have *the machine*. The machine refers to:

> …the entire technological complex. This will embrace the knowledge and skills and arts derived from industry or implicated

in the new technics and will include various forms of tool, instrument, apparatus and utility as well as machines. (p. 12)

The seat of the machine for Mumford is North Europe, or the part in Europe which he often refers as the Latin West. It is asserted that other parts of the world may have technologies but not the machine.

Other civilization reached a high degree of technical proficiency without, apparently, being profoundly influenced by the methods and aims of technics. All the critical instruments of modern technology—the clock, the printing press, the water-mill, the magnetic compass, the loom, the lathe, gunpowder, paper, to say nothing of mathematics and chemistry and mechanics—existed in other cultures. The Chinese, the Arabs, the Greeks, long before the Northern European, had taken most of the first steps toward the machine. (p. 4)

But these non-Western cultures have not been able to partake in the culture of the machine; this might have been the case at least until the time *Technics and Civilization* was written.

This point of view was also shared by most historians of technology. Even though they do not speak in terms of the Mumfordian distinction between cultures of 'mere technologies' and cultures of 'the machine', historians of technology (e.g. Lynn White) believe that no region in the world has attained technological advancement like Western Europe (and later on the US) and this they attribute it to a distinct cultural preparation that has developed in the region. There seems to be here an element of cultural determinism.

However, despite the intonation of cultural determinism we see here, Mumford's interpretation of cultural preparedness seems also to give room for choices and deliberate enforcements on the part of individuals and groups. Whether this is the case **despite** the cultural context in which individuals and groups act will be something we shall come to consider later on. Now we see how Mumford stresses choices and deliberate actions:

Technics and civilization as a whole are the result of human choices and aptitudes and strivings, deliberate as well as unconscious, often irrational when apparently they are most objective and scientific: but even when they are uncontrollable they are not external. Choice manifests itself in society in small increments and moment-to-moment decisions as well as in loud

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dramatic struggles; and he who does not see choice in the development of the machine merely betrays his incapacity to observe cumulative effects until they are bunched together so closely that they seem completely external and impersonal. (p.6)

This point of view, however, seems to be the odd out when we see his further analysis on the notion of cultural preparation. In fact, the presumption that it was only the West that had the preparedness in question does not logically allow a space for choice and creativity. Otherwise, these very choices must be culture-bound in the sense that it must be only a society which has the cultural preparedness that could make the choices. And these choices must, in turn, be choices for methods that further or augment the already existing technical advancement.

For Mumford, the initial cultural stronghold of this technical achievement in the West had been monasteries. And this was in turn attributed to the new conception of time that the monastery brought and with it a mode of life that was orderly, regimented and punctuated:

> …during the first seven centuries of the machine's existence the categories of time and space underwent an extraordinary change, and no aspect of life was left untouched by this transformation. The application of quantitative methods of thought to the study of nature had its first manifestation in the regular measurement of time; and the new mechanical conception of time arose in part out of the routine of the monastery. Alfred Whitehead has emphasized the importance of the scholastic belief in a universe ordered by God as one of the foundations of modern physics: but behind that belief was the presence of order in the institution of the Church itself. (p. 12)

Monastic life in the West is characterized by the iron discipline of the rule and hence does not have any space for "surprise" and "doubt," nor for "caprice" and "irregularity." In addition to being the cultural preparation for industrial or technical regimentation, the regularity of the monasteries gave way to, for Mumford, the most important invention of all inventions, namely the clock. Well before the appearance of the mechanical clock, "the habit of order…and the earnest regulation of time-sequences had become almost second nature in the monastery" (p.13).

The monasteries therefore became the prototypes for regular and punctuated life. In these monasteries, and later on in the worldly life of trade and industry, the clock has started to serve not only to "keeping track of the hours but of synchronizing the actions of men" (pp. 13-14). In this respect, time accounting or clock culture has become almost second-nature to Westerners in contrast to the East which has a "loose" conception of time accounting.

> … the Hindus have in fact been so indifferent to time that they lack even an authentic chronology of the years. Only yesterday, in the midst of the industrialization of Soviet Russia, did a society come into existence to further the carrying of watches there and to propagandize the benefits of punctuality. The popularization of time-keeping, which followed the production of the cheap standard watch, first in Geneva, then in America around the middle of the last century, was essential to a well-articulated system of transportation and production. (Pp. 16-17)

The West therefore "created" the machine because of the social and ideological preparation for it. There were different machines in other countries but *the machine* has been realized in the West. He writes:

> There had been power-machines, such as the water-mill, before the clock; and there had also been various kinds of automata, to awaken the wonder of the populace in the temple, or to please the idle fancy of some Moslem caliph…. But here was a new kind of power-machine, in which the source of power and the transmission were of such nature as to ensure the even flow of energy throughout the works and to make possible regular production and a standardized product. (pp. 15-16)

Thus, for Mumford, the clock (in contrast to the then established view that the steam engine was the turning point for Western industrialization) was the single most instrument to fundamentally transforming the organization of work and the development of technics. And for this the orderly and regular life style of the monastery was responsible. It was this life that provided the cultural framework for mechanical power and technical excellence of the West. Along with the development of sciences in the 16th and 17th centuries, especially after the mechanical conception that Descartes forged (later developed by the French mechanical materialists), the regimentation of life in the monasteries also became the characteristic behavior of life outside it. It was the regimentation of life in the Church that lay the ground for the development of mechanized life:

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If mechanical thinking and ingenious experiment produced the machine, regimentation gave it a soil to grow in: the social process worked hand in hand with the new ideology and the new techniques. Long before the peoples of the Western World turned to the machine, mechanism as an element in social life had come into existence. (p. 41)

But, as it can be hinted from what we have just noted, Mumford seems to take seventeenth century natural philosophy and subsequent development of science as *another* or additional form of cultural preparation. He even goes further and argues that technics is the translation of scientific theories – a position that makes it at odds with what he has been presenting so far. He writes:

The issue of practical life found their justification and their appropriate frame of ideas in the natural philosophy of the seventeenth century: this philosophy has remained, in effect, the working creed of technics, even though its ideology has been challenged, modified, amplified, and in part undermined by the further pursuit of science itself. (pp. 45-46)

Mumford's apparently new or contradictory formulae that technics is nothing but the translation of scientific truth came out more clearly thus:

Technics is a translation into appropriate, practical forms of the theoretic truths, implicit or formulated, anticipated or discovered, of science. (p. 52)

An even more contradictory statement comes in stating that technological innovation is nothing but the application of science:

Many empirical inventions, like the steam engine, may suggest Carnot's researches in thermodynamics: abstract physical investigation, like Faraday's with the magnetic field, may lead directly to the invention of the dynamo. From the geometry and astronomy of Egypt and Mesopotamia, both closely connected with the practice agriculture to the latest researchers in electro-physics, Leonardo's dictum holds true: Science is the captain and practice the soldiers. But sometimes the soldiers win the battle without leadership, and sometimes the captain, by intelligent strategy, obtains victory without actually engaging in battle. (p. 52)

Mumford's idea of the social and ideological preparation that he associated to the time accounting of the monasteries, which was in turn responsible for preparing the ground for the development of technics in the Western world, seems to have temporarily suspended.

However, despite this apparent inconsistency, Mumford has continued to work on the theme of cultural preparedness throughout his analysis. In discussing the place of warfare in technological development, he reiterates in his formulaic fashion that "A triumph of mechanical improvement: a triumph of regimentation" (pp. 83-84). In connection to the significance of cannon making, he writes:

> If the invention of the mechanical clock heralded the new will-to-order, the use of cannon in the fourteenth century enlarged the will-to-power; and the machine as we know it represents the convergence and systematic embodiment of these two prime elements. (p.84)

Finding a new embodiment in military life, regimentation has continued to be the cultural soil and water for the growth and development of technology in the West (see pp. 96-105).

As we shall see soon, Lynn White's analysis does also consider religion like Mumford as the cultural preparation of technological advancement in the West. What probably makes White's analysis unique is its distinctive clarity. White tries to substantiate his point more clearly and rigorously.

2.1.2 Religion as Cultural Preparation for Technological Development

Lynn White, Jr., in his book *Medieval Religion and Technology: Collected Essays* presents a more focused argument on the cultural preparedness of the West for technological advancement. He argues that the Church has been highly instrumental in bringing about a technological development. In his essay titled as "The Medieval Roots of Modern Technology and Science," (1978: 75-91) White states that it was almost a truism to assume that the Middle Ages was an age of faith:

> It has been axiomatic that the Middle Ages were an Age of Faith, which therefore must have been antipathetic toward anything legitimately called science, and that their technology was both

static and negligible. The Scientific Revolution of the seventeenth century and the Industrial Revolution of the eighteenth century were the antithesis of everything medieval. (p. 76)

This is wrong, White contends very strongly. The high productivity of agriculture and soaring military technology in the Middle Ages Europe were things that tell us something different than the pervasiveness of the contemplative life (pp. 78-79). This was later emphasized in his essay titled as "Cultural climates and Technological Advance in the Middle Ages" (pp. 217-253).

By 1492…Europe had developed an agricultural base, an industrial capacity, a superiority in arms, a kill in voyaging the ocean which enabled to explore, conquer, loot, and colonize the rest of the globe during the next four centuries and more. (p. 219)

Thus, before coming to the point where he connects technological advancement with the Medieval Western Church, White wants to give us evidence that Medieval Europe was really thriving in various sectors. In relation to or in connection with the agricultural and military superiority, Medieval Europe had technical superiority:

The emergence of the mechanical clock in the second quarter of the fourteenth century…by enlarging the number of craftsmen skilled in making and correlating moving metal parts in machines, led in Europe to heightened activity that soon gave to the Occident a clear technical superiority even over China. (pp. 218-219)

White also relates that the West was not only known for its inventions. It has also the capacity, or the cultural preparedness, to actively adapt technical developments from other parts of the world:

Medieval Europe's capacity for gathering and expanding insights and elements drawn from the most distant and unexpected sources is a major characteristic of its culture which, on the one hand, is underscored by the study of technology and which, on the other hand, helps to explain the vigor of that technology. (p. 235)

After giving us historical accounts that pertain to technical and economic achievements in various sectors, White embarks on his central thesis: Why did Christianity manage to give the first and sure impetus to technical development in the Latin West? First White refers

to the attempt of German theologian and church historian Ernst Benz (1907-78) to tie technological development with Christianity. By way paraphrasing what Benz said, White directs us to Christianity's representation of God as "the architect of the cosmos and the potter who shaped man from clay in his own image," and hence the subsequent capacity of humans to imitate the creator. The contribution of Christianity also lies, White adds, in its conception of the unilinearity and progress of history:

> History, far from being cyclical as it is in most religions, in Christianity is unique and unilinear; it is accelerating toward a spiritual goal, is an essential and pressing form of worship. (p.236)

But White soon notes that taking Christianity as a whole would be a problem because the Greeks were also Christians and yet did not have the technological advancement of the Latin West (pp. 237-238). Were Christianity as a whole instrumental for the development in question, Byzantine civilization would have also been partaking in the mechanized life of the West. In this regard, on the basis of what he calls the analyses of the historians of spirituality, White makes a distinction between Greeks and Latins:

> The Greeks have generally held that sin is ignorance and that salvation comes by illumination. The Latins have asserted that sin is vice, and that rebirth comes by disciplining the will to do good works. The Greek saint is normally contemplative; the Western saint, an activist. (p. 238)

This difference is "largely subliminal," states White. But he believes that it is possible to bring it out more clearly by digging further on the theological literature. White observes that this difference especially emerges more clearly in the "iconography of the Creator God." (p. 238). Quoting White in length would show us how much deeper he goes in order to shed light on the difference between the two Christianities:

> During the first Christian millennium, in both East and West, God at the moment of creation is represented in the passive majesty, actualizing the cosmos by pure power of thought, Platonically. Then, shortly after the year 1000, a Gospel book was produced at Winchester which made a great innovation: inspired by Wisdom 11.20, "Ominia in mensura et numero et pondere disposuiti," the monastic illuminator showed the hand of God—now the master

craftsman—holding scales, a carpenter's square, and a pair of compasses. This new representation spread and, probably under the influence of Proverbs 8.27, "certra lege et gyro vallabat asbyssus," the scales and square were eliminated leaving only the compasses—the normal medieval and renaissance symbol of the engineer—held in God's hand. This tradition, which culminated in William Blake's "Ancient of Days," was never adopted in the Eastern Church. It was the perfect expression of Western voluntarism, but it violated Greek intellectualist sensibilities about God's nature. (p.238-39)

Something that seems to show how technology and religion are intertwined follows soon though the way it is put seems to suggest that White is giving two but conflicting propositions:

As medieval machine design became more intricate, God the builder developed into God the mechanic. The term "machina mundi" is at least as old as Lucretius, but was rejected on religious grounds by Arnoius Afer. By the thirteenth century, however, it was commonly used by Latin clerical scientists and had strongly affirmative overtones. (p. 239)

On the one hand, he seems to say that religion supports technology, and, on the other hand, he gives the impression that it is technology that shapes religion. Nonetheless, though it is not clear still, White also seems to suggest how intertwined the two spheres are.

Coming back to the distinction between Christianity in East and West, White further takes us to the history of scriptural exegesis. Again here, for the sake of showing the degree to which White goes to stress the division, quoting him in length would be useful:

For our purposes the varying treatments of Luke 10.38 – 42, the Mary-Martha episode, are full of meaning. Since the time of Origen at least, the Greek East has invariably assumed that Martha represents the active and Mary the contemplative life, and that Christ's rebuke to Martha validates superiority of the contemplative over the active. In the West, however, a quite different style of exegesis emerges early. Saint Ambrose, once himself a Roman official and now a bishop, feels that the sisters of Bethany are symbols of actio and intentio: both are essential, and once cannot rightly be considered better than the other. Then Saint Augustine, a revolutionary in so many ways, entirely subverts the Greek exegesis, the structure of values inherent in it,

and, one must add, the literal meaning of Christ's words. To him, Mary and Martha represent two stages in the perfect life: Martha, the life of the soul in time and space; Mary, in eternity…. Yet, since we mortals dwell in time and not eternity, we must be Marthas, troubled about many things rather than Marys. (pp. 239-240)

The Latin West therefore grew or developed under this spell or "periscope" of practicality and activity.

White has even cited a sermon by a theologian from the Latin West of the 14th century. That sermon he cites counsels people to live the life of Martha because that was what Christ teaches. White immediately adds that the Eastern Church "could not have produced, much less tolerated, such a sermon. The mood of activism which Eckhart [author of the sermon just mentioned] reflects surely fostered technological growth in the West" (p. 241).

White therefore shares Mumford's idea of cultural preparation. Both believe that Christianity in Western Europe was very instrumental in serving as the cultural framework for technical advance in the region. White has even goes further and tried to give theological basis for his claims.

As we shall below, Arnold Pacey, the other historian of technology we are reviewing here, brings in a lot of material from non-Western regions and/or cultures of the world and he speaks in terms of technological dialogue across the world.

2.1.3 Arnold Pacey's Technological "Dialogue"

In his book Technology in World Civilization: A Thousand Year History (1990), Pacey accounts the history of technological inventions and the movements of technological tools and skills from one part of the world to the other. Unlike Mumford and White, Pacey does not try to single out any one region as the heart of technical advancement. That is why he speaks in terms of "dialogue" or "conversation." The wealth of materials he describes and the maze of paths of technological inventions and modifications that he traces would provide a broader range of historical material.

However, Pacey does not pretend to overlook the significant place that Western Europe must have in the technical development of the world as a whole. And, like Mumford and White, he notes of the favorable

cultural climate that Europe has. Of Europe's place in having technological culture, he states that in addition to inventing technological devices (of course like other parts of the world such as China and India), Europe was also very fast in accepting and adapting technologies from other parts of the world at the beginning of the second millennium. And this he attributes it to the thriving technological culture that Europe has attained at that time.

> People cannot adopt technologies from other cultures unless they have the skills necessary to modify, adapt and develop them to suit their own purposes. Thus the European ability to learn so rapidly from contact with the Islamic world was the outcome of previous experience of innovation in agriculture and the use of mechanical devices. (p. 44)

As we can see here, Pacey does not still speak in terms "European-cultural" preparedness. When Pacey refers to "culture," he is talking about a technological culture that might as well have been developed in other parts of the world. For Pacey, technological cultures come and go. A few years of civil wars in some parts of the world have wiped knowledge and skills that have been accumulated for ages:

> …when institutions declined, or were disrupted by a conquering power, there was often a loss of technology. The best known example … was the collapse of the western Roman Empire in the fifth century, when engineering skills disappeared along with institutions which had organized their use. (p. 19)

Some countries had to start anew after facing demise for sometime. In this regard, Pacey's approach would help us see the broader picture.

The other reason why we need to consider Pacey's approach here is to get some conceptual tools that we might need for later use. When talking about the movement of skills and technological inventions from one geographical region to the other, Pacey speaks in terms of technological dialogue. In the opening pages of the book we are reviewing, we are told that the movement of inventions from one place to the other might not actually be a transfer of technology. It could rather be simply transfer of knowledge. (Apparently here Pacey is distinguishing between knowledge and the material artifacts.) A classic example is Indian textiles and their influence on British inventors. The historical account goes like this: the British just heard what the Indians were doing and they started using this knowledge in order to device new ways of doing the same things. He then theorizes that the

interaction that existed between these two sides was like a "conversation." And the British inventors creation of new methods can be taken as "responsive invention" (p. vii).

The other reason why Pacey questions the term "technology transfer" lies in that it implies passivity on the part that "receives" the technology. In most cases, however, such tradeoffs include modifications.

> The reality is that transfers of technology nearly always involve modifications to suit new conditions, and often simulate fresh innovations. The obvious example is that the transfer of gunpowder recipes and some primitive hand-guns from China stimulated the invention of the cannon in Europe…. Thus the invention of the cannon can be seen as the outcome of a dialectic or dialogue between the eastern and western parts of the Old World, triggered by the transfer of gunpowder and early firearms from China (p. 51)

Nonetheless, Pacey also seems to make an exception when we make use of the phrase. He states that in case where "techniques and knowledge were moved wholesale from one regional and cultural setting to the other," it is possible to talk of technology transfer (p. 51). Examples are transfer of technologies via trade or movement of artisans. Paper-making in China and its transfer to Spain via artisans who learnt the art from the Chinese is cited as one instance (p. 50).

> Another clear case is the transfer of specialist skills in glass-making from Islamic Syria to Venice following a treaty between a local ruler and the Doge of Venice in 1277. One of the raw materials used to make the glass was known in Syria as 'al-Qali'. This was potash, and the fact that the word passed into European languages as 'alkalai' is symptomatic of the transfer of a considerable body of chemical knowledge from the Islamic world, through books as well as n connection with processes such as glass-making. (pp. 50-51)

Nonetheless, Pacey again takes such cases of transfer as just one aspect of technological dialogue. He contends that even in such clear cases of transfer, there will be "conversation" or "dialogue" between the technological object and the context into which it is being "transferred."

2.1.4 Staudenmaier: The Problematic of Technology Transfer

John M. Staudenmaier's book *Technology's Storytellers* documents the development of a discipline known as history of technology on the basis of articles published in *Technology and Culture*, a journal of the Society for History of Technology. The book, which provides a thematic analysis of articles ranging from the founding of the journal in 1959 to the beginning of the 1980's, provides a wealth of material for researchers in the area, but more importantly it offers working definitions of concepts and clear distinctions between apparently closely related expressions such as "invention," "development," and "innovation." Staudenmaier also discusses various other vocabularies in the language of history of technology. For our purpose here we will limit our review to his analysis of the notion of technology transfer.

The first conceptual analysis we find here is the distinction between "transfer" and "diffusion." The author very well notes that in most cases historians use these concepts as synonyms. On the other hand, some other historians try to make a distinction between the two, and yet the distinction they make is so blurred that it would be more a source of confusion than helping us to understand things. Staudenmaier therefore suggests very useful working definitions. He relates that we have to distinguish between the two:

> … by defining diffusion as the adoption pattern of an innovation within the culture of origin. Technology transfer, on the other hand, can be understood as multicultural, always involving the culture of origin and at least one other recipient culture. (p. 123)

It is also in this sense that we use the term technology transfer in the course of all our discussion in the thesis.

In his classification of essays that deal with technology transfer in the journal in question, Staudenmaier comes up with four groups. The first group deals with transfer of technologies from one country into another. The second are articles that add into their analysis "the specific processes" by which technologies were taken from one culture to the other. The third accounts how technologies got integrated into "the recipient country's technological support network." The fourth groups focus solely on the "cultural tensions" disregarding the aspect that the third groups touched upon (p. 123).

Staudenmaier adds that this classification does not imply that any discussion or analysis of technology transfer would fall in one or the

other category. A given study might touch upon all four aspects while focusing on one of them. It is also possible that certain studies of transfer might have a different focus other than the ones listed here.

Much of the analyses in this thesis focus also on the cultural aspect of technology transfer. This does not, however, mean that the thesis will use the approaches followed in the studies that Staudenmaier put into the fourth group. After all, the approaches that these studies employ are diametrically opposite to each other. They were only brought together because they deal with the issue of technology transfer in relation to culture. Staudenmaier thus discerns between two clusters of studies within the fourth groups. The first cluster presumes technology to be neutral. An author by the name Arthur Goldschmidt is noted to have assumed that technological development is the same everywhere around the world and that non-Western countries can simply benefit a lot by simply replicating the technological patterns of Western industrial countries (p. 129).

The second cluster of literature takes the opposite standpoint, taking technology as a cultural aspect and hence establishing its non-neutrality. As we shall see in the course of the discussion of the thesis, much of the analyses of the thesis are done in view of the conception of culture-technology complex. Our aim here, in other words, is in par with the view that recognizes technology as part and parcel of the cultural patterns. That is why the case studies in the thesis are focusing on the problem of the integration of new technologies to the cultural settings of the "recipient" country and how these technologies in turn affect or shape these settings.

However – this is a big however – there is an important distinction that we need to make here. The articles that Staudenmaier analyzed[3] stress the damages that technologies would bring to cultures of "developing" countries, and, worse still, incline to counsel that these countries must be distrustful of technologies in order to "preserve" their cultural values. This is a genre of the ominous outcry of some cultural anthropologists who want to create human zoos somewhere in the South. In fact, as Staudenmaier relates, Robert Theobalds concern was to preserve the cultural values of the less developed countries because these values "may well be badly needed by present-day Western society" (pp. 129-30). In other words, these poor countries must remain where they are as stockpiles of cultural values for the rich

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[3] Jack Baranson, "Economic and social considerations in adapting technologies for developing countries" (*Technology and Culture*, 1963, Vol. iv, No. 1, pp. 22-29); Robert Theobald, "Emerging nations: Long-term prospects and problems" (*Technology and Culture*, 1962, Vol. iii, No. 4, pp.601-616).

industrial countries to salvage from when they suffer from the deficiency of these values.

There is no doubt that we should sharply distance ourselves from such dismal and selective prescriptions to "developing" countries even though we still hold the view that technological systems must be examined within the cultural, social and economic contexts in which they exist. For it is one thing to appreciate that cultural ambience of technological artifacts, and an entirely difference story to speak in terms of insulating cultures from "external" influences whose logical conclusion is nothing but "preserve cultures."

What we can gather from this is that studies dealing with the issue of how new technologies could be integrated to the cultural and economic life of societies is lacking. As Staudenmaier points out, most historians of technology have approached this culture-technology issue very carefully and thus what has been achieved so far could only be taken as "the cautious beginning of a theme" (134). And the fact that there is lack of historically based studies accounting for the cultural basis of technology transfer makes the thesis all the more important.

2.2 Theories of Mediation

Many countries in Europe, North America and Asia have developed what can be taken as a technological culture. Almost each and every aspect of people's lives is not left untouched by systems of technological knowledge and artifacts. In the opening page of *What Things Do*, Verbeek concisely put this:

> Our society is saturated with tools, appliances, and other assorted objects that strongly shape the course of life many ways. Our personal interactions are inextricably bound up with telephones and computers; our traveling with bicycles, automobiles, trains, and airplanes; our eating with refrigerators, ovens, and microwaves; our leisure activities with televisions, videos, and electronic devices. Even our being born, staying healthy, and dying depend on a wide variety of medical instrumentation (Verbeek 2005a: 1).

Now, in this age of information and communications technology the lives of people even in "developing" countries in South East Asia, Lain America and Africa have increasingly been affected by new technological developments. Mobile telephone use in Ethiopia and in Sub-Saharan African countries is a good demonstration of this. Just an

hour's visit to the campus of Addis Ababa University at a time when students are moving from class to class suffices to observe a good number of students with cell phones and the degree to which they use it. Students easily meet and discuss their group assignments. They talk to their families when they need financial as well as emotional support from their families. In this regard, even in regions where modern technological artifacts are minimal in the spheres of influence they cover, their mediating role is all the same very evident.

Don Ihde is known for providing us with a rigorous analysis of the structure of relations between technologies and human beings. Ihde believes that technologies do actively transform the way humans see or deal with the world. As it has been briefly considered above, for Heidegger also the place of technological artifacts is very crucial in human-world relation. Tools and equipment mediate the way humans deal with the world while disguising their presence. When I am using the hammer, it withdraws from my attention unless and otherwise it stops to function properly. Thus, the role of artifacts in the human-world relation is something that Heidegger and some existential philosophers took up as their subject of analysis. Nonetheless, as we shall see shortly, Ihde has raised this role of artifacts in the relationship between humans and the world to a higher level. Ihde uses the concept of intentionality as a basis for expounding what he meant by technological mediation. Verbeek relates:

> Don Ihde has, from a phenomenological perspective, characterized this mediating role of artifacts in terms of what he calls *technological intentionality*….By this he means that technologies – like consciousness for Husserl – have a certain directionality, an inclination or trajectory that shapes the way in which they are used. (Verbeek 2005a: 114)

Intentionality of technological equipment or artifact refers to the potentiality of the artifact to mould or transform the world with which we are interacting. By way of illustrating this, Ihde brings in the example of the relation that a person may have with his or her eyeglasses. He writes:

> In the magnificational capacity of the eyeglasses, there is a certain shape to its technological "intentionality." Magnification selects the panorama in a certain way, and in the process, there is a change of both time and space. My seeing is a magnified seeing as (Ihde 1990: 48)

Here the perception of the person with eyeglasses is seeing something magnified. In fact, all our perceptions are mediated ones. However, what we see when we use a technological artifact like eyeglasses is something different from what we experience by our naked eyes. However, whether this experience is a mediated one does not come to the surface unless something wrong happens to the equipment. Unless the pair of eyeglasses is broken, the user does not normally notice its presence. In other words, as Heidegger would also say, the object that functions well withdraws from the observation of the user. In order to see the changes that eye glasses or similar technologies would bring in, Ihde (1990: 48) suggests that we put on "lenses much stronger than required." The result then can easily be observed when he or she encounters a marked difference "from normal motor activity."[4]

The effect of this mediation does also affect the way a person perceives her bodily position. The lens transforms the way she looks at things. What was farther when she didn't have the lens could be nearer, or what was smaller could be bigger. This does not however mean that a lens technology does only give us a greater magnification. At the time it magnifies things, it also reduces another aspect of the image being magnified, namely the depth of the image: "the sense of depth is lost as magnification increases" (1990: 50).

Ihde has also worked on what he calls the ambiguity of technology in order to show the multiple uses that technological objects would have in addition to what their designers and producers intend to attach to them. He employs the example of a symmetrically shaped stone and the varying interpretations that an artist, a writer, and an anthropologist might have come up with whenever they are asked to contemplate on its possible functions:

> The designer's intentions play only a small part of the subsequent history of the artifact. It was, after all, Nobel's intention in the invention of dynamite that it will be used for mining and the benefit of humankind. Design, in the history of technology,

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[4] Ihde writes: "In the magnificational capacity of the eyeglasses, there is a certain shape to its technological 'intentionality'. Magnification selects the panorama in a certain way, and in the process, there is a change of both time and space. My seeing as is a magnified seeing as. When a new prescription is taken up, one has to relearn the minor adjustments to the very way one embodies ones vision lenticularly—this could be experienced more dramatically were one to put on lenses much stronger than required. Here the variation from normal motor activity is much more marked." (Ihde 1990: 48)

usually falls into the background of a multiplicity of uses, few of which were intended at the outset. (1990: 69).

The rational behind this is that technological objects are not mere objects. Following Heidegger, Ihde is here arguing that artifacts are artifacts in context. Phenomenology stresses that there is nothing-in-itself. In turn, this putting things in contexts implies the multiple uses of things beyond above what designers put into them because use contexts are multiple. Uses define technological objects.

Caution needs to be made here, however. This view might easily be confused with the social constructionist view of technology. The view that is normally known as the social construction of technology insists that technology is a product of social relevant groups. And this view greatly tends to undermine, or at the very least neglects, the place of the materiality of the technological artifact. To use the language of Latour, the social constructivist view seems to recognize only the humans to the utter neglect of the nonhuman actants. Is there anything that Ihde does here in order to avoid this? Anticipating such a possible constructivist lead in what he has stated (i.e. uses define technological artifacts), Ihde warns that this should not imply that "technical properties of objects are irrelevant, but it is to say that such properties in use become part of the human-technology relativity. Nor is it to deny that there is a specific type of history to the development of technical properties" (1990: P. 70). As we shall see soon below, Ihde's scheme of the phenomenology of technics would clearly mark the place of a technological object as an artifact that has physical properties that would mediate humans with the world.

The rigor with which Ihde deals with the idea of technological mediation is very well demonstrated when he further explores the structural features of the technology-human relations. Dubbed it as 'phenomenology of technics', he speaks especially of four relations, namely the embodiment, hermeneutic, alterity and background relations. An embodiment relation is like when a pair of glasses helps us to see a transformed look at things. This pair of glasses mediates, corrects, distorts, or augments our vision of things. This is one characteristic feature why an artifact creates an embodiment relation. But Ihde still refers to other conditions (and even more important ones than the one just cited) in order to characterize a human-technology relation as an embodiment relation. These are: (1) the technical capability of the technology to be "seen through," and, because of this "transparent" nature (2) its degree of integrity with the user must be

so perfect that it must "withdraw" from being noticed at the time it is being used (Ihde 1990: 73-75).

The second form of human-technology relation is the hermeneutic one. This refers, for instance, to when I have to rely on satellite pictures in order to predict the weather condition of a certain part of the world or when I have to read a thermometer in order to determine the temperature of a person with a fever. Unlike the embodiment relation – a relation in which we do not face the artifact under normal circumstances (because it has to be transparent and withdraw from being noticed and allow us do the things we do) – in hermeneutic relation we rather embark on the artifact itself because it is the one that serves as a text we read or interpret. Ihde states that the mediating object is the object that creates a connection between me and the world by providing itself for reading (Ihde 1990: 86).

The third relation is characterized as the alterity relation. As the word itself is suggestive of, alterity relation depicts the tendency of a person to associate with the artifact. Ihde prefers to call this the "personalization of artifacts." There are again two forms for this. The first type is when people try to draw a parallel between humans and technological objects. An example Ihde himself uses here is the analogy that artificial intelligence researches try to create between the functioning of the human mind and the functioning of a computer program. The second type refers to the affective relation people establish with artifacts (Ihde 1990: 98-99). People usually develop a very special kind of relation with the cars they have driven for long time. This kind of affective relation with technological objects can also stem from embodiment relation. The more transparent the technological artifact, the bigger will be the chance to end up with romanticizing it (Ihde 1990: 74-75). This comes from the feeling for the object to "become me" – a stance that in turn stems from the desire for the object to be "totally" transparent.

The fourth aspect of the technology-human relation comes up as a background relation. This refers to situations where technologies remain at the background. An example is the refrigerator we use at home. Because of its thermostat nature, we are not required to switch on and off it. It mostly works on its own. The central heating system in industrial countries is a very good example for this. In most cases, except for minor adjustments seasonally or with drastic climatic changes that appear suddenly, the heater that is connected to a central heating system functions at the background (Ihde 1990: 108). In this variety of human-technology relation, something apparently

paradoxical happens. The technological artifact that functions at the background is obviously in a state of near-nonexistence and yet it is there as part and parcel of our "immediate environment" (Ihde 1990: 109). It provides the context for our perceptions and therefore fully contributes it, albeit in non-trivial way.

Ihde's phenomenology of technics does therefore give us theoretical ground for discussing technological mediation. On the basis of the variety of relations discussed so far, it is possible to explore how particular technological artifacts actively shape our relation with the world. But Ihde's book *Technology and Lifeworld* is very much restricted to elaborating phenomenology of mediation. While his view is in practice a critique of what transpired before his time, Ihde does not show the line of development his theory has followed. Peter-Paul Verbeek, one other philosopher working on theory of mediation fills in this gap. In his *What Things Do*, Verbeek has followed the arguments of major schools working on philosophy of technology and come up with critical stances. I shall briefly look into his point of departure and embark on how he tried to develop the philosophy of mediation.

As the title of his book suggests, Verbeek main goal in discussing the line of thinking of various philosophers including Karl Jaspers and Martin Heidegger was to show the much neglected area of what things do. He then suggests that it is high time that philosophers study "what things do" instead of merely occupying themselves with "words and ideas" (Verbeek 2005a). Quoting an aphorism from the Senegalese poet and story-teller Birago Diop, viz. "Listen more to things than to words that are said," Verbeek underlines in his preface to his book that his purpose in writing it is "to answer this call of Birago Diop literally, by making a philosophical analysis of the relations between human beings and material objects" (2005a: vii).

As anyone who is familiar with the history of philosophy can easily notice, many philosophical discussions in the past did not have a place for the role of artefacts. And in order to show the extent of the neglect, Verbeek relates that we may soon see the "death of things" after the manner of the "death" of God and the subject: "Now we have survived the death of God and the death of the subject, we seem to be faced with the death of the thing" (2005a: 2).

In fact, as Verbeek points out, philosophers had already started to bring in to philosophy discussions on modern technology starting from around the second quarter of the 20th century. Classical philosophy of technology, which is traced back to the two German philosophers Karl

Jaspers and Martin Heidegger, has developed perspectives and a whole set of concepts that equip us to discuss the place of modern technological artefacts in our lives. The problem was that classical philosophy of technology turned out to be tendentiously negative since the basis of its formulation was largely by way of a reaction or response to "modernity." Michael E. Zimmerman, one of the authorities on Heidegger's philosophy, provides us with the context in which Heidegger's views on modern technology came about:

> Read in its own historical context, Heidegger's concept of modern technology emerges as a critique of the legitimacy not only of industrial production processes, but of the whole modernity as well. For him, nihilistic modern culture arose from the same one-dimensional disclosure of entities that simultaneously gave rise to the industrial forms of working and producing. According to Heidegger, technological humanity, far from being the autonomous agent in control of technological conquest of nature, had itself become the "subject" of the self-directing work processes of modern technology. In the totally administered technological world, talk of individual "autonomy" or "freedom" made little sense, for in that world people had become indistinguishable ciphers shaped by the demands of the industrial modes of production. Moreover, no mere change in the "ownership" of the means of production could alter the alienating and destructive character of industrial work. Capitalism and socialism alike were, from Heidegger's viewpoint, manifestations of the limitless Will to Power associated with technological disclosure of things (Zimmerman 1990: xix-xx).

As Verbeek pointed out, the major difficulty that this view suffers from is that it simply tries to conceive modern technology in terms of the conditions of its possibility – a position which takes us away from the things themselves. This would in turn have the consequence of overlooking the role and significance of the concrete technological artefacts. In contrast to the classical orientation, contemporary philosophy of technology started to take an "empirical turn" in a manner that would enable us reflect on technological artifacts instead of something transcendental to them.

Nonetheless, Verbeek also emphatically and recurrently argues that the fact that the classical philosophy of technology has many limitations does not mean that it should be abandoned or undermined. In addition to the philosophical problems it raises, classical phenomenological philosophy (especially that of Heidegger's) has tried

to address the place of technological objects as mediating things. Verbeek notes clearly that the earlier position of Heidegger offers strong conceptual framework for analyzing the mediating role of concrete material artifacts.

Tracing its roots to the earlier works of Heidegger, Verbeek comes up with what he prefers to call postphenomenology after Ihde though the latter has used the concept in a more limited sense. When tracing the "contours" of postphenomenology, Verbeek sheds light on the significance of Heidegger's point of view thus:

> Heidegger showed that tools and equipment give shape to the encounter between humans and their world. Things make daily practices possible while withdrawing from the explicit field of attention. Only when human beings occupy themselves not with their tools proper, but rather with what they set themselves to do with the help of these tools, are these tools present as tools. The tools are then, in Heidegger's words, "ready-to-hand." (Verbeek 2005a: 114)

Heidegger's idea of tools as "ready-to-hand" imports the understanding that these tools actively shape the human-world relation while they remain withdrawn from notice. They are not mere intermediaries between humans and the world. They mediate this relation in the sense of coshaping it.

Working on Ihde's analysis of the various aspects of technological mediation, Verbeek has gone further and provides us with a more expanded version of postphenomenology. The key idea for this is the idea of "technological intentionality" and Verbeek sees in it two dimensions:

> Two different meanings of "intentionality" are therefore intertwined here, a first referring (in Ihde's sense of "technological intentionality") to the "intentions" of the technology itself, the second (in the more general phenomenological sense of "technologically mediated intentionality") to the relations between human beings and world that are mediated by the technology (Verbeek 2005a: 116).

The general phenomenological intentionality Verbeek here identifies (and claims it to be a new addition to Ihde's phenomenology of mediation) seems to be much more related to the earlier works of Heidegger – works where Heidegger recognizes tools in their role as

specific technological artifacts and not as expressions of the disclosing of reality – than to Ihde's sense. The difference is between the intentionality of the technology itself and the intentionality of the relation between humans and the world.

2.3 Cultural Mediation

So far the theories of mediation that Ihde and Verbeek offer work at the level of specific technological artifacts and their mediating capability in the human-technology relation. In other words, to use Ihde's expression, we have been dealing with the microperceptual level. The other level of analysis can be taken as cultural mediation or, to use Ihde's language again, the macroperceptual dimension.

As already pointed out in section 2.1, there were many attempts on the part of historians of technology and other social scientists to touch upon the issue and for some of them to describe a whole maze of the movements of technological artifacts from one part of the world to the other. Arnold Pacey's *Technology in World Civilization* (1990) could serve as a good example. Philosophical perspectives seem to be lacking in this regard. Thus, Ihde might probably been one of the few philosophers to develop a philosophical perspective for technology transfer.

Again in his book *Technology and Lifeworld* Ihde has given a considerable attention to the cultural mediation of technologies. He actually refers to it as cultural hermeneutics in order to mark the interpretive aspect of the shift of perspective his analysis makes, i.e. a shift from technological mediation at the microperceptual level to that of the macroperceptual one. He writes: "Here the question revolves around the ways in which cultures embed technologies" (Ihde 1990: 124). He is here trying to answer the question how cultures can appropriate technologies and how the latter serve to mediate cultural program, though the latter is touched upon only scantly. (When I am claiming that this thesis is an attempt to expand the postphenomenological theory, one of the things I do is to enrich this aspect of mediation by drawing on a few cases I collected in Ethiopia.)

Ihde thinks of various aspects of technology transfer in both real and imagined contexts. The first example he draws from the anthropology of an encounter between two groups of people, namely Australian gold miners who traveled thousands of miles to Africa and the New Guineans who inhabit the gold-rich area. Ihde, without telling us where he got the ethnographic account about this meeting, paid a good deal

of attention to how the New Guineans had a real difficulty to make out whether the new comers were humans or not before he begins to discuss the cultural technological issue he wanted to discuss. He simply follows the anonymous Frazerian[5] ethnographer account that the New Guineans had the hard time to realize whether the Australians were supra-human beings or real human beings like themselves. The New Guineans, so the account goes on, went to the extent of inspecting the defecations of the new comers in order to know for sure that these beings were humans.

The New Guineans were also exposed to artifacts which they never had come across before. They were therefore busy inspecting everything they came across:

> Such droppings were not the only items curiously inspected by the tribesmen: every piece of refuse and artifact was inspected. Gifts of steel knives, in classical cross-cultural fashion, were enthusiastically received, as were steel axes (Ihde 1990: 125).

But the tribesmen were not very much attracted to the artifacts before they managed to discover that the new comers were really human beings, so Ihde recounts from the anonymous film. The reactions of the tribesmen to a gun shot is recounted as follows:

> [An Australian gold prospector] shot a pig (close up, muzzle no more than inches from the animal's head); and while the shot's report caused some amazement, the ability to kill a pig at such range did not apparently seem impressive. Only later, after the prospectors were seen to be humans, were their artifacts perceived as desirable and worth a raid. Such a raid was organized with disastrous but predictable results: several New Guineans were killed by rifle fire. After this event, rifles were perceived as powerful weapons, worthy of having. (Ihde 1990: 125)

Now, the question is: How do the New Guineans use the artifacts they "received" from the Australians? How does the culture of the tribesmen appropriate the technological artifacts that they received from the gold prospectors? Ihde here refers to an ordinary economic and sociological interpretation without giving his explicit commitment to it. He relates that one of the expected outcomes of the use of such perspective is

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[5] James G. Frazer (1854-1941) was a British evolutionist anthropologist known for his naïve and greatly incredible stories about "strange" people. All these stories were packed in his rather infamous book *The Golden Bough* (1922).

that by receiving the artifacts from the Australians the new Guineans will develop "a situation of dependency" on the new or incoming culture of the Australians. For the artifacts they received were not mere artifacts. They were rather cultural components.

> Just as there is no such thing as "an" equipment, neither is there an equipment without its belonging to some set of culturally constituted values and processes. As the steel axe and knife become more desirable and since their mode of production is not available to the New Guinean, the new objects must be attained by some form of exchange. (Ihde 1990: 126.)

Here we have Ihde's postulation that technological artifacts cannot be imagined out of their use contexts. Thus, when artifacts leave their context of origin and enter into another context they would still maintain some of the old values they were constituted from – at least during their initial stages of their adoption – and at the same time acquire new values from their new cultural environment. Ihde adds:

> …in addition to now tying into a new set of cross-cultural exchanges, one must also note that the context of the previously familiar object – in this case, stone knives and axes – also changes value and position. Whatever ritual aspects and beliefs surrounded stone tool making are fated to disappear with the unused equipment (Ihde 1990: 126)

This explanation may sound as if it is working only in a condition where a given artifact replaces absolutely another one. However, in real terms, it might also happen when an artifact gets into a culture in such a way it serves as something that is not replacing anything – as something whose use is totally novel to the country – or as an artifact that serves similar functions like already existing things in a much more advanced manner. An example is when aircrafts came to Ethiopia when there were, though very 'traditional' ones, other means of transportation like the mule.

A more significant passage impregnated with so many concepts refers to a borrowing of the Puluwateans, navigators in South Pacific. This story depicts how this people, who used to depend on the observation of waves using their naked eyes, started to adopt the technology of the compass in order to navigate the sea.

> The Puluwateans steered by wave patterns, without a compass. Once becoming acquainted with the compass, these navigators

adopted its use – largely because the compass was at first an object of fascination rather than something useful. A compass conferred prestige. But once it had been adopted and used for of its purposes – to steer a straight course – it became possible to unlearn (de-skill) the more difficult wave perceptions, which were part of a complex initiation process in seamanship. The complex network of involvements to which the compass belongs in Western navigation, that is, the mathematical referents to the complex directions (polarity focused), latitude and longitude, etc., was never adopted at all by the Puluwateans. The compass thus has a different "being" in Puluwatean use than in Western use (Ihde 1990: 126).

Ihde is here trying to describe the process of transfer of technology to a certain community and conceptualize it as a course of general significance. Unlike the New Guineans, the Puluwateans were not of course preoccupied with the "being" of those who showed them the compass. They seemed to realize the functions of the compass and they have started to use it though in a different way than their Western counterparts. And yet, as could be the case with similar encounters with a new technology, the compass was initially used more as a symbol of "prestige" than an object to trace direction on the sea. Then we have, so to speak, a stage of closure where people started to use the compass and "unlearn (de-skill) the more difficult wave perceptions."

Whether this unlearning had been something that actually happened to the Puluwateans might not be a useful story here. Be this as it may, this fact, whether something actually happened or imaginatively generated, Ihde seems to have largely utilized it as an analytical tool to look into such technology transfers. More specifically, Ihde is apparently interested to show the negative consequence of such transfers. In an article he published recently, he alluded to this example of the transfer of the compass and commented thus: "The invention transferred, but the replacement of cultural context had negative results" (Ihde 2000). Such transfers do not include the transfer of the cultural contexts of where the technological device was designed and developed. Thus, as of necessity such transfers could only be partial. In this regard, whenever a new kind of technology is introduced, it may do away with the cultural contexts of the technical capabilities that people had been using for ages.

Here Ihde was especially wary of the globalization of "high-technology culture" and very concerned that the effect of this "technologization"

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might lead to the cultural extinction of some traditional societies (Ihde 1990: 151). He even commends the effort of anthropologists to create "culture museums" and was sorry for them because they were not able to successfully create them (Ihde 1990: 155).

Ihde also stresses the "negative effects of high-technology culture upon dying or under-stress cultures of the Third World or the subcultures within the interstices of industrial culture" (Ihde 1990: 154). Some of the ills are pin pointed here:

> The uneven and unjust flow of resources, the elimination of previously arable land, the decimation of wildlife habitats, the exploitation of poor countries for everything from waste dumping to labor use are ills that could be cited as at least associated with the economic infrastructure of technological culture… (Ihde 1990: 154)

This has always been the case in the past, so Ihde is arguing here. But what makes today's technology especial is that it has a "larger magnification of power and greater impact" than previous technological advancements. Hence the danger looms large for these so called monocultures.

Nonetheless, the central concern of this paper (and may be Ihde's also) is not whether technology transfer causes problems. The issue at hand here is the broader meaning of technology transfer. Why do some technologies get easy acceptance outside of the cultural and geographic region where they were developed while others do not? Is it because of the superiority of the former to the latter? Or is it because of other non-technological factors? Ihde contends that the technical superiority of an artifact might not be a function behind its reception outside of its social and geographic horizons. Despite the technical perfection with which technologies function, they might not be adopted:

> Mesoamericans, for example, developed complex and accurate calendars, implying sophisticated measurements and observations. The Mayans even created a calendar calculator (in stone!) that was more accurate than contemporary European calendars…. But the Mayan calendar has never been transferred (Ihde 2000).

The reason behind this lies in the cultural or contextual meanings that embed the technology. In order for the Mayan calendar to be

transferred, Mayan cultural meanings must have also been transferred. It is within the cultural meanings of the artifact that the use-contexts reside. Thus, the use-contexts of the calendar must have also been transacted so that the calendar in question could also be used by other people. Or, at the very least, the technology must find a fertile soil in the "recipient" culture even though there is a gap between the two contexts of signification (Ihde 1990: 127).

Following a review of certain historical examples of technologies transferred in both inter- and intra-cultural contexts, Ihde points out the very important central idea he wants to offer, namely *a technology transfer is in a way a cultural transfer*. This cultural transfer manifests itself at two different levels. The first is the immediate use context of an artifact. Since an artifact is what it is in relation to its use-context, its transfer can be realized when it finds the operational context in the recipient culture. And this happens when there is some kind of similarity in between the two use-contexts:

> Insofar as such contexts, particularly at the simplest levels, may be widespread with respect to cultures, a transfer is a relatively simple matter (steel axes and knives for stone ones). It is less so if the context of instrumental involvements are themselves complex, implying particularly some specific learned hermeneutic process (the compass example). In each case, the artifacts become technologically what it "is" in relation to the degree and type of transferability to which the respective cultures overlap in practice. Here the overlap may be minimal. (Ihde 1990: 128).

The second expression of cultural transfer takes the bigger cultural field as a point of reference. A technological artifact is an artifact in relation to the cultural framework in which it appears. Thus, at a time when a given technological device is adapted to a given culture, its meaning is reconstituted within this new cultural field. We can take the example of the transformation of Chinese prayer wheel to a European windmill. The windmill was not actually a windmill when it was functioning in ancient China. It was used as prayer wheel: the Chinese were known to believe that their prayers could go to the skies with the assistance of the windmill. Thus, its new use in Europe has come to fruition because of its reconstitution in the new cultural environment: "The mere technical aspects of the prayer wheel do not become a windmill until reconstituted within the new cultural context" (Ihde 1990: 128).

Generally speaking, a technology transfer is therefore the transfer of cultural meanings or the reconstitution of technological artifacts into new cultural fields. On the contrary, if a device is transported out of its contexts and still embraced by the recipient culture more for its symbolic significance rather than its functionality (like when a wristwatch is used as a bracelet), we can say that the movement does not stand for any "technology" transfer. In such as case, it is possible to say that only the artifact was transferred. Ihde (1990: 131) represents it by comparing it to the transfer of a text without "the entire reading process" being transferred with it.

Nonetheless, this analogy might in fact raise more problems than it solves. First of all, if one follows this parallel, it would be far impossible for some artifacts to be reconstituted into a new cultural field. For example, were the prayer mill moved to Europe along with its "entire reading process," either there would have been no technology transfer at all, or Europeans would have ended up with having the prayer mill like the Chinese – the latter alternative is in fact a remote possibility because such shift would in turn demand another set of cultural values.

But more importantly when we conceptualize the movement of artifacts from one culture to the other, we should not suppose that the entire cultural paraphernalia for reading it would go along with it. As I have tried to show above, the "transfer" could only be partial whereby it leaves the technological device in a liminal state and then enshrines it with a hybrid cultural configuration. At the initial stage of its movement, the windmill will neither be Chinese nor European. Then, it will take more of a European character. And finally, it will be everybody's that it will be nobody's.

Indeed such may not be the course of development of things on the ground since there are multiple ways in which technologies developed and transferred. But the hybrid nature that a technological artifact might in the final analysis acquire could be something that we could extend to many examples. Pluriculturalism manifests itself in the technologies humans use. As technologies are culturally embedded, their mediation would be characterized by pluricultuality.

Ihde has generally stressed that technology transfer is a cultural transfer. Since technologies are culturally embedded their movement is determined by the cultural contexts in which they originated and/or to which they will be implanted. Failure in this flow comes in as we attempt to pick the artifact without a little tincture of the cultural

elements that embeds it, or when there would no be the cultural preparation to receive it at the other end. This is especially the case with complex technologies:

> Without that dimension of the wider culture, the transfer of complex technologies that interlink and form systems will remain difficult. These technologies remain what they "are" in relation to the way they become embedded in cultures; without the cultural preparation, the transfer remains frustrated. (Ihde 1990: 137)

As an element of cultural preparation, Ihde emphasizes on science education that the most industrial countries work on. Similarly, other countries should also invest on education. Intertwined with this, there should be the scientific-technological infrastructure so that the transfer could be possible. For Ihde one of the gaps in between developed countries and many poor countries is the difference in the extent and depth of science education that the former work on:

> A supportive condition for a high-technology culture is an intensive science education as port of the infrastructure, which supports the enterprise. This crucial factor separates First and Third World developments. Just as the overall infrastructure is lacking, so especially is the intensity of science education, which is important as a cultural motor. (Ihde 1990: 136)

In this respect, Ihde is suggesting that technology transfer from rich industrial countries to developing countries must be accompanied or supported by rigorous scientific training. Otherwise, the transfer would be limited to a transfer of the technological artifacts minus the knowledge and skill to operate them.

In this section we have been discussing in the main Ihde's theory of technology transfer. Technology transfer is for him cultural transfer. Technologies are what they are in the cultural context they function in addition to the specificity of their use contexts. Nonetheless, as Verbeek points out, this does not mean that technologies are only instruments to "project" cultures:

> Different cultural contexts, different "ways of seeing," … can lead to the development of different technologies. But such multistability does not imply that technologies are only projection screens for cultural interpretation. For According to Ihde, technological intentionalities (in the sense of "intentionalities of

technologies") appear at the cultural level, over and above those at the perceptual level… (Verbeek 2005a: 137)

According to Verbeek, Ihde's theory, by characterizing technologies as having multistability and intentionality, provides the alternative point of view counteracting both instrumentalism and determinism. Instrumentalism is the view that propagates the neutrality of technological artifacts, while determinism views technologies as having an autonomous power over against cultures. Ihde's position overcomes the limitations of these views. In view of Verbeek, Ihde point is that technologies change culture within the milieu that the culture itself provides:

> Precisely because technologies are always interwoven with culture, they are always in a position to transform that culture—not "in themselves," but from the position that the cultural definition has given them. When a cultural relation with an artifact is initiated, there arises a "cultural intentionality" within that relation, a cultural space mediated by technology, thanks to which technology is able to give indirect form to the interpretations and experiences of human beings, as well as directly meeting sensory perception. (Verbeek 2005a: 138)

In this respect, Ihde's interpretation that technology transfer is cultural transfer is based on the recognition that technology mediates or shapes within the cultural context in which it exists. In other words, technology and culture relation is taken as technology-culture complex. Instead of seeing them as separate spheres, they are taken as intertwined poles within the same sphere.

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CHAPTER III

CULTURAL TRANSLATION OF TECHNOLOGICAL MODERNIZATION

3.1 Cultural Reconstitution of Technologies: Expanding Postphenomenology

As already discussed to some length in the previous chapter, Ihde provides us with a phenomenological theory of technology transfer and argues that technologies transferred in some ways could be appropriated by the new cultural spaces in which they start to function. His central thesis is that technology transfer is a cultural transfer – a thesis which in fact is open to interpretations that Ihde himself might have not intended to direct us to. We will come to this shortly. Before this, we need to recapitulate the meanings that Ihde himself seems to attach to his thesis. The first thing that the theory implies is that a technological artifact cannot be described or defined out of its context of use. In this regard, if a technological artifact is transported to a new cultural context and begins functioning, it means that it has found a similar use context at the new cultural space. If the transfer is "successful," Ihde argues, it means that there is an "overlap" between the two cultural spaces. A difficulty arises if the overlap is very minimal.

The other aspect that Ihde's theory lays emphasis on is the cultural reconstitution of technological artifacts. The question it tries to answer is, once technologies step on the new cultural space and somehow begin functioning, how are they being utilized? How do they become culturally reconstituted? The example of the windmill – an artifact believed to go from China to Europe – illustrates very well what cultural reconstitution of an artifact means. Ihde stresses that the mill actually started functioning as a windmill after it became part and parcel of the new cultural context.

This is actually consistent with Ihde's theory of multistability. As just pointed out at the end of the previous section, Ihde, in arguing that technologies could be made use of differently – and all the more when they move to different cultures – his analysis points to the direction that the technologies themselves do not have the power to make the changes. It is the culture that defines (and at the same time provides

the context for), the technologies that is instrumental to the change of uses. But a problem arises when we are working at the cross-cultural level. The question I would like to raise at this point (and would like to pursue it in the first section of the next chapter) is: When Ihde states that technologies transform culture from the definition or meaning that the culture itself gives them, which culture is he referring to in the cross-cultural level? Is he referring to the culture that "gives," or the culture that "receives," or both? In view of his notion of multistability, Ihde would refer to both. We have already discussed some examples in this chapter where Ihde demonstrates how the function of technological artifacts takes shape in the new cultural milieu it is entering.

Nonetheless, a closer examination of Ihde's notion of multistability does seem to have a changing, or to use his own expression, multistable meaning in the course of his analysis. The concept of multistability is primarily used in Ihde's analysis to show the multiple uses that technologies have. A technological artifact may have multiple uses due to many reasons. One reason is when users of a given technological artifact apply it differently in a way unintended by the people who designed or made it. This could happen within the same culture in which both designers and users live. The second reason why artifacts may be used differently is the cross cultural movement they make. Technologies may turn out to take a different function than what they used to have when they enter into a different culture – the transformation of the Chinese prayer wheel to European water mill is a good example here.

The third reason is – this may work either within the same culture or cross culturally – when the user is not equipped with adequate "reading" mechanism of the technological artifact he or she comes across. Two examples from Ihde may help us here. The first example is Ihde's reference to his two year old child taking a calculator to his ear and mimics it as a portable radio. The child does this because he has the difficulty to understand "the designed significance" of the calculator; he takes it closer to his ear and act as if he was listening to a radio because he was only familiar with a transistor radio (Ihde 1990: 137-138). The other example we have is the reaction of the New Guineans to "the oval sardine cans left by the Australians." The cans were "immediately snatched by the New Guineans as treasured objects—and promptly made into the centerpieces of the elaborate headwear they wore for special occasions." For the New Guineans found a characteristic likeness between the cans and the ornamental shells they had been familiar with (Ihde 1990: 125).

As I see it, Ihde seems to attach two different sheds of meaning to his notion of multistability. In the first two examples, the multistability of the technology seems to be the result of ingenious application of technologies whereas in the latter two examples multistability seems to stem from complete ignorance of the users, and consequently if the artifact comes to be "perceived" or "used" differently, it is the result of pure luck. In this respect, the notion of multistability seems to have two different sheds of meaning. In the first two examples it means technologies would be having different technical functions in different contexts. Whereas in the latter two examples the notion of multistability seems to incorporate the use of technological artifacts totally unrelated to the internal structure of the technological artifacts to the point that we may not actually talking about technological artifacts.

Besides, Ihde seems to make certain things exceptional when it comes to the transfer of technology from high-technology cultures to minimal-technology cultures. As we have seen again at the end of the previous chapter, Ihde points out that that when we say technologies change or shape a certain culture, it does not mean that the technologies themselves bring about the changes. For Ihde it is the culture that provides the context that makes it possible for the transformation to happen. We are again left with ambiguity here. And we are again here forced to speculate whether Ihde here is referring to the culture that "gives" the technologies or the culture that "receives" them.

As I shall show soon, Ihde is decidedly referring to the culture that "gives" when it comes to transfer of technologies from high-technology cultures to, as Ihde would say, "minimal-technology" cultures. Ihde makes it clear that this is especially true of complex technologies. Referring to technologies that "interlink and form systems," Ihde states that their transfer will be difficult without the transfer of the cultural features of the area in which they were developed:

> The technologies remain what they "are" in relation to the way they become embedded in cultures; without the cultural preparation, the transfer remains frustrated. (Ihde 1990: 137)

As already pointed out under the second section of this chapter, cultural preparation is must really be there for a successful technology transfer to occur. And since Ihde is here referring to science education as an aspect of the cultural preparation, his conclusion that *technology*

transfer would be frustrated without the preparation in question is all the more descriptive of the usual state of affairs in technology transfer. Most developing countries really suffer a lot from the misuse or under-use of the technologies they import because they do not have the groundwork preparing them to use the technologies to their full capacities.

Nevertheless, Ihde also believes that technologization is Westernization. In this respect, when he states that technologies transform culture in the way the culture itself prepares, the culture he meant to refer in the context of the transfer of complex technologies is the culture that "gives" the technologies. As a result, for Ihde, some countries may find it very difficult to acquire technologies if they have a policy of rejecting Western values: "Technology-culture transfer in the context of those cultures that firmly reject many Western values becomes a more serious problem" (Ihde 1990: 138). A lengthy quote from Ihde would substantiate what I am saying very well:

> Islamic countries are especially interesting in this respect. On the one hand, most of these countries are midrange in development and are striving for technological upgrading. On the other, crucial cultural elements are in conflict with those of the West. The role and position of women is particularly sensitive and relates immediately to internationally available programming (via satellite). Can the role of privatization, purdah, and other valued roles for women in Muslim contexts withstand the cultural transfers via television? This is a highly debated issue in Pakistan, for example. Richard Reeves, in one of his fascinating and perceptive travelogues in the New Yorker, found Pakistan to be a country committed to both modernization and islamization. Caught in this *double goal*, often crucially, were traditional attitudes towards women. (Ihde 1990: 138, emphasis added)

In fact, Ihde is also very cautious here; he warns that the Japanese example – which he calls "enigmatic and interesting counter-example" – may stop us from making "too large a claim concerning acculturation at this level" (ibid.). However, all the same, Ihde is stressing here the inevitability of the acculturation accompanying technologies that would only leave little room for the culture that that "takes up" the technologies.

Now, after having made these preliminary critical remarks, we have to turn to the concept of cultural reconstitution of technologies, which is one of the key discussion points in this chapter. The notion of "cultural

reconstitution" would help us to grapple with a few questions here: How can we make use of Ihde's conceptual tools in the analysis of technology transfer in circumstances other than the kind of instances he has been discussing? How adequate are his conceptual tools? What are their limitations? But before trying to answer these questions[6], it is important to look into some points which concern the internal consistency of Ihde's theory and the adequacy of the examples his analysis depends on. By theory I am referring here to the formulation that technology transfers are cultural transfers.

First, let us see the degree of coherence in the theory. The first thing we see is incongruence between the examples on the one hand, and the theoretical assertions on the other. Most of the examples Ihde himself employs do not seem to stand up to his theoretical assertions. Take the example of the compass. Puluwateans picked up the compass, first, as an object of fascination; it took them sometime until they saw in it an equipment to navigate the sea. As we discussed in the previous chapter, Ihde also states that the Puluwateans were not able to employ the compass in its full power because they did not have the knowledge to translate some of the functions of the instrument. In other words, they did not have the corresponding mathematical knowledge to use the compass to the same degree as their Western counterparts (Ihde 1990: 126)

But what is important is that the compass was anyways adapted as a device for navigation. Now the question for us here is: Where does then the overlap between these two cultural contexts lie? If Ihde presumes that there is an overlap, is he referring to the fact that these two people share the "culture"[7] of navigation? But the problem is that it would be too loose for a category like "navigation" to come out as *a* culture. A closer scrutiny reveals that navigation is just a practice that gets different expressions in different cultural contexts. In fact, Ihde himself does not seem to represent navigation in this way.

Where is then the problem? I suppose that the problem lies in Ihde's theorization of the "successful" transfer of artifacts. For the "transportation" to happen successfully, Ihde (1990: 128) argues[8], the

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[6] The questions just mentioned should still need to be addressed very well but the place is not here. The next section, i.e. 3.2, would be dealing with them.

[7] Staudenmaier states: "Culture is more than the mere aggregate of institutional or individual behavior patterns. Strictly speaking culture is a coherent world view, a universe of discourse giving meaning to institutions, rituals, and networks and making it possible for members of the culture to interpret reality in terms of a shared set of values and meaningful categories." (1985: 122)

[8] We have a more detailed analysis for this in the previous chapter, section 2.3.

use context in which the artifact finds in the new cultural space must be similar to the use context in which it was before. This may not be a problem by itself, however. The concept "use-context" in the case of the "transportation" of the compass, for example, refers to the practice of navigation. Thus, *one might contend* (though without having an adequate ground) that as long as the two societies share something in common, in this case navigation, it is possible to say that the compass has found a similar use context.

The problem is, again, in Ihde's view, use-contexts are not to be disentangled from the cultural contexts in which they exist. More importantly, he has explicitly stated that there could only be similar use-contexts when there is only similarity or some kind of overlap between the respective cultural contexts (Ihde 1990: 127-128)[9]. Where was then the similarity between these two cultures? As we can gather from Ihde's own accounts, there seemed to be little or no similarity at all. Here is therefore one formidable difficulty for his theory. At least, its internal coherence seems to come under question.

This theory of technology transfer has also another limitation. The evidence or rather examples Ihde uses to support his theory of technology transfer seem to be selective and inadequate. In addition to their overtones of missionary or colonial anthropology, Ihde's examples seem to be picked up selectively: The introduction of the compass to the Puluwateans; the European transformation of the prayer mill to windmill; the Chinese and their "cultural resistance" to a "Western" clock-culture; and the intrusion of steel axes and knives to the New Guinea are some of the examples. And most of these examples are apparently picked up tendentiously so that they could fit in the presuppositions of the theory – one of the presuppositions is that there should be an overlap of use-contexts and cultures should there be a successful technology transfer. In other words, the examples seem to be presumptively skewed to support the interpretation that the theory elicits.

Last but not least, Ihde's interpretation of technology transfer also suffers from cultural determinism. Let us once again have a glimpse of Ihde's formulation. He sets two preconditions for technology transfer, namely (1) that the technology being transferred must find a similar use-context in the new environment, and (2) that there should be a cultural overlap between the cultural space from which the artifact was developed *and* the new cultural space (Ihde 1990: 127-128). When we

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[9] A detailed discussion for this was also given in the previous chapter.

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take precondition No. 2 and fuse it with his general standpoint that technology transfer is cultural transfer (not to mention the examples he bases his discussions on), we see an element of reductionism – a reductionism that accounts technological changes in terms of only cultural changes. This again disregards a host of other factors in society. Amartya Sen's critique on the pessimistic view of the possibility of democracy in non-Western countries is very useful here – just by way of an analogy. In a small but powerful piece he titled as "Democracy Isn't Western", he writes:

> "The fault, dear Brutus, is not in our stars, but in ourselves, that we are underlings." Culture too, like our stars, is often blamed for our failures. Attempts to build a better world capsize, it is alleged, in the high sea of cultural resistance. The determinism of culture is increasingly used in contemporary global discussions to generate pessimism about the feasibility of a democratic state, or of a flourishing economy, or of a tolerant society, wherever these conditions do not already obtain. (Sen 2006)[10]

Sen takes Samuel Huntington's comparison of South Korea and Ghana as a case in point. According to Huntington, these two countries were almost at the same level of development in the 1960's, and yet after almost three decades later South Korea was able to accomplish much and made it to become 15 times richer than the African nation. Huntington is quoted as commenting by way of a conclusion: "South Koreans valued thrift, investment, hard work, education, organization and discipline. Ghanaians had *different values*. In short, *cultures count*." (Italics added). And all what matters is culture. As a result, a whole lot of political, social and economic factors that contributed to the growth of one and the "stagnation" of the other were totally disregarded. As Sen points out, there were so many differences between the two countries in the 1960s other than "cultural dispositions":

> First, the class structure in the two countries were quite different, with a very much bigger--and proactive--role of business classes in Korea. Second the politics were very different, too, with the government in South Korea eager to play a prime-moving role in initiating societal reform and economic development in a way that was not true in Ghana. Third, the close relationship between the Korean economy and Japan, on the one hand, and the U.S., on

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[10] url: http://www.opinionjournal.com/editorial/feature.html

the other, made a big difference, at least in the early stages of Korean economic expansion (Sen 2006).

The fourth important factor that Sen brings in here is the literacy level of South Korea in the 1960s. Sen is therefore arguing that Huntington's analysis has left out much and considered the matter as solely cultural.

This critique can usefully be applied also to other situations. As Sen points out, if democracy is being considered as an exclusively "Western" and "cultural" project, its "transfer" must be accompanied by "cultural" transfer. First and foremost, this formula presupposes that culture is some kind of immutable object. The culture at the "receiving" end is only there either to "absorb," or "resist" the changes. Secondly – and this is in fact something that logically follows from the first – the culture on which the new elements are grafted on does not seem to have its own dynamism.

In reality, cultures (not to mention political, economic and historical factors at work at the time of "democracy transfer") respond actively and constitute or reconfigure "in-coming" elements dynamically. But more importantly, culture does not have its own life. It is true that culture matters but it matters only in connection with other contemporary political and economic factors. One can even go further and argue that there could be times when things can happen despite the cultural preparation that a country might have. Stalin's industrialization program was a case in point. His modernization or industrialization program was a success par excellence despite the cultural background or context in which his country had.

Despite the limitations we have been discussing so far, however, the theoretical framework that Ihde provides can be expanded and utilized in our effort to ferret out how technologies get transported to new cultural spaces and consequently the changes that they bring about. We have been critically engaged with Ihde's theory because expanding or using the theory implies the need for a critical appreciation. In the coming section, we will focus on the issue of how technologies could be reconstituted into new cultural contexts. The analysis will help us to both utilize as well as critique Ihde's theory of technology transfer.

3.2 "Modernization" in Ethiopia and the Cultural Reconstitution of Technologies

As it has been repeatedly pointed out so far, there is no attempt here to make a distinction between culture and technology. Technologies are believed to be part and parcel of the cultures in which they are developed, or into which they will move to. Instead of talking in terms of technology *and* culture, it has become almost a truism now that we should speak in terms of technology-culture complex. Thus, when we speak in terms of "cultural reconstitution of technologies," it is only to emphasize the *cultural aspect* of this relation or complex. And the fact that our reference here is a cross-cultural one makes our emphasis on the cultural aspect of the technology-culture complex all the more necessary.

3.2.1 "Modernization" in Ethiopia: Historical Context

Our context at this point is Ethiopia's "modernization" efforts since the mid-19th century. The subsequent discussion will touch upon the introduction of certain technological artifacts to the country in about a period of fifty years and how these artifacts were received and adapted to the new cultural environment. The focus will be on how these technologies were reconstituted to the new cultural space. But before we proceed discussing this issue, we need to have a brief historical profile of the country.

Ethiopia's history could be traced back to more than three thousand years[11]. Ethiopia is the only country in Africa, and among the few in the world, for having its own written scripts. A great number of manuscripts that the Ethiopian Orthodox Church keeps to this date, ancient church and palace buildings in central and northern parts of the country, and the wonderfully designed rock-hewn churches of King Lalibela (who reigned from 1189 to 1229) and the various obelisks in Aksum (a seat of the Aksumite Empire which emerged around 500 B.C. and declined after the 7th century) are live witnesses that Ethiopia was one of the seats of ancient world civilization.

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[11] In his book "A History of Modern Ethiopia" Bahiru Zewde's remarks in passing that Ethiopia's history could even be pushed further to the prehistoric times: "Archaeological and linguistic research in recent years has made possible and necessary the adoption of a longer and more scientific perspective. On this basis, the beginnings of the Ethiopian past are to be sought not in the historical but in the prehistoric period" (2002: 7).

King Ezana's stele (4th century)
churches of King Lalibela (photo: easterntravel.net)
Encyclopedia

Bete-Giorgis – one of the 11 rock-hewn
(photo: Wikipedia

The history of modern Ethiopia starts around the mid-19th century. Before this time, Ethiopian history was dominated for almost a century by internal rivalries between regional powers. This period, which is known in Ethiopia as Zamana Mesafint (Era of the Princes), was characterized by renewed interest of Europeans after the expulsion of Jesuit missionaries in 1632. Europeans of various trades started to visit the country. Traders, scientists, diplomats and missionaries were among these. Side by side with this peaceful venture, Ethiopia was also the target of series of Egyptian aggressions. Thus, until 1855, a year for the coronation of Kasa Hailu as Emperor Tewodros II, Ethiopia was sandwiched between internal civil wars and external incursions (Bahru 2002a).

Emperor Tewodros's coming to power in 1855 and his subsequent measures to reunite the country had brought about stability to the country. More importantly, Tewodros's zeal to modernize the country was exceptionally high. The American historian Donald Crummey wrote:

Here we have an idea distinctive in Ethiopian history, and one which deserves, in the strict sense of the term, the use of the word 'modern'. The idea that Ethiopia should emulate the technological achievements of Europe is one which sharply distinguished Tēwodros from his predecessors amongst the Masāfint, and, indeed, amongst the emperors. This is not to say that his predecessors were not interested in foreign technology – both Wubē and Sāhela Sellāsē definitely were. But to them it was

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something exotic, something which was to be incorporated into a traditional framework. They saw no necessity for re-making Ethiopia, for transforming its society (1969: 462)

Since external pressure was eminent at the time, Tewodros's major response to this was to modernize the country. He planned to organize modern standing army. He was eager to have modern armaments. Tewodros's determination for technological modernization was revealed in his keen interest to develop or produce arms locally. He forced Europeans in his captivity to produce artillery. (The same workshop where the artillery was being made was also serving to train Ethiopians.) Unlike his predecessors, who wanted to simply acquire guns when they have the chance to get foreign assistance, Tewodros was rather very insistent in getting the technical capability. Bahru relates:

> When Tewodros … sought foreign assistance, it was not so much in the arms that he sought as the skilled manpower to manufacture those arms and to impart those skills to Ethiopians. (2002a: 34)

However, despite his interest to transform the country and his arduous efforts to establish a modern army, Tewodros was not able to move smoothly on his modernization track. The clergy, on one side, and the resistance of a few regional powers on the other, were formidable obstacles for his endeavors. But more importantly Tewodros's modernization fervor did not come to fruition because, as many scholars of Ethiopian history would say, his ideas were ahead of his time and did not therefore find a fertile soil on which they could grow. In a way reminiscent of what Lewis Mumford said of "cultural preparation," the historian Crummey attributed the failure to lack of important socio-economic and administrative infrastructures:

> … he [Tewodros] lacked any social or institutional base upon which to build: national unity eluded him; there was no historic bureaucracy; no national administration had survived the division of the country; urbanization was practically unknown (except, perhaps, in the most rudimentary form); there did not even exist a well-developed class of feudal nobility; and finally, foreign assistance was not forthcoming on a scale at all relevant to the country's needs. (1969: 465)

Next to Tewodros the other powerful emperor who came to power, Yohannes IV (1872-1889), was preoccupied with reunifying the

country and proselytizing activities. But much of his time and efforts were also spent on defending Ethiopia from a series of foreign incursions. Thus, another modernization gesture was not rekindled until Emperor Menelik came to power.

Soon after Yohannes's death in 1889, Menelik came to the throne. Menelik was of course consolidating his power starting from 1865 – a year on which he came to power as ruler of the central province of Ethiopia, Shewa. By then, Menelik was able to expand to the present day southern and south-western parts of the country. Thus, at the moment he became emperor, he had a broader political and economic bases than most of his predecessors.

The Italian colonial ambition in the horn of Africa and its subsequent debacle in the battle of Adowa (1896) gave Menelik wide international recognition. The political and symbolic significance of the victory of Adowa was immense. This was later to have great ideological and political gains for Ethiopia. But, more importantly, the end of this colonial ambition, and, with this, the end of other potential and actual foreign incursions, gave Menelik ample opportunity to develop his country. Hence his modernization efforts. The beginning of the Twentieth century thus marked the beginning of modern education system in Ethiopia. Modern communication technologies such as telephone and telegraph were introduced then. (We shall discuss the significance of this in more detail in the next section.)

Despite the power struggles that followed Menelik's death in 1913, Emperor Haile-Selassie (after being regent and then *de facto* emperor for sometime) came to the throne officially in 1930. At the time he was regent (then known as Tafari Mekonnen), Haile-Selassie had traveled to Europe and visited institutions such as schools, hospitals and factories. On the basis of the foundation lain down by Menelik, Haile-Selassie proceeded to expand education. Schools were opened not only in the capital but also in the provinces. The political power he forged at the centre was autocratic and equipped with all the necessary bureaucratic and administrative offices. In a way, Haile-Selassie had a far better socio-economic and infrastructural preparation in order to proceed with the modernization schema that Tewodros and Menelik had launched.

3.2.2 Cultural Reconstitution of Technologies

Having roughly set the historical context within which we can talk about technological modernization in Ethiopia, we can now proceed to discussing the introduction of a few technological artifacts and how these were reconstituted to the traditional cultural milieu of the country. We begin by examining Menelik's endeavors. Immediately after victory in Adowa, Menelik resumed constructing his palace at Entoto, a mountain range adjacent to Addis Ababa. For this purpose, he employed Arab and Indian craftsmen. Italian prisoners of war were also vastly utilized for road construction and other projects (Pankhurst 1961). But because of shortage of supplies and the unsuitability of the place for expansion, the capital was soon moved to Addis Ababa.

The establishment of Addis Ababa as a capital city has many significances to the modernization of the country as a whole. When the settlement grows, Addis Ababa became an attraction to many foreign traders. Arabs, Greeks, Armenians, and Indians started to come in great numbers. The newly founded capital city therefore became not only the political and administrative centre of the country but also the center of commercial transactions.

As the first modern capital city to be built by Africans themselves[12], Addis Ababa has had also larger political and symbolic significance. In relation to this, Pankhurst wrote:

> The event, which was important in modern Ethiopian history as a landmark in the reorganization and modernization of the State, is not without interest in the wider perspective of the African continent where it provides a unique example of rapid urban growth in an area not under European control. Whereas in such areas the capital was the result of an attempt to create a European type of city in a colonial environment, Addis Ababa represented an attempt by an African ruler to forge something new in his country's history by grafting modern institutions on a traditional living organism. (1961: 103).

And yet, building palace complexes, schools, roads (that connect the capital to provincial administrative seats), etc. called for foreign expertise. In addition to expatriate artisans already engaged in different activities, Menelik imported additional skilled labor from European countries. Pankhurst's recited:

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[12] Addis Ababa was in fact the third capital city to emerge in Ethiopian history.

Addis Ababa differed from Entoto and other earlier capitals in that Menelik made far greater use of foreign skill in its construction. Impressed by the need to import technicians from abroad, he had arranged with a Swiss trader in Aden as early as 1877 to procure young European Technicians who would be employed as government engineers and instructors to Ethiopian workers. In the following year three Swiss engineers arrived in Shoa, one of whom, Alfred Ilg, was destined to play a notable part in the modernization of the country (Pankhurst 1961:108).

As Pankhurst noted, Alfred Ilg had been one of the key personages behind Menelik's most modernization projects. Ilg was responsible for building certain public buildings and bridges in the capital. As we shall see soon, Ilg was personally involved in installing the first ever piped water to the country. Due to his expertise and above all his loyalty to the emperor, he received a concession from Menelik to build and operate the Djibouti-Addis Ababa railway.

But the arch-architect behind all these projects of course was the emperor himself. Once he organized the bureaucratic and administrative facilities that a modern nation-state would call for, Menelik thoughtfully invested in introducing new technical capabilities for his country. As Bahiru (2002b) pointed out, already by the end of the 19th century, Ethiopia was connected to the rest of the world through a postal and telegraphic system. In 1894, Ethiopia joined the then international postal association known as Universal Postal Union (Ghelawdewos 2006). Menelik was very much eager and willing to try any technological equipment that he thought would be useful for his country. In fact, as some historical accounts note, the degree of adeptness that the emperor had was that of an innovator's. Pankhurst, reciting European travelers who met Menelik, wrote:

There can be no denying Emperor Menilek's significance as an innovator. "His chief interest", according to the British traveller Herbert Vivian, was in "mechanical contrivances", about which he had "almost the knowledge of a specialist". The Austrian technician Willy Henze took a similar view, declaring that in Menilek the world had lost a valuable engineer. The Italian envoy Lincoln de Castro likewise observed, humorously, that if a builder of castles in the air came along proposing to build an escalator from the earth to the moon, Menilek would have made him build it, if only to see whether it could be done (2003).

In fact, as the Austrian technician quoted by Pankhurst correctly stated, there was really an engineer in Menelik's person in the sense that, as is the case with professional technologists, he would sought technical solutions when he encountered problems. That is what we see in most of his ventures. It is time now that we discuss some of the specific technological systems and artifacts that the emperor introduced. This would surely enable us to substantiate the issue of the cultural reconstitution of technologies further in addition to what we have seen in section 3.1. (We shall also soon embark on cases from emperor Haile-Selassie's period).

As pointed out earlier, Menelik was for sometime engaged in rebuilding and expanding his palace. He had employed foreigners for the purpose at hand. But since palace building was an age-old tradition in Ethiopia, one cannot really say that the building techniques applied on the emperor's palace were new to Ethiopians. The history of construction in Ethiopia was the history of building churches and palaces. Thus, what attracted the attention of many Addis Ababans of that time was not the building of palace complexes. What attracted a great deal of attention and wonder was the construction of piped water project. This was completely new. Pankhurst (2002) wrote:

> … in 1894, Ilg installed the water installations for the Emperor's palace at Addis Ababa. This created something of a sensation, as the water, obtained from a spring in high Entoto, had to flow down to the Addis Ababa plain beneath it, and then make its way up again to the Palace compound, which was located on a smallish hill. People in the capital had never seen anything like this, and could not believe that water could ever, under any circumstances, flow upward. Menilek, however, was a great believer in innovation, and insisted that Ilg should proceed with his project, if only to see whether it would work.

As we can see in the last few lines of Punkhurst's account, the emperor had encountered resistance from some corners, especially the clergy. But, more importantly, since people at that time did not have the smallest idea about mechanical power, they believed that it was only natural if water would flow down a sloppy area. Were water to get the power to go upwards, it must only be because of certain supra-natural power. And when it came to the clergy, because they were very much conservative towards such changes, they must have associated this (as they have done to other things) with the "work of the devil," though there was no such account specific to the piped water. The clergy might as well have explained such "wonders" or inventiveness

with the power of God or any other benevolent spirit. But they were not usually inclined to do this.

However, the reactions were not completely negative. The piped water was greatly an object of fascination. Many people wondered as to what force can do this nearly- miraculous performance. As Ihde points out, one of the reactions when people encounter a technological system or artifact for the first time is to be allured by the mechanism. If what the technology can do is easily "readable," like the spectacle of the water going upwards to the hilly location of the palace, people would switch to raising technical questions such as "How on earth does this happen?" "What helps push this water upwards?" "Would the water be safe for drinking?" "Wouldn't it be less clean than the water we fetch directly from the stream?"

Surely, Addis Ababans of that time must have asked these questions. It is very natural for people anywhere in the world to engage something novel in such a manner. But the questions they might have raised would largely have a "religious" twist and tone than taking a "technical" or "scientific" bent because of the cultural setting working at the background. When it comes to the clergy again, as could be the case to in many societies (e.g. Europeans at the time of the absolute domination of the Church), their response to most of the technical systems that Menelik introduced were negative. They were mostly apt to depict these new elements as functions of "the devil's machination."

However, it must also be noted here that this should not be dismissed as mere "resistance." Rather, this might or should be taken as one way of reconstituting a technology into one's cultural framework. An attitude of indifference might in fact be more inimical to an innovation than calling it demonic. The latter is an act of recognition and hence a way appropriating or placing it in context.

That was why this same framework of interpretation had also been employed in order to positively reconstitute or appropriate the technology. People started to compose and recite poems that commend, praise, and at the same time attach religious meanings to the works of the emperor. At this point it is very important to note that Ethiopians are very much known for their tradition of poetry. Either in happy or sad moments, they use poems to express their feelings. They use couplets to define new things. Major historical events of national significance such as coronation of emperors, battles, decisive victories on enemies, drought and famine periods, etc would be captured

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poetically. A whole account of one major battle could be retrieved on the basis of poems composed in retrospect or at the time of the battle.

Menelik's water project was thus the subject of many impromptu lyric compositions. Here is one of them (this was turned to English by Pankhurst 2002):

"We have seen wonders in Addis Ababa,
"Water worships Emperor Menilek.
"O Danyew[13] [i.e. Menilek] what more wisdom will you bring?
"You already make water soar in the air!"

Two things surface in this couplet. The first meaning of the couplet is: what had happened was something miraculous. In fact, the theme of miracle generally coheres in many other religious traditions too. But what we see here is an attempt to reconstitute the new thing in a religious way. For Addis Ababans of the time, Menelik had been able to do wonders. Water, one of the forces of nature, was manipulated by Menelik. Menelik made it "soar in the air" against the laws of nature. Water worshiped Menelik!

The second thing that the poem tries to tell us is that what had happened is not something miraculous of course. Wisdom was behind the new things. The matter at hand was not something inexplicable. It was not something to be dismissed once and for all as "miraculous." It was also something that emanated from wisdom. The poem even marvels, though in a tone that combines both awe and expectation, what more wisdom the emperor would bring to the country.

A more down to earth recital was also made:

"King Abba Danyew [Menelik], how great is he becoming!
"He makes the water rise into the air through a window,
"While the dirty can be washed, and the thirsty drink.
"See what wonders have already come in our times,
"No wonder that some day he will even outdo the Ferenje [i.e. Europeans]."

This was not of course composed merely to praise the emperor. It went beyond that. It consists in three interrelated statements. The first one is a political statement. It assets that the king is a great king. It even tends to say: due to the new technological capability that the

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[13] This is an Amharic word for "the judge." Menelik was known as Abba Dagnew.

emperor introduced to the country, his prominence and magnificence got greater and greater. The couplet then goes on to weigh the emperor's power in terms of what Europeans had achieved. It again goes further and expresses a yearning for a time when the country would excel many. Finally, it has come to establish the use-context of the new technological system. That is, we see the poem stressing how this new way of drawing water could actively facilitate things. And more importantly, when the couplet states the obvious (i.e. that people can wash clothes and satisfy their thirst), it is in a way giving the assurance that people can use it without any fear.

Here we see a clear demonstration of how new technological systems could be culturally reconstituted while at the same time mediating or co-shaping the political power of an emperor who succeeded not only to protect the territorial integrity and sovereignty of the country but also consolidate a functioning central administration. The introduction of telephone line and postal system had further boosted the power of the central government at home and lent it a heightened diplomatic relations with the outside world.

The introduction of these communication systems was not without any difficulty, however. There was a great and open resistance on the part of the clergy. Thus, as Arnold Pacey would say, the "dialogue" or "conversation" between the new technological artifact (in this case, telephone) and the cultural context in which it just begun functioning was very arduous. As regards the postal system, there was no problem at all. Many Ethiopian emperors before Menelik were using mails to communicate both within and outside the country. What may be new to the country (as could be the case also to many other countries around the world) was its membership in an international postal association, and the beginning of circulation of mails on more systematic and regular basis. As a country with a long written tradition by then, however, using mails to exchange information was not something novel to the country. By the time Ethiopia joined the international postal system, she had the whole paraphernalia of, to use Ihde's concept, "reading" and appropriating it.

In the case of the telephone, however, there was at first a "translation" problem. But this should not be taken as something unique to Ethiopia. Telephone was invented in 1876. It then reached Ethiopia only after 14 years. In the country where it was invented itself, it must have taken some years before it came to be used by the wider public. Ethiopia must have therefore been one of the few

countries to have telephone lines at that time. If there were problems and negative reactions on the part of conservative elements of the society, it won't therefore be something unexpected.

Let us then have a brief look at the reactions of people. This will help us see how the technology was received and reconstituted into the Ethiopian cultural context. The first incident was when Ras Makonnen brought a telephone apparatus when he came back form a short visit to Europe in 1890. Ras Makonen, the father of Tafari Makonnen (the future emperor Haile-Selassie), was one of the generals of Menelik and governor of the eastern town of Harar.

Once Menelik acquired this apparatus, he ordered one French technician to operate it. Then, a telephone wire was stretched between two halls in the palace compound. After assuring that it started functioning properly, the Frenchman handed over the receiver to the emperor. The emperor heard the voice of one of his palace officials. His first reaction was to drop the receiver on the table a little bit frantically and moved to the window in order to check whether that official was just standing outside of the house and making fun of him (Paulos 1992: 258). But it was not the case. Menelik found out that the person talking to him was actually talking to him through the wire while being in another hall which was far removed from the room where he was.[14]

Then, no sooner than this happened, the offices in the palace were connected by telephone wire. This was soon followed by a strong opposition from the Ethiopian Orthodox Church. As Paulos Ňoňo (1992: 259) accounted, a contingent of priests was sent to the palace to voice the opposition of the Church. The Church condemned the device as the work of the devil and insisted that it should immediately be disposed.

Nonetheless, as already suggested earlier, this opposition might not be

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[14] This was something that happened to most people around the invention of the technology. In his book *The History of the Telephone*, Herbert N. Casson, gave the following account of the reaction of Dom Pedro, Brazilian emperor visiting the US when Alexander Graham Bell was displaying his invention: "A wire had been strung from one end of the room to the other, and while Bell went to the transmitter, Dom Pedro took up the receiver and placed it to his ear. It was a moment of tense expectancy. No one knew clearly what was about to happen, when the Emperor, with a dramatic gesture, raised his head from the receiver and exclaimed with a look of utter amazement: '*My God -- it talks!*'." (1911, electronic version 1997). Casson added: "People who talked for the first time into a telephone box had a sort of stage fright. They felt foolish. To do so seemed an absurd performance, especially when they had to shout at the top of their voices."

so much because of conservatism as it was an attempt to define and place the new "thing" in context. Similar reactions were abounding in the country where it was developed. The telephone was at first associated with witchcraft in the United States. Casson wrote:

> As Bell had worked out his invention in Salem, one editor displayed the headline, "Salem Witchcraft." *The New York Herald* said: "The effect is weird and almost supernatural." *The Providence Press* said: "It is hard to resist the notion that the powers of darkness are somehow in league with it." And *The Boston Times* said, in an editorial of bantering ridicule: "A fellow can now court his girl in China as well as in East Boston; but the most serious aspect of this invention is the awful and irresponsible power it will give to the average mother-in-law, who will be able to send her voice around the habitable glob." (1911 [1997])

What made this reaction similar to the one expressed in Ethiopia was its reference to quasi-religious reason. Witchcraft was invoked as a possible reason behind the workings of the telephone. However, this should not imply that the two cultural contexts were similar. The US encounter with the device was actually taken place within an immense scientific and technological orientation. That was why the allusion to witchcraft was actually brought up with scorns and satires. But then, there were still indications that there was a great deal of confusion among the wider public. What Casson recounted expresses this very well:

> The very idea of talking at a piece of sheet-iron was so new and extraordinary that the normal mind repulsed it. Alike to the laborer and the scientist, it was incomprehensible. It was too freakish, too bizarre, to be used outside of the laboratory and the museum. No one, literally, could understand how it worked; and the only man who offered a clear solution of the mystery was a Boston mechanic, who maintained that there was "a hole through the middle of the wire."

However, when put in context, the Ethiopian reaction had truly religious character. The Ethiopian society, except the few literati in the church and the palace, was largely uneducated. Even worse, when measured against the then existing scientific and technological advancement in Europe, America and the Far East, the Ethiopian experience would almost be bare. Hence, it wouldn't be surprising when the response was largely religious. In fact, as stated earlier, though the reaction was negative and inflammatory, the fact that the

Church took it up as an important issue and tried to explain it in its own terms suggests that the Church was in a way trying to define the device and place it in context by confronting it. Aloofness would have probably done more damage. This can especially be true in view of the emperor's counter measure – a point which we consider next.

The emperor's response was immediate. He gathered notable personalities including the patriarch and addressed it thus:

> These priests have become nuisance to me by standing against many of my projects. And now, when I brought telephone, they are arguing against it saying that it is the work of the devil. I have tried my best to convince them that telephone is by no means that of the devil's…. They even came here in person to tell me that I should get rid of it. I tried to persuade them that it [the telephone] is not the devil's work. But they do not listen at all. They are simply daydreaming. Thus, I am planning to leave my faith [Orthodox Christianity] behind and convert to another one. This might help me to disentangle myself from them once and for all. (Quoted in Paulos 1992: 259; translation mine)

This reaction created a great commotion among the nobility and the leaders of the Church.[15] Menelik actually did not mean it. And he also seem to realize very well what he would get in return. His reaction was of course potentially formidable. Were this translated to practice, in other words, were the emperor to take a practical step in that direction, it would have had disturbing consequences for the status quo.

Shocked by the response of the emperor, the nobility and the patriarch implored him to drop what he was planning to do and they assured him in return that the "thing" would be left alone. He was promised that the clergy wouldn't stand on his way again. Subsequently, the capital was connected to some of the provinces. The emperor and his government officials were able to get in touch easily. In a country where the only means of transportation were mules, the role of the telephone line was immense. Things that had been taking weeks or months started to be executed within hours, and this in turn

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[15] Since the advent of Christianity in Ethiopia in the 4th century, the great majority (or it might not be a great exaggeration to say "almost all") of Ethiopian Emperors Orthodox Christians. When emperor Emperor Susneyos officially accepted Catholicism as his faith in 1621, which was soon followed by a growing number of Jesuit priests, he faced a big social unrest and civil war. He was then forced to resign. His son Fasiledes came to power by retracting what his father had done. He expelled all Jesuit missionaries in 1633.

contributed a lot to reinforce the power of the central government.

What was remarkable about the two opposing forces was that both appealed to the same set of cultural meanings in order to back their respective claims. The clergy's claim that the new "thing" is nothing but the seat of the demon was counteracted by a threat of religious conversion, which in turn meant a lot when this was coming from the emperor. But more importantly, the confrontation in question was more than a mere instance of a set of confrontations of the time. It also reveals the flexibility of the cultural setting to allow choices. After all, the political power of the emperor was very well consolidated to effectively meet the cultural inertia.

Besides, the culture was not simply there to "allow" or "disallow" things. The cultural setting by itself was subject to modification due to the influence of the new technological device. In line with what we have been discussing in theories of mediation, the telephone, as a new technological object, was mediating or co-shaping the culture in which it started to be part of.

In addition to the functions that it has as communication device, the telephone was very much instrumental for silencing the opposition of the Church. The telephone, as a model case, mediated or co-shaped the emperor's struggle with forces that tried to thwart his modernization project. As a result, Menelik was able to proceed with his remaining programs. A railway line had been under construction until the death of the emperor in 1913. The line reached the capital in 1917. Menelik's determination to modernize his country was not limited to introducing artifacts. Along with importing the artifacts, he had been busy laying down the necessary technical and administrative infrastructure for their functioning.

The next figure to follow Menelik's path of modernization was emperor Haile-Selassie I. Until the Italian invasion in 1936, a few schools were opened in the capital and in the provinces. As pointed out earlier, Haile-Selassie had been a regent and a *de facto* leader until the death of empress Zewditu. These years were however years to consolidate his power and create modern state machinery way back before he became the emperor *de jure*.

While a regent, Haile-Selassie (then only known as King Tafari Mekonnen) bought the first aircrafts for the country, which later grew into the Ethiopian Airlines. (Ethiopian airlines was the first airline to make east-west flights across Africa in the 1950's and it has now the

largest pan-African network than any airline.) As we shall see soon, one of the notable things about Haile-Selassie's modernization scheme was that he had been able to ingeniously employ it for consolidating his political power in a degree that was unmatched by his predecessors. The process we call "cultural reconstitution of technology" in general terms could alternatively be depicted here as political reconstitution. It is this aspect of his modernization program that we shall try to examine next. And for the sake of restricting the range of the discussion, we shall focus on the aircrafts and on the symbolism of the Sun that the emperor was known to have been associated with (he was eulogized as "sun emperor").

The following is the story of the first aircrafts. In 1922 regent Tafari Mekonnen (future Haile-Selassie) have had the chance to visit British naval fleet in Eden. As the then weekly Amharic newspaper *Berhan ena Selam* (meaning, Light & Peace) noted[16], the British gave the regent a short flight around the port of Eden. This was his first contact with airplanes. Then, after a couple of years, Tafari Mekonnen visited a few European countries including Britain, Italy, and Belgium and this was a moment of reflection for him: He came to realize that the aircraft has become one of the conventional transportation means in Europe. Hence his eagerness and determination to introduce aircrafts to Ethiopia. This came to fruition in 1929. Two aircrafts were bought and arrived at Djibouti port in August. Now, the question is: how did people then accept or view this matter? How was this accommodated in the existing cultural setting?[17]

Let us begin from the reception that the aircrafts got from the newspaper we mentioned above, *Berhan ena Selam*. Since this was a government newsmagazine, the account it gave will help us to get closer to the emperor's intentions. *Berhan ena Selam*, issue of August

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[16] Most of the narratives and accounts I am using on the story of the first aircrafts to Ethiopia are drawn from a few issues of the weekly Amharic newspaper Berhanena Selam (which hereafter I refer as BS; and the translations are mine). These issues were published in the last weeks of August 1929, a month and year when the first aircraft arrived in Addis Ababa, and the first week of September when the second aircraft reached the capital.

[17] We might as well ask questions like: How have they been reconfiguring the traditional setting in which they were functioning? How have they been affecting the socio-economic, cultural and political geography of the country as well as the continent? Focusing on the first group of questions might give the wrong impression that we are presuming as if there is such a thing as technological artifact as opposed to culture. However, as has been already pointed at the beginning of this chapter, we are dealing here in the "cultural aspect" of the technology-culture complex. Thus, the second group of questions – questions that touch upon the issue of how technology shapes the rest of culture – would be considered in the next chapter but with different examples other than aircrafts.

22, 1929 heralded the news about the first aircraft to arrive in the capital in a way that sounded like an editorial and at the same time a religious sermon:

> God listens to those who beseech him truthfully and meets all their needs. His majesty [Tafari Mekonnen] has been eagerly waiting for the time when the air-train will arrive in Ethiopia. His majesty should now thank God for making his dream come true. (B&S: 173)

Air-train was the name that Ethiopians used for the aircraft then. We shall briefly discuss the significance of this nomenclature soon. We now go to the religious intonation with which the aircraft was received.

As already demonstrated when discussing the case of the telephone, the religious storyline had played a big role in the "reception" of new technological artifacts in Ethiopia. Religion was not only the common ground where people fight out or negotiate their differences but also the one cultural instrument to reconstitute the technological artifact. In the case of the aircraft also, the newspaper first and foremost sermonized it as God's will. The new technological object was considered as an element through which God demonstrated His providence. Through these devices, God wanted to help the king, and, through him, Ethiopia.

But the newspaper was also apt enough to list the functions of the aircraft in the "real" world. It accounted that there were two reasons why the king decided to import the aircraft. The first was to reach different parts of the country and dispatch official government letters. The second reason that the newspaper stressed was the usefulness of aircrafts in fighting swarms of pests covering wide agricultural areas. The newspaper recounted the experience of other countries in this regard, and added that Ethiopia might also soon be attacked by similar swarms:

> Last year many parts of Africa and places around Jerusalem were swarmed by pests. The swarm of grasshoppers destroyed a lot of crops. It is also probable that we might soon encounter a similar problem ourselves. [Therefore] the rational behind His majesty's decision to bring in aircraft is …, if God wills, to protect our land from similar problems. This will surely play a great role to protect the Ethiopian people from shortage of crops. (B&S: 174)

Of course, the will of God must be there if the technology is going to function. That was why the clause "if God wills" was added even if the newspaper was discussing the normal functions that the aircrafts were supposed to deliver. In other words, God's will had been considered as a necessary condition for the functioning of the aircrafts. As was the case for the telephone and piped water, the religious theme had once again been the dominant theme in place to appropriate technological artifacts.

Nonetheless, it must also be clear that pioneer modernizers of Ethiopia like Tewodros, Menelik and Haile-Selassie have employed various means (other than religion) in order to teach their own people about the things they were introducing to the country. They were not simply appealing to religious reasons alone. That was what the newspaper *Berhan ena Selam* was doing when it was discussing the aircrafts' role in fighting pests as well as facilitating communication.

In addition to the "official" reception that the aircraft received, the manner in which it was seen and received by the common people is also worth mentioning here. When the first aircraft reached the capital, Addis Ababa, on the 18th of August 1928, the reception was unique. People from all walks of life went to the field where the airplane was to land and waited for hours to witness it. When it arrived at around 1:00 in the afternoon, people were mesmerized by the experience. And according to one account, some people lost some valuables. One person had even lost the belt of cartridges he wore on his waist because he was completely immersed looking up the aircraft on its way to land. (This story was recounted many times after that because loosing one's belt of cartridges for that time was regarded as loosing one's masculinity.)

The other form of reception consisted in the naming of the aircraft. As already mentioned above, the aircraft came to be known as *ye ayer babur* (an Amharic word for air-train) because by then the railway was functioning for about ten years. This was therefore a way of defining the function of the airplane. And the wider public also was using this expression for sometime to come after that. But there was another, and more interesting name that the aircraft came to be known with, namely *ye ayer beqlo* (an Amharic expression for air-mule). This has culturally and symbolically a more powerful message. The mule had been the major means of transportation. The mule can gallop for hours on very difficult terrains. The aircraft was therefore defined and understood in the Ethiopian cultural terrain.

As repeatedly pointed out, there is no doubt that emperor Haile-Selassie was one of the pioneering figures to modernize the country. He was very much instrumental for the expansion of modern education in Ethiopia. He was able to organize a modern army par excellence. He created an airline that was to become the leading airline not only for networking Africa but also to connecting it with the rest of the world. He had established a prolific international diplomatic relations. He was one of the founding fathers of the African Union (known before as the Organization of African Unity) for which Ethiopia's capital Addis Ababa was selected to be the seat.

On the basis of his endeavors to forge a strong international relations, and, above all, because of his efforts to expand modern education and open the door for new technological artifacts, emperor Haile-Selassie was popularly known as the "Sun Emperor." Thus, in addition to, and somehow also associated with, the religious legitimization that his political power draws on, the emperor was able to formulate the symbolism that revolved around his modernization efforts. When he named his newspaper *Berhane ena Selam* (Light & Peace), it was deliberate on his part. Under the title of the newspaper we find the following description: "His Majesty Tafarri Makonnen … named this newspaper as *Berhan ena Selam* out of his sheer desire that light and peace be on his country."

This had been a recurring theme attached with so many things. According to Shiferaw Bekele[18], a professor of history at Addis Ababa University, the emperor was tirelessly and carefully forging this symbol for the sake of consolidating and legitimating his political power. His coronation ceremonies were always glittering with new things imported from Europe. He was always seen on TV and newspaper cover pages inaugurating factories, schools, etc. The emperor was in effect saying "I am your light;" "I am an eye opener;" "I brought you education, new technological artifacts;" etc. In doing so, he was also counteracting conservative elements, largely the nobility, in his government. In view of the conservative nobility, the emperor was progressive.

This symbolism was also very much echoed by his close associates in the intellectual circle of the time. A typical example was the narrative presented by Wolde-Giorgis Wolde-Yohannes. Wolde-Giorgis Wolde-Yohannes, very important government official then, wrote a book in Amharic titled *Agazzi* (name of the character at the same time). This

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[18] Personal communication, May 2006, Addis Ababa University.

book apparently narrates the fictional story of an Ethiopian student in Europe. The literally style it uses is monologue.

The theme of the book, however, is the emperor and his position as the "light" of his country. It is important to note at this point that this book was written around the 1960s but it goes back in retrospect to Tafarri's coronation as Haile-Selassie I, King of Kings and Lion of Judah. Quoting a few statements would help us to see how much effort the author put on the symbolism. Referring to modern education, the fictional character speaks thus (all the quotes are my translations):

> His majesty Emperor Haile-Selassie I has introduced education to Ethiopia so that the minds of Ethiopians could be liberated from ignorance…. Young people could now be educated and be the fountain of knowledge and serve their country. (Wolde-Giorgis, p. 15)

The fictional character dramatizes as if he has some kind of mystic vision:

> With Hailesellasie, I see Ethiopia growing and partaking in civilization. I see Ethiopia holding light with her hands. I see Ethiopia hastening to catch up the developed countries…. Something whispered into my ears: "Thanks to Hailesellasie, the dawn of civilization is flickering on the mountains and young people of Ethiopia." I see ignorance leaving the country forever. Old customs and habits would go forever. Even old folks would no more be victims of old habits and customs. Thanks to His Majesty, we are witnessing new pillars being erected. Things are changing a lot. Everything is changing for good…. This change is all-rounded. People are changing their way of thinking. They are changing their lifestyles. They have come to know how to economize their money and their time…. Thanks to the great effort and endeavors of the Emperor, Ethiopia is on its way to be created after the image of Europe." (Wolde-Giorgis, pp. 53-54)

Agazzi, the character, continued to play with the symbolism. Directly referring here to the Haile-Selassie's coronation, he hollers:

> When something itched my ears, I was at first worried thinking that this could be a bad omen that might bring something gruesome. But right away something whispered into my ears, "Good news to Ethiopia. Your enlightenment is on the way. Ethiopia's dawn has come." (p. 54)

The book concluded by complementing the coronation as a cosmic event:

> Planet earth expressed its happiness. Mountains danced. Hills all over the land clapped their hands. Ethiopia shared its happiness to the entire world and the heavens…. The Ethiopian people expressed contentment. Ethiopia was searching and looking for a person. Now, she has found him…. (pp. 55-56)

What do we gather from all this? One may simply dismiss all these as pointless eulogies from an author who was very much close to the emperor. We can in fact see how the author squanders words and phrases to praise the emperor. We see the extent to which he goes to end up grafting cluster of praises over the other.

However, even though many people might not have gone to this length, this idea of taking the emperor as a prophet of enlightenment was something that was taken for granted among the wider public. That was why, many a newspaper columns, radio programs, TV broadcasts and educational materials had resonated this point of view. It was therefore the ideology of the time par excellence. The new technological systems and devices that the country was able to import were vehemently reconstituted to the Ethiopian cultural milieu, ensuring and reinforcing the political, socio-economic, and diplomatic vigor of the emperor. People compose folk songs and poems in praise of, or simply alluding to, new technologies such as the railway, the train, cars, the telephone and radio. All these therefore contributed to the constitution of the new technologies into the cultural setting in which they might have been at odds with at first.

Much of the examples we discussed so far can help us go out of the cultural determinism we had been discussing in the previous section. As we have seen in some of the confrontations that Menelik encountered, the existing cultural setting did not arrest the introduction of the new technological artifacts. First and foremost, the emperor had established a consolidated political and ideological power to confront thwarting forces. He was able to impose the new technological systems vehemently. But more importantly he was also able to exploit the cultural fund to his modernization schemes. By fighting back on the bases of arsenals he got from the religious tradition of the country, the emperor was able to vigorously expand his modernization project.

When it comes to emperor Haile-Selassie's time, we even see a more creative use of cultural traditions. Haile-Selassie was able to wed his modernization scheme with the cultural tradition of the country. In his case, we see in fact the place that individuals and a group can have in shaping or transforming society. The capacity of the emperor and his close associates to forge the symbolism of light or the Sun was a good example for showing the power of a few individuals to forge an ideology that can revolutionize or transform society despite the predominant cultural inertia of the time. In other words, we see the function of a symbolism to guide or shape actions creatively.

CHAPTER IV

TECHNOLOGICAL MEDIATION OF CULTURES

In the previous chapter we have been discussing the cultural mediation of technological objects. We based our analysis on the critical appraisal of Ihde's theory of the cultural reconstitution of technologies. The cases in particular enabled us to substantiate how different cultural agencies could be instrumental in integrating new technologies and how these technologies in turn shape social, economic and cultural patterns.

Nonetheless, as already pointed out earlier, the focus of the chapter was to show how cultures appropriate technologies. In other words, we have been dealing with the cultural aspect of the relation between technology and culture. Now, in the present chapter, our focus will shift to the technological aspect, which means we will be dealing with the mediating role of technological systems in a new cultural environment.

This chapter is divided into two sections. The first section (4.1) will deal with the philosophical frameworks of technological mediation. The section draws mainly on the (1) semiotics of technological objects as presented by Madeleine Akrich and Bruno Latour, and (2) phenomenology of mediation as presented by Peter-Paul Verbeek. The second section of the chapter (4.2) will be dealing with cases from Ethiopia. We have two sets of cases, namely mobile telephones and new shopping center designs.

4.1 Philosophical Frameworks of Technological Mediation

As it has been shown in the course of our discussion, the thesis aims to expand the postphenomenological perspective in philosophy of technology. This thesis especially draws on the phenomenological points of view as presented by Don Ihde and Peter-Paul Verbeek. This section also employs some of the conceptual tools we get from these philosophers; subsection 4.1.2 will deal with this.

Nevertheless, an attempt will also be made to incorporate the semiotics of technological artifacts. We are referring here to Madeleine Akrich's theory of inscription and Bruno Latour's idea of delegation. As Verbeek points out, Latour's actor-network theory shows the

mediating role of technological objects. Verbeek in fact believes that it is possible to translate "Latour's vocabulary into a postphenomenological philosophy of technology" (Verbeek 2005a: 168; see also pp. 169-172). Thus, section 4.1.1 will deal with Akrich's idea of script and Latour's notion of delegation. This will help us to interpret the cases we shall be describing under section 4.2, especially that the influence of shopping center designs in Addis Ababa.

4.1.1 Semiotics of Technological Objects

In this subsection, I will discuss the philosophy of script as developed by Akrich and Latour. First, let us see Akrich's point of view. Akrich is a pioneer scholar in coining and utilizing the metaphorical expression script. According to Akrich, many sociologists of technology have tried to tell us that designers of technological objects, in designing the objects, are *defining* the users. And this can be done by inscribing scripts into the objects. She writes:

> Designers … define actors with specific tastes, competences, motives, aspiration, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways. A large part of the work of innovators is that of "*inscribing*" this vision of (or prediction about) the world in technical content of the new object. (Akrich 1992: 208)

For Akrich, designers of technological artifacts are equivalent to script writers. When they design, they are inscribing something into the artifact. When users are employing the artifact for something, on the other hand, it means they are *de-scribing* or unpacking what has already been inscribed into it.

However, Akrich was also well aware of the active role that users of artifacts can play. She argues that there are several cases in which we see users going beyond what has been inscribed by designers: "To be sure, it may be that no actors will come forward to play the roles envisaged by the designer. Or users may define quite different roles of their own" (ibid.). Furthermore, prescriptions can also go to the extent of forging new social relations or reinforce what has already been there. A network of electricity in Burkina Faso clearly shows the role that a technical system may have in forging citizenship. According to Akrich, the network of electricity in Burkina Faso has become part and parcel of the whole effort of the government to configure Burkina Faso "spatially, architecturally, and legally" and create the modern Burkina citizen. (Akrich 1992: 214).

The other theme of Akrich's idea of script is the moral significance of technical objects. Akrich points out that designers inscribe moral precepts into technologies. In order to demonstrate this, she describes the introduction of electric meters in Ivory Coast in the 1980s.

> The way in which the individual/consumer relates to the network, and via the network to the electricity company, is codified and quantified by means of a basic tool, the electricity meter. This formulates the initial contract between the producer and the consumer. If one or the other fails to meet its obligations, the meter becomes invalid or inactive. Meters have a symmetrical effect on the producer/consumer relationship. The agreement of both is required if they are to tick over. Accordingly, the *set* of meters is a powerful instrument of control. Taken together, the set of meters measures the cohesion of the sociotechnical edifice materialized by the network. (Akrich 1992: 217)

The electric meter is therefore endowed with some kind of moral authority. It measures not only the amount of watt used but also the behavior of the users:

> Any reduction in the rate of return can be interrelated as an increase in the number f illicit connections, the work of corrupt employees, or a consequence of trafficking in meters. With both human and technical actors involved, the network measures illicit behavior and determines character (ibid.)

Furthermore, the network of electricity in question is also shown to have affected non-uses in some ways: The villages which were not included in the network were considered as "deviants," a moral and political valuation that comes through a technological system.

Latour also utilized the term script and its inflections in order to convey a similar idea like that of Akrich's. For Latour, the design of a certain technological artifact "prescribes who does what and when" after the manner of a film script (Verbeek 2005b). The function of the speed bump on a university campus is to slow down drivers. The speed bump is "delegated" to make sure that drivers drive slowly. In other words there is no need of signboard or a traffic police to control speed. In designing the concrete speed controller, the engineer or the designer has inscribed a warning like "slow down!" (Verbeek 2005a).

The other favorite example of Latour's – and probably more clearly demonstrative of the mediating power of technological artifacts – is a door-spring. Hotels and other public service-giving institutions use big doors with springs so that once people enter or get out of the building the doors can be closed on their own. Those who design door-springs or other technological artifacts are therefore inscribing a program of action that prescribes a certain way of doing things. The springs regulate or prescribe the way things should be done. Verbeek again writes:

> Technologies, as it were, can implicitly supply their own user's manuals. They coshape the use that is made use of them; they define actors and relations between actors, and share responsibilities and competencies between humans and things (ibid)

Like Akrich, Latour has also attached moral significance to technological artifacts. When discussing whether he should obey the instruction of his car to fasten his seat belt, Latour raises the question "Where is the morality?"

> Where is the morality? In me, a human driver, dominated by the mindless power of an artifact? Or in the artifact forcing me, a mindless human, to obey the law that I freely accepted when I get my driver's license? Of course, I could have put on my seat belt before the light flashed and the alarm sounded, incorporating in my own self the good behavior that everyone—the car, the law, the police—expected of me. Or else, some devious engineer could have linked the engine ignition to an electric sensor in the seat belt, so that I could not even have started the car before having put on. Where would the morality be in those two extreme cases? In the electric currents flowing in the machine between the switch and the sensor? Or in the electric currents flowing down my spine in the automatism of my routinized behavior? (Latour 1992: 225)

Latour believes that the morality lies in the network of relations between actants, where these actants are both human and non-human. And the whole process of inscribing the network he calls "a program of action." In the case of the car, the seat belt, the mechanical instruction and the driver, plus the program of action "the driver must have a seat belt" in order for the car to move.

> The program of action "IF a car is moving, THEN the driver has a seat belt" is enforced. It has become logically—no, it has become sociologically—impossible to drive without wearing the belt. I cannot be bad anymore. I, plus the car, plus the dozens of

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patented engineers, plus the police are making me be moral. (Latour 1992: 226)

Moral behavior is therefore no more exclusively human. The whole sociotechnical system is engrained with ethical precepts. Latour concludes: "Prescription is the moral and ethical dimension of mechanisms" (1992: 232).

4.1.2 Phenomenology of Mediation and Materializing of Morality

According to the classical philosophy of technology, artifacts are either neutral instruments used merely as means to an end (later Jaspers), or they alienate people from reality (later Heidegger). But Heidegger is also known for recognizing the active role of artifacts in the relationship of humans to the world:

> In *Being and Time* Heidegger saw the relations between human beings and equipment as occupying a center stage – or rather, he saw the role of tools and equipment as occupying center stage in the relation between human beings and their world. Heidegger showed that tools and equipment give shape to the encounter between human beings and their world. Things make daily practices possible while withdrawing from the explicit field of attention. Only when human beings cease occupying themselves with their tools themselves, but rather with what they set themselves to do with the help of these tools, are these tools present as tools. The tools are then, in Heidegger's words, "ready-to-hand." (Verbeek 2005a: 114).

Don Ihde raised this role of artifacts in the relationship between humans and the world to a higher level, and speaks in terms of the intentionality of things:

> Ihde has, from a phenomenological perspective, characterized this mediating role of artifacts in terms of what he calls *technological intentionality*....By this he means that technologies – like consciousness for Husserl – have a certain directionality, an inclination or trajectory that shapes the way in which they are used. (Verbeek 2005a: 114)

As we have already seen in detail in chapter two, Ihde describes the relation that artifacts create as a relation of mediation in the sense that artifacts co-shape the relation between humans and their world. This relation of mediation is further classified into four forms of

relationship, namely embodiment, hermeneutic, alterity and background relations.

As already shown in the previous section (4.1.1), Latour's actor-network theory does also provide us with framework of interpretation that sheds light on the mediating role of artifacts. Akrich's theory of script lends a similar explanatory framework. As Verbeek (2006a) points out, Akrich and Latour focus on the use-context of artifacts. In other words, when designers design a given technological artifact or inscribe something into it, they are in effect prescribing instruction to the end-users. This means the designers do this by anticipating how the end-users of the product will behave. Thus, unlike the view that sees in technological artifacts only their functionality, the philosophy of script emphasizes how they can shape the behavior of people who use them. Verbeek stresses: "Scripts transcend functionality: they form a surplus to it, which occurs once the technology is functioning. When technologies fulfill their functions, they also help to shape the actions of their users" (2006a: 362).

The concept of script thus shows clearly how technological artifacts shape or influence human behavior. As we shall see in the case study, this idea of script is very useful conceptual tools to understand how engineering or architectural designs co-shape the way people behave. When architects design new shopping malls or department stores, they are in effect writing scripts according to which users of the buildings behave.

As has been said so far, the conceptual tools that Akrich and Latour lend us, especially the concept of script, would enable us to have a closer understanding of how technological designs could prescribe certain human behavior and proscribe others. But there is one limitation that Verbeek points out: namely, the manner in which the concept script is used by Akrich and Latour seems to predetermine what the users of the technologies should or should not do. Technologies for Verbeek do not function only for the goals they were designed for. The transport airplanes that destroyed the twin towers of the World Trade Center in New York were not of course designed in order to serve as lethal bombs but they were used so. Verbeek notes:

> Designers … [of course] help to shape the mediating roles of technologies, but these roles also depend on the ways in which the technologies are used and on the ways in which the technologies in question allow unforeseen mediations to emerge. The suggestion that 'scripts' are a result of inscriptions (Akrich) or

'delegations' (Latour), therefore, does not do enough justice to the complex way in which mediation comes about. Designers cannot simply 'inscribe' a desired role of morality into an artifact. The mediating role of technologies is not only the result of the activities of the designers, who inscribe scripts or delegate responsibilities, but also depends on the users, who interpret and appropriate technologies, and on the technologies themselves, which can evoke 'emergent' forms of mediation (Verbeek 2006a: 371-372).

In this regard, technological mediation goes beyond the desired ends that designers might inscribe into technologies because these technologies are "inherently moral entities" (ibid). Verbeek emphatically establishes that technological artifacts have moral agency. He argues that as long as ethics is "about the question how to act," technological artifacts do also prescribe certain moral behaviors, albeit in an "implicit" way. This means, designers are "doing 'ethics by other means': they materialize morality." Technologies *act* "in the sense that they help to shape human actions and experiences" (Verbeek: 2005b).

This does not however mean that technologies do have the autonomy to act in their own. There is no action of artifacts without the intentionality of humans. When artifacts are said to have the potential or the capacity to materialize morality, it means that they co-shape the moral decisions humans make. Medical technologies might for example detect that an unborn child has deadly disease. On the basis of this technological mediation physicians might suggest abortion as the best possible solution. The would-be parents may as a result reach a well considered decision to accept the recommendation of the doctors. Verbeek here notes that such a "decision is not 'purely' human" as much as it is not "entirely induced by technology."

How does materializing morality mean? This largely means technological artifacts materialize or embody the ethical precepts of the designers, producers or the society in which the artifacts are produced. Ethical precepts are therefore not limited to discourses or spoken and written maxims. In other words, ethics has taken a material form via technological artifacts.

Here, I have found a striking parallel in between Verbeek's theory of materializing morality and Ihde's idea of "materializing the conceptual" (1990: 184-187). According to Ihde, one of the characteristic features of modern science is "its technological embodiment." Ihde is especially

interested to demonstrate the significance of computer technology in mathematics. Before that he discusses Ian Hacking's analysis of technological embodiment of modern biology. As Ihde pointes out, Hacking in his book *Representing and Intervening* (1986) has been able to show how the microscope was instrumental to forge microbiology. Similarly, Ihde shows the place of the computer in producing graphs and other modes of "sensory perceivability" (Ihde 1990: 186). This is what materialization of the conceptual mean for Ihde. Mathematics and the other sciences have taken a material turn in the sense that they have been technologically embodied. Thus, analogous to this materialization of the epistemological, we have materialization of the moral in Verbeek. He argues that morality is materialized in technological artifacts.

But Verbeek also argues that designers of a technology can only do something limited because after all technological artifacts are defined not only by their designers but also by the users. The use contexts of artifacts define their identity:

> Only when human beings use them, artifacts become artifacts for doing something. And this "for doing something" is determined not entirely by the properties of the artifact itself but also by the ways users deal with them…. (Verbeek 2006a: 371)

In this regard, technologies can be used in totally unanticipated ways. The example of the transport planes turned to missiles in 9/11 has become a classic contemporary example now. Verbeek further notes that even if technologies are being used in ways that were first intended by the designers, they may at the same time mediate unforeseen things: the design of revolving doors prohibiting people who use wheelchairs was a form of mediation unanticipated by the designers.

According to Verbeek, it is here that the limitation of Akrich's idea of script and Latour's notion of delegation comes out clearly. These concepts do not account for the "complex way in which mediation comes about." Verbeek further notes:

> Designers cannot simply inscribe a desired form of morality into an artifact. The mediating role of technologies is not the result of the activities of the designers, who inscribe scripts or delegate responsibilities, but also depends on the users, who interpret and appropriate technologies, and on the technologies themselves,

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which can evoke emergent forms of mediation. (Verbeek 2006a: 372)

There are two possible things that designers can do in a way to make morality part of the technologies themselves. The first is to help designers reflect on the possible aftermath that artifacts may bring about and hence help them to find ways to stop or minimize the unwanted results of the artifacts. The second is to let designers embody "specific forms of mediation" in the artifacts (Verbeek 2006a: 369).

Verbeek stresses that as long as the question "how to act" is the central ethical question, and in this regard, insofar as technologies can answer this question, then we can say that things can have morality like humans. Nevertheless, Verbeek argues, the capacity of the artifacts to meet the issue at hand might not be sufficient condition to ascribe morality to things. For critics might forward the following objection:

> Things, after all, do not have intentions. They are not able to make decisions about their influence on human actions, and therefore they cannot be held responsible for their "actions." On the basis of this argument, it would be a mistake to describe the influence of things on human actions in terms of morality. Steering behavior, as well as showing steered behavior, is something entirely different than making moral decisions. (Verbeek 2006b: 119)

Verbeek tries to meet this objection in two ways. First, he makes it clear that things have morality does not mean that they bear responsibility for their actions because, for this, it must obviously be the designer or the producer that takes the accountability. Secondly, since artifacts do answer moral questions, they should be taken as moral agents – but it must again be clear that they do this not by claiming moral rights but be helping people to take moral decisions. In other words, things are moral agents because they "help to *shape* morality" (Verbeek 2006b: 121). We might as well add the point that if the "moral community" has been expanded to include slaves, small children, mentally retarded individuals, people in commas, animals, and the environment, there is no reason why it should not include technologies or things at large.

4.2 Mobile Telephones and Shopping Center Designs: Semiotics and Mediation

The foregoing discussion, especially that of Verbeek's critical interpretation of Latour and Akrich, is part of the attempt to show how we can expand postphenomenology. We will do more of this by employing the conceptual tools to the cases. We have two cases for analysis here. Section 4.2.1 will be discussing mobile phone use in Ethiopia. By way of giving background information, a very sketchy outline of the condition of communication in the country will also be provided before the case analysis. In section 4.2.2, the case of shopping centre designs will be examined within the context of long standing open air market tradition in Ethiopia.

4.2.1 Mobile Telephone in Ethiopia

Ethiopia had been able to partake in global communication networks such as telegraph, telephone and postal services early on. As shown in chapter three, it was only a decade and half after its invention that telephone was introduced to the country. By 1894, a long distance telephone line was in place – the capital was connected to Harar, a province in eastern part of the country and about 500 km from the capital. Subsequently the country has been able to have a wide network of telephone lines connecting most urban and rural areas. As early as the first decade of the 20th century, Ethiopia was a member of International Communication Union.

Despite these early beginnings, however, the cumbersomeness of the bureaucracy as well as different socio-economic and political problems that the country suffered from especially after the 1970s were serious drawbacks holding the development of telecommunications and the rest of the service sector. A good number of the telephone lines in the rural and semi-urban parts of the country do still work on the basis of very outdated systems. Regional centers that use microwave telephone lines were very few in numbers up to the last few years.

The work of digitalizing lines (so that they could be compatible with modern communication technologies around the world) is a quite recent endeavor to the capital and a few major cities of the country. In this respect, when mobile phones were introduced a few years ago, it was like a huge, or, better put, unnatural jump, to the country's communication experience. In a country where the majority of the people do not have access to ordinary telephone lines, the mobile phone technology was rather Martian. However, as we shall see soon,

the mobile telephone communication system is probably even more necessary to countries like Ethiopia than to well-developed regions of the world. The mobile telephone has been able to enhance communication to an unprecedented degree.

I have two sets of accounts as to how the mobile telephone system has been able to affect life in Ethiopia. The first set refers to the initial stage of the commencement of the service, end of the 1990s. The second set of accounts recount about the developments the last two years, a time when the technology has been expanded to include many of the regions and towns throughout the country.

We have already seen how the introduction of the telephone and piped water attract attention and reaction from various sectors of society before a century. There was on the one hand opposition from the clergy, and welcome reception on the part of the emperor, some government officials and lyricists on the other hand. Similarly, but minus the opposition we witnessed a century age, the introduction of the mobile phone in Ethiopia has given rise to numerous stories that reflect how this new communication device was shaping the human-world interaction. At the beginning, around years 2000, 2001 and 2003, a whole lot of anecdotes, and very entertaining and humorous stories used to circulate everyday. As we shall see soon, these stories very well reflected how people used and perceived the new technology, and, as just stated, they show how the technology started to affect the lives of people in the country.

I have classified the cases/stories in question into two. The first category consists of stories that revolve around the operation ff the mobile phone. During the time when the mobile phone came to Ethiopia, only a few people managed to have it. The reason behind this is financial and administrative. Let me begin by the latter. Telecommunications service in Ethiopia is catered by the government. In this regard, the process of distributing the mobile phone as well as the ordinary telephone line service had been very sluggish. (This has changed a lot since the last two or three years.) Thus, no matter how many people applied for the service, they had not been able to get it at the moment they asked for it.

Financial constraint was the other reason. Since the service is government owned, customers would not have any other choice in terms of price. And the kind of money the government has been asking for getting the service was a little bit too high for many middle class educated people. But what made it worse during the first few

months of the introduction of the service was that the government had been asking for collateral. For these reasons, most people who afforded to get the service were business men and women. And since a good number of wealthy people in Ethiopia are not educated, it wouldn't be difficult to imagine the kind of difficulty these people would have when they use the service for the first time.

Let us look at two examples that illustrate the difficulty of people in understanding or "reading" how the telephone works. One man was said to have dropped by a pub in order to avoid his friends while he was supposed to meet them at a place which he usually visit in the evening after work. While he was enjoying alone in the pub, his mobile phone rung. He picked it up. When he realized that the call was from his friends, he answered the phone by saying: "How do you know that I am in this pub?"

Another story on this line is related to a person who became very pompous for buying a mobile telephone whereas he did not have the orientation or the knowledge to operate it properly. And his friends were very much annoyed by his behavior because he always moves around holding his mobile phone with his hand by way of showing off that he has got one. (In Ethiopia, and probably in many other countries, having a mobile phone has been considered – and might in fact continue to be so for sometime – as a status symbol.) Since the way this man was acting was a recurrent topic for them, they discussed the matter one day in order to devise something that could help them to return him to the right way of behaving. Then they called him on his mobile phone from a place from where they can see and control his movements.

Friends: We are calling you from Tele [a habitual way of referring to the Ethiopian Telecommunication Corporation].

The man: Why are you calling me? I have already settled my bill. [He said this a little bit nervously because one of the reasons why people usually get a call from the corporation is at moments when they have not settled bill on time]

Friends: This time our call is for a different purpose. We have come across a serious problem on our central computer here – the computer which monitors the server. By the way, do you usually carry your mobile telephone with your hand?

The man: [A little bit taken aback and amazed] What? Yes, you are right!"

Friends: Oh, there you are! Our server here is being disturbed because of the movements of your hand.

The man: Oh, I see! What can I do then?

Friends: Either you should always put your mobile [phone] in your pocket or buy a case for it and hang it on your belt. Please listen carefully to the following instruction. We would like to check something right now. Would you please walk around by carrying your hand up so that we can once more see the movement here on our screen?

The man: [Completely fooled by what he had been told from the other end, he carried out the instructions of his friends who were merely making fun of his acts.]

The second category of stories/cases revolves around the significance of the mobile phone in denoting one's social standing in terms of wealth or social recognition. When the cell phone came to Ethiopia, the first cluster of telephones begins by number "20." The second cluster of telephones were assigned with number "21," the third "22," the fourth "23," the fifth "24," etc. Telephones beginning with "20" were therefore nicknamed as "VIP" (acronym for "Very Important People") because most subscribers were high ranking officials in the government. Telephones beginning with "21" was dubbed as a number for "investors," which in a way refers to rich business people; "22" for brokers; "23" for snobs – people who pretend as if they are members of the well-off. "24" is funnily denoted as "I am in a bus." In order to understand the last instance, we may need to have a little description of the context in which it is used. In Ethiopia, especially in the capital city Addis Ababa, there are three major transportation means. The first is private cars, the second is taxis, and the third is buses. Using a city-bus is regarded as the lowest possible means of transportation because the buses transport people by stacking as many people as possible. They function on the basis of subsidies from the government and the transport people for small fees. Most middle class people therefore would prefer to use taxis if they do not have a car.

Besides, if one is using a bus, it is very unlikely that he or she gets a seat. Many people have to stand, holding the bars or the poles of the bus as a support. The intended meaning of the expression for mobile telephones starting with number "24," namely "I am in a bus" is that one cannot pick his or her mobile phone because his or her hands, both of them, are busy holding the slab of the bus. This designation implies that the mobile phone has increasingly become affordable and ordinary that even people who use the bus have started to use it.

4.2.2 Discussion of the Cases

The conceptual schemes put forward by the phenomenological perspective would be very useful here in order to analyze some of the stories I put forward in the use of mobile phones in Ethiopia. In line with what the earlier Heidegger said, the manner in which the mobile phone has been used in Ethiopia reflects how a given technological artifact can shape the relation between its users and the world in which they live.

At this point, as I have already touched upon above, the ideas that Verbeek developed from the earlier Heidegger's point of view comes to

the fore: namely, "how specific technologies disclose reality," and the way in which they can establish "new relations." The story that classifies mobile phone users in terms of their social status, namely "government officials," "business people," "brokers," etc, shows how this newly introduced artifact has fostered a social grouping that that has not been there before, or shed light on something that has been there before but clouded for different reasons. In other words, the mobile phone seems to have established a new relationship in society by introducing a new classification, or solidifying what has already been there though very loosely or hazily.

More importantly, we see here how technological artifacts can mediate a new form of knowledge. Notwithstanding whether the social grouping we have come across was something new, we are witnessing that a new form of knowledge is in the making because of the mobile telephones. In her observation of the network of electricity in Burkina Faso, Akrich has noted how the network was instrumental to elicit or produce knowledge, and how this knowledge was "transported" to other spheres:

> Once technical objects are stabilized, they become instruments of knowledge. Thus, when an electricity company sets differential tariffs for high- and low-consuming domestic users, for workshops, and for industrial users, it finds ways of characterizing and identifying different social strata. If it also chooses categories used in other socioeconomic-political network, then the knowledge it produces can be "exported." "Data" can thus be drawn from the network and transmitted elsewhere, for instance, to economists concerned with the relationship between the cost of energy or GNP and consumption. (Akrich 1992: 221)

Similarly, the classification we discussed, although it was not meant for addressing any studied or serious concern – at least initially – it must have hinted at or brought to light the kind of social strata we have in certain urban centers of the country. As Akrich states, the data elicited on the bases of the observation as to who were the first to get the access to the service under discussion might serve as a point of departure for sociological studies on the economic or social stratification of urban centers.

So far we have been dealing with accounts during the first few years of mobile phone use in Ethiopia. We also need to have a brief look into the recent developments very briefly. This will help us to enrich or expand the postphenomenological perspective further.

Mobile telephone service has spread to almost all the regional centers in Ethiopia now. Small rural towns and villages surrounding big urban centers also benefit from the wider coverage. The influence of the technology can be seen in various sectors. Business people, brokers, teachers, students, housewives, peasant farmers, – people from almost every walk of life – have started using it. We see how people's lives have stared to be affected in many ways dues to the new culture of the mobile phones. People have started developing new behaviors. For example, in Ethiopia – this might also be the case to many other traditional societies around the world – people do not normally strictly observe appointments. And even if one is very strict and very punctual, he or she would be forced to "understand" the reasons why the other party is not punctual. Now, as I see it, the mobile telephone is changing things now. People can no more excuses for not attending appointments on the agreed time. Should a person be forced to be late for an appointment, she has so many opportunities now not to risk a disappointment from other party: calling the other party and ask for a postponement, cancelling the appointment itself, etc. These days we have started to see people taking public transports or driving cars frantically calling and begging the party to wait for some more minutes or postpone the time.

The mobile telephone has also started to affect family life tremendously. College students that move away from their families for sometime are enabled to constantly keep in touch with their parents and other family members. Interpersonal relations are being shaped in a new way. In a society in which the relation between a husband and a wife is not transparent, the mobile phone has opened up, or has created a new form of relationship. Because married women could easily reach their husbands, the level of interaction has changed now. Spouses can easily rich their partners.

We come across people who switched off their mobile telephones in order to avoid calls, or the "nuisance" that comes from the other end – namely, from wives, bosses from working places, unwanted friends, etc. However, this very act of switching off or not answering one's a call would rather alert and exasperate the other end and hence lead to a boomerang; for the very absence of a response for repeated call gives the message that one does not want it, or that one is engaged would imply that one is deliberately avoiding the person at the other end. This would especially be a great problem if it is happening recurrently between married couples. Married couples also use the telephone to watch over each other's behavior. We see people running

out of noisy bars when they calls from home – some would run as if they have a time-bomb on their hand; but is indeed a time bomb if one is not answering it on time. As much as it helps to strengthen fidelity among couples, it has also started to exasperate it. In June 2006 there was news on television about a homicide – one man killed his wife. According to the story, the person who committed the crime told the police that he did that because he checked her mobile phone and found the call she made to a person with whom he had been suspecting her for having an affair.

It has also been observed the role of mobile telephones in the political sphere. People discuss political issues. They inform update each other in situations of difficulty. The political atmosphere in Ethiopia has been very tense before and after May 2005 election. The political parties running for parliament seats during this election have been using SMS message in order to reach supporters. The opposition Coalition for Unity and Democracy had especially effectively used SMS texts and was able to win all the seats for the capital city – though everything was reversed later on by the government in power now and turned to square one. The messaging service was banned immediately after the election on the pretext that the opposition is using them to incite violence. People can only receive SMS from outside the country.

Mobile telephone is therefore changing or configuring people's behavior. Not only is it mediating or reinforcing already existing social relations and cultural values but also it will have enormous potentiality to forge new ones.

4.3 Shopping Center Designs

4.3.1 Background: From Open Air Markets to Shopping Malls

Shopping centers, malls and supermarkets are very recent phenomena in Ethiopia. The prevailing market forms are urban and rural periodic markets, small and easily accessible neighborhood shops (*souks*), *gulets* (small neighborhood traders' open air stalls for fresh and semi-processed food items), cattle selling open-space stands, and a variety of other traditional markets. There are so many big marketplaces which work periodically throughout the country. The typical marketplace (a market that is usually attached to small and big towns and serve both town and rural people) is a kind of market that provides a variety of goods (including manufactured consumer goods such as clothes, soaps, dry cell batteries), staple crops (such as teff, wheat, sorghum, maize, beans, chick beans, etc.), cash crops (like

coffee and oilseeds), fruits and vegetables, cattle, sheep and goats, chicken, etc. The typical marketplace works once or twice a week.

Typical rural market in Ethiopia

Nonetheless, it goes without saying that these traditional markets are not only there for providing goods and services. They are also forums of a variety of social interactions and cultural transactions. Some people go there not only to buy or sell goods but also to meet relatives and friends. Some people may even visit the marketplace in order to gather or give information regarding some crucial but non-market matters, or to get their future spouses, or to look for and kill a person with whom they have blood-feud, or to simply enjoy the fragrance and sight of the colorful buffet of materials for sale.

Market for cattle and camels

As would be the case in many African countries, people in rural areas of Ethiopia might have to travel long distances in order to reach markets. They might have to cross big rivers and travel through very unfriendly territories. But one cannot recoil from going to these periodic markets because of harsh environmental conditions or because they have to walk long distances, or because of a possible threat from adversaries. For marketplaces are the bloodlines of the rural economy and one of the cultural citadels where people transact moral, aesthetic, and cultural values. Besides, the fact that people transact in very expansive places has great significance in many ways. In the first place, that one can move freely and enjoy the colorful view of the variety of goods, food crops, cattle, pack animals, etc. has its own use. The marketplace is in short a cultural mosaic where every kind of transaction is going on.

In view of this long standing and well established market tradition, retail and wholesale shops, supermarkets, shopping centers, department stores and malls are novel phenomena to Ethiopia. In fact, relatively speaking, street and neighborhood shops, kiosks, boutiques, and public markets that municipalities lease to retail traders might not be taken as newly formed market traditions. They were there for decades. There were also very few number of shops christened as supermarkets as far back as forty years ago. But when it comes to department stores, shopping centers and malls, they are surely new additions, or rather juxtapositions, to the already existing markets. Most of these newly emerged shopping centers are housed by beautifully designed and highly ornamented buildings. A few of these are multistoried buildings located far from the usual shopping quarters. The questions that need to be dealt with in the subsequent sections are: How do people who have been accustomed to traditional marketplaces and small shops cope up with these newly emerging shopping center designs? Do these newly emerging architectural designs buttress certain social and moral behaviors to the discouragement or exclusion of some others? If yes, how does this happen?

4.3.2 Buildings as Artifacts

In an article entitled as "What Building Do?" Thomas F. Gieryn (2002) dubs buildings as "walking-through machines." He adds: "Buildings are technological artifacts, made material objects, and humanly constructed physical things. To set them this way brings buildings

within the compass of a promising theoretical orientation developed initially for the study of machines" (Gieryn 2002: 41).

As Gieryn points out, this way of picturing buildings – i.e. buildings as technological artifacts – would help us to uncover the various meanings that they may have in their contexts of use. On top of this, some of the conceptual tools discussed above are in par with the working vocabulary of designers or architects. An expression such as "sketching a design" – an expression which is probably a household term for the architect – does somehow match with an apparently Akrichean phrase like "inscribing a script." When designing a building, an architect is inscribing or forging a way of life. Gieryn establishes:

> To some degree, every design is a blueprint for human behavior and social structure, as well as a schematic for the "thing" itself. Designers necessarily theorize about social life at least as much as sociologists do: in order to design the contents of a machine that will fly, designers must decide which pattern of behavior and institutional arrangements they must respect as intransigent, and which are malleable enough to conform to the demands of the artifact itself (2002: 42-43)

Similarly, a building design is not only a blueprint for the construction engineer to materialize or erect it on the ground but also a blueprint for materializing certain moral values and behaviors on the field of ethics. In other words, they are scripts by which humans act as social actors. But, as discussed by Verbeek (2004, 2005a, and 2005b), the idea of script does have a restricting aspect. When we speak metaphorically that buildings are scripts, we are somehow suggesting that users of these buildings do not go beyond the designers' inscriptions. This would again undermine the mediating power or "intentionality" of buildings whereas in reality these buildings as technological artifacts do have the capacity to shape the life of humans beyond what the designers put into them. The case material that this section considers, namely newly built shopping centers in Addis Ababa, would demonstrate the mediating role that architectural designs and their material expressions play in forging or co-shaping new values and social relations.

4.3.3 Discussion of the Cases

This section of the paper tries to apply some of the theories we have considered so far. The case refers to newly constructed public buildings in Addis Ababa, Ethiopia's capital city – buildings that serve as shopping malls. I would call them at some stage 'black boxes' because I assume that for a country in which open markets are the only markets available for the greater majority of the people, relatively huge and architecturally complex buildings (now very few in number) are opaque and impermeable objects for many people. They are there as black boxes to be inspected while deterring many from approaching and experiencing them. Thus, only few people might consider them as shopping malls.

This does not however mean that this approach-avoidance relation will continue indefinitely. People will surely start to get used to them and consider them as shopping malls; they might even start to construct or attribute originally unintended values and meanings. The major questions that this paper will try to answer are: how does the emerging architectural design of shopping malls in Addis Ababa affect values and behaviors of people? Why do people consider them as opaque and unapproachable during their first few encounters? Winston Churchill is known to have said "**First we shape buildings**, **then they shape us.**" Thus, how do these architectural designs impinge on the values of people who have spent their time shopping in open markets and small shops? How are people trying to appropriate or shape these structures and designs to their tastes?

As has been noted, the description and analysis that follow are done within the context of philosophy of engineering design. The basic assumption here is that buildings are technological artifacts. The task at hand is to explore how engineering designs prescribe or shape the moral life of people who use (or excluded from using) the technological objects that the designs gave rise, in this case buildings or newly built shopping centers.

The remaining part of the paper is divided into four sections. Section two will *briefly* address the pop up of new shopping malls in Addis Ababa and what they meant against the background of the tradition of open markets. Section three will be dealing with the key conceptual tools that the subsequent discussions and analyses would be based on. Divided into two subsections, section four will discuss how the newly emerging architectural designs of department stores materialize the

morality of social relations and new cultural values. Section five will come up with concluding remarks.

Mall Designs and Materializing Values

As has been tried to be considered from the outset, most markets in Ethiopia are open-air markets. Even in the capital city Addis Ababa there are a good number of traditional open markets where traders sit on market stands spreading what they have in front of them. On top of this type of markets, traders and retailers provide goods on half open verandas. Merkato, probably one of the largest open air markets in Africa, consists of such selling stands. You can practically find anything starting from variety of spices, grains, diary products, vegetables, fruits, etc. to clothes, shoes, furniture, household utensils, spare parts for cars, etc. This does not however mean that there are no shops. There are a lot of small retail shops adjacent to streets and residential areas. Supermarkets are of course recent phenomena.

When it comes to shopping malls, they are just emerging. The few shopping malls available at this time are new additions. Their number may not exceed a dozen at present (referring to August 2006).

Dembel city-centre – one of the first shopping malls in Addis Ababa

There are three issues I would like to discuss about these shopping centers. The first issue or rather hypothesis is to consider these shopping malls as black boxes. Then, I will try to focus on what we find when we are opening these black boxes and what they meant or could mean to different sectors of society. Finally, I will like to explore as to what is the morality of these shopping center designs.

Shopping centers as black boxes

I live in southeast Addis Ababa, in an area widely known as Meskel Flower. When I go to and from my workplace, almost everyday I pass by the building you see above. I have to walk right on the pavements of this building in order to take a taxi. However, I didn't have the appetite (or the courage?) to go in and look around. I know that it is a shopping mall. Don't I have the financial capacity and the demand for some articles? I do but I didn't dare to have a look. I asked a few colleagues and friends if they have done so but I didn't find one who said yes. Then, in the subconscious, I might have simply commented to myself, "Oh, birds of the same feather…" and forgot about it. I said this because I remember now that the building was then an object of fascination for Addis Ababans. Many young men and women must have flocked to this mall only to look around and appreciate the interiors.

But then, I didn't stop asking myself "What does deter me from entering the building and see what it has?" I sometimes almost decided to do that first visit but postpone it on pretexts. Still then, that question was on my mind for sometime. However, the question "What deters me… was transformed to "What deters many people from using it as a market?" This question started to come more pointedly when I was contemplating for an additional case for my thesis. Suddenly, one day, even though by then I have already visited the mall several times, I almost grumbled to myself "Oh, these are black boxes!" (It is important to note here that by the time I was decided to take the issue as a case material for my research project, a handful of other buildings have been erected and already started work.)

Following this, I began asking colleagues in the university and a few friends and relatives about what they feel about going to such shopping malls. Quite a good number of my colleagues were frank in their answers. "You know," one of them begun wondering, "you know, I never thought of it before…. Yes, of course, I know that something

do deter me from going to these malls. But I really do not know what it is."

Later on, when I confided to him what I am planning to do and shared my ideas with him, he told me honestly that he has had that unknown "dread" in him. I replicated this query with other people, university students, friends and relatives and I was able to gather from most that each has something he or she shares with me. Though the reason differs from one person to the other (some do not go there because they assume that they wouldn't find things for fair price, others think that "the mall is not the kind of place I go to", etc) almost all have something that withhold them. Then my questions started to take shape more in line with theories that revolve around ethics and philosophy of technology. Here are a couple of them: Why do people consider them as opaque and unapproachable during their first few encounters? How do these new architectural designs affect values and behaviors of people?

But before answering these questions, which I will do in the next two sections, let me say a little further on the nuisance "Why black boxes?" The prevailing mode of economy in Ethiopia is to this date principally peasant subsistence economy. As a result, periodic rural markets and open air and semi-open markets in urban areas are the rule than the exception. Hence one can imagine the jump from this gamut of open air markets and small retail shops to these newly emerging multi-storied shopping buildings whose façades give them rather majestic looks built for non-market purposes.

As could be the case in many other open air market cultural constituencies, markets in Ethiopia are literally open. You can see everything that traders supply on their stands while you pass by. By contrast, individual residential houses are rather metaphorically closed, which means houses are culturally conceived as entities of privacy. Especially, in urban areas people like to build big fences around their homesteads. Government offices and public buildings are rather fortified. They are repellently closed in many ways. When it comes to palaces and central government offices, they do not even allow people to approach their hugely fortified fences way above and beyond cultural reasons of course.

In this regard, people are encountering new markets whose façades and overall structures *look like* as closed as palaces or ministry offices. Besides, these buildings are not functionally and spatially integrated to the communities and lifestyles surrounding them. As we shall see

soon, yes these shopping malls and supermarkets are of course enforcing new values. After all markets, whatever their nature, are places for transacting not only goods and services but also cultural values.

But the fact that there is some kind of obstructions in their very designs – something very obvious given the cultural contexts in which they function – people who own these shopping centers do very well realize that this is the case. And consequently they use different means to find a way out to boost the number of their customers. Television and radio adverts are usually utilized for this purpose and they somehow improve things. But I have observed that the effects of a few of the ads could do the opposite of their intention, i.e. ward off potential customers instead of attracting them. One typical example is an ad that brags about the cleanliness and tidiness of the shops in one of the malls. The ad even tries to allude to the untidiness and filthy nature of Markato (open market in Addis Ababa) saying "You will never be soiled by mud and dirt if you come to us" while showing a couple preparing to the shopping centre dressed up as if they would go to a wedding party. "What is then unhelpful about this?" one may ask at this point. In the first place, "true" markets are not supposed to be clean. Their untidiness is a perceived to be part and parcel of their nature. But more importantly markets are supposed to be where you move freely without being dressing formally and without giving any due to whether the mud on the bottom of your shoes splotches the floor of any of the shops. (Note that many side-roads in Addis Ababa are not asphalted – or those which are asphalted, they are paved very poorly – and could therefore be very muddy in rainy days.)

However, it is important to note at this point that these newly emerging shopping malls are in fact engendering a good deal of influence and bringing in new values despite their apparent anomalous nature. G. Richards wrote with reference to architectural designs of malls:

> …it must be kept in mind that architects do not design malls for architects; they design them for developers and retailers that are interested in creating malls and other shopping centers to attract consumers and keep them coming back. (quoted in Goss 1993: 21)

I would add the malls are also there in order to create new tastes and shape new values. The next section will elaborate on this issue.

Opening up the boxes and finding the scripts

I have two reasons for utilizing the expression "opening up the boxes." First, I would like to continue using the metaphor I already employed in the foregoing discussion. Secondly, which is something that logically follows from the first one, I would like to represent the idea that a closer examination of these malls discloses their meanings as malls. Following what Akrich and Latour say of scripts, I use the expression "finding the scripts" and relate that the shopping malls are partly scripts or designs of architects primarily intended to be malls. In fact, as we shall see under section 3.3 (deliberately titled as "Beyond scripts") these shopping centers also mediate or actively shape cultural patterns way beyond and above what the designers put into them. But what matters at this stage is that we open these black boxes, and read their scripts. We might as well switch to a typical Ethiopian metaphor here: Opening up the *kitab* and reading the magical scroll in it[19].

In order to unpack what possible scripts architects of these shopping centers engraved into their designs, we have to know what people (such as vendors, shoppers, ship-owners, architects, etc.) feel about these shopping centers or how they describe them. One way of doing this was to take up field observations, which was conducted in August 2006 in two malls[20]. Consulting a few newsmagazines' accounts served also as an additional input for the study. I will therefore look into these accounts but very briefly.

During an interview I conducted with a shop owner in Adam's Pavillion, a shopping centre located in Southeast Addis Ababa (close by the headquarter of African Union), the first thing he said when I asked him how he feels to be there was something that seems to reflect what architects and builders of such buildings probably feel. He said:

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[19] Kitab, probably directly adapted from the Arabic ("kitab" means book in this language), is some kind of miniature book (mostly not greater than a size of dice) in which it contains a scroll. This scroll, mostly fashioned from animal hides and sometimes simply a piece of paper) is used to inscribe words by way of magical spells. The scroll is folded and wrapped dexterously in a folder that gives it the look of a book. Parents hang them on threads and make their children wear them as necklaces; these kitab is believed to guard off these children from evil eyes, nightmares, etc. It is important to note here that it is believed that a kitab can go wrong because the diviner, deviously or unintentionally, might prescribe a kitab wrongly. In this regard, a priest or a diviner who have a superior power would open up the scroll and read it what it is engraved into it. Thus, when I say, by way of an alternative, that we might as well say "opening up the kitab and reading the scroll in it" it could even give more sense to a person well acquainted with the Ethiopian cultural field.

[20] After formulating the questions, data was collected on the basis of interviews. This was done by three female students (from the Philosophy Department, Addis Ababa University) and myself.

I used to work in Markato, in the open air. I was assisting my father. Then our business grew and we changed to the centre of the town and used to sell clothes in a big shop. That was in Piazza. Now, what we have is entirely different from what has been before. *I feel that I have finally joined the new world*.

The designs of the new shopping centers seem to reflect their sensitivity towards things contemporary. In a way the architects are inscribing new shopping styles and commercial transactions. As G. Richards stated (quoted above in Goss 1993), the architects are after all designing the malls for business men and woman who would like to bring the experience of other countries, introduce department stores instead of small isolated retail shops, etc. and sail this uncharted sea of profits. Though at first these new shopping styles might simply win the favor of a few people[21], they are also there in order to create new customers. And malls have already started to attract new shoppers because of the new elements they have introduced, something that has not been in the open air markets. Substantiating this, one young woman in her early twenties related:

Yes, I come here sometimes. We can find here quality and a variety of goods unlike open markets. Besides, we can find everything under one roof. You can find everything you need…. Plus, the atmosphere is good. There are no pick pockets. The place is not crowded. Thus, it is good to shop here. You can find everything.

During the past fifteen years, the construction industry in Addis Ababa has grown. Due to growing efforts to liberalize the economy, many real state developers have come into being. Investors have started to build private hospitals, schools, colleges, etc. A new class of wealthy people is appearing as the poor get poorer. If you look around the night life of Bole area, a place where many of the residents are well off, you would clearly see new, "modern" lifestyles in the making. Thus, malls, very stylish cafes, bars and restaurants are only parts of these changing lifestyles. These are varieties of scripts that shape the lifestyles and behaviors of people in various ways.

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[21] These may refer to wealthy people, fashionable city boys and girls, Ethiopians who come from abroad for vacation, the diplomatic contingency, or the foreign dignitaries who work in different international organizations, aid agencies, etc.). The shop owner I mentioned above told me, very proudly at that, that a great majority of his customers are diplomats.

Beyond Scripts: Morality of Shopping Center Designs

As discussed so far, the designs of the shopping centers do affect the way people behave. But then, these designs or buildings do go beyond scripts and mediate other unintended values. In other words, the behavior of the people using (shopping or whatever) these buildings is not limited by the scripts of the architects.

But there is one limitation that Verbeek points out: namely, the manner in which the concept script is used by Akrich and Latour seems to encode or preprogram the way these new market structures relate to or affect people's behavior. As we have already seen above, Verbeek (2006a) argues that although designers do shape the mediating roles of technological artifacts, the mediating roles of these artifacts go beyond and above what they were designed for. The mediating roles of technologies are not simply the results of the scripts that designers encode into them. These mediating roles of technologies do also depend on the use contexts of the technologies and, equally importantly, "the technologies themselves, which can evoke 'emergent' forms of mediation." (Verbeek 2006a: 372).

In this regard, the mediating capacity of the shopping centers we have been discussing so far really goes beyond what has been intended by their designers and owners. And this is clearly seen in the malls in question. As would be the case around the world, these malls are not only shopping centers as such but also civic centers. People meet and transact values. The restaurants within the malls are meeting places for people who think that they are of similar social standing. There are also clear indications that these shopping centers are actively contributing in forging social classes. People enjoy the physical distance that they have in these shops in comparison to the cramming tendencies of the open air markets. This physical distance is also symbolic of the social distance that such people might want to create. Put it concisely, these new architectural designs are materializing a set of moral and cultural values.

CHAPTER V

CONCLUSION

This chapter tries to bring out more clearly my own view on what we have been discussing so far. I have, of course, sufficiently analyzed the weak points of the various theories of technology transfer. But since the criticisms were made at various stages in the development of the thesis, one may not be able to get the central concerns of the paper at once. Hence the need for a conclusion. This chapter is divided into the following sections. Section 5.1 will provide a summary; section 5.2 will recap and critique the idea of cultural preparation of technological modernization that Lewis Mumford and Lynn White have offered; section 5.3 will show why I need to go beyond the views of these historians of technology and adopt Ihde's postphenomenological theory of technology transfer (this section will once again critique Ihde's position); section 5.4 takes up and develops Arnold Pacey's conception of the dialogical or conversational relation between technology and culture in order to correct Ihde's weakness; and finally section 5.5 will present my argument that phenomenology or for that matter many philosophies of technology that take technology-culture as one complex whole needs an elaborate theory of culture. As we shall see in the final section of this paper, I have come up with what I tentatively call a conversational theory of culture – a theory that can further be developed in order to elaborate technology-culture interaction as an interaction *within* instead of an interaction from *without*.

5.1 Summary

As has been shown in the course of our discussion so far, the thesis mainly aimed to accomplish three things on the basis of the three research questions. The research questions that the thesis has been trying to grapple with were: (1) How can the postphenomenological philosophy of technology be expanded and translated to the cultural level? (2) How does this expanded version of postphenomenology help us to conceptualize and analyze the implications of technology transfer from one cultural context to the other? and (3) How can this postphenomenological theory be used to explain the technical mediation of cultures?

By way of answering these three questions, we have been discussing the following. Firstly, drawing on the postphenomenological

perspective as developed by Don Ihde and Peter-Paul Verbeek, it tries to show at the theoretical level how technological artifacts mediate human-world relation. Postphenomenology, unlike classical phenomenological theories[22], mainly accounts the active role that technological artifacts play in co-shaping human-world relation. A few of the sections for the first two chapters have followed the main line of argument that Ihde and Verbeek pursue.

Secondly, with an explicit aim of showing how technological modernization could shape cultures and, in turn, how technologies could also be culturally appropriated, the thesis inquires into theories of technology transfer. In this regard, we have seen two points of view, namely (i) the idea that there must be cultural preparation for technological modernization to be possible – a perspective developed by historians of technology such as Lewis Mumford, Lynn White, Jr., Arnold Pacey and John M. Staudenmaier –, and (ii) the understanding that technology transfer is cultural transfer, a view which was developed by Ihde. Ihde argues that the transfer of complex technological systems in the context of twentieth century may even take us to conclude that technologization may mean Westernization. The first section of chapter three has critically looked into Ihde's theory of technology transfer and we shall further discuss it in this chapter in relation to the views of the historians of technology just mentioned and the cases we have analyzed in chapters three and four.

Finally, we have also been analyzing how certain technological artifacts or systems have been reconstituted by, and, in turn, affecting or shaping the culture that was there before the introduction of the technologies. This has enabled us to test and use various theories of mediation including the semiotics of techniques that Madeleine Akrich and Bruno Latour developed. These issues were discussed in the last two chapters.

5.2 The Idea of Cultural Preparation in Mumford and White

I discussed (chapter 2, section 2.1) Mumford's and White's accounts of the history of technological development in Europe in order to demonstrate what cultural preparation is all about. We have on the one hand Mumford's periodization of the development of the machine

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[22] Classical phenomenology, by contrast, conceives of Technology as one ensemble and considers it as something inherently alienating human experience.

as *eotechnic*, *paleotechnic*, and *neotechnic*[23], and White's focused discussion of the role of Christianity in the technological modernization of Europe on the other. But the way these two scholars treat cultural preparation seems to differ in some fundamental ways.

First of all, let us briefly look at Mumford's thesis. Mumford's interpretation targets two things. Primarily the interpretation is presented as a critique of the machine. Much of his discussion on the paleotechnic phase focuses on the negative influences that technical advances had brought about. He discusses problems such as pollution and environmental degradation (Mumford 1934: 167-172). Drawing on Kant's categorical imperative that every human being should not be taken as a means to an end, Mumford devotes a considerable number of pages on the brutality of the factory system in England at the end of the eighteenth century and later on in other European countries (Mumford 1934: 172-196). While Mumford's analysis of the vile condition of workers in industrial England follows Karl Marx's conception of the dehumanization of the proletariat, he went beyond the Marxian conception in seeing in *the machine* humanity's demise instead of hope[24].

Secondly, Mumford's analysis considers the importance of other cultures. He argues that *the machine* wouldn't have been developed if not for the technical seeds it received from other cultures. "Civilizations are not self-contained organisms," he stresses. He adds:

> Modern man could not have found his own particular modes of thought or invented his present technical equipment without drawing freely on the cultures that had preceded him or that continued to develop about him. (Mumford 1934: 107)

"Technical syncretism" is the force behind this process: "a creative syncretism of inventions, gathered from the technical debris of other

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[23] Mumford's periodization canvasses various waves of the development of technics and the cultural preparations that brought about the transformations.

[24] But all is not dark for Mumford, of course. He sees hope in the third phase which he calls neotechnic. Electricity and the appearance of other new sources of energy, the use of rare metals, the invention of telegraph and the telephone, etc. started to transform conditions of human beings to the better (Mumford 1934: 212-241). Referring to electric light both as a material discovery and a metaphor for a *new* age, Mumford writes: "The dark blind world of the machine, the miner's world, began to disappear: heat, light, electricity, and finally matter were all manifestations of energy…" (Mumford 1934: 246). In short, the neotechnic phase marked the transformation from "destruction to conservation" (p. 255).

civilizations, made possible the new mechanical body"[25] (1934: 108). Mumford therefore believes that technical development in the West came to fruition because there was the appropriate cultural, socioeconomic and political preparation for it at that historical juncture. He points out:

> … most of the important inventions and discoveries that served as the nucleus for further mechanical development did not arise, as Spengler would have it, out of some mystical inner drive of the Faustian soul: they were wind-blown seeds from other cultures. (p. 107)

What mattered was that the Western world was prepared for this – it has had the fertile soil to grow the "wind-blown" seeds:

> After the tenth century in Western Europe the ground was…well plowed and harrowed and dragged, ready to receive these seeds; and while the plants themselves were growing, the cultivators of art and science were busy keeping the soil friable. Taking root in medieval culture, in a different climate and soil, these seeds of the machine sported and took on new forms: perhaps, precisely because they had not originated in Western Europe and had no natural enemies there, they grew as rapidly and gigantically as the Canada thistle when it made its way onto the Southern American pampas. (1934: 108-109)

We have said that Mumford's interpretation of the machine is presented as (1) a critique of the mechanized life of the West, and (2) recognizes cross-cultural or cross-regional interaction in technological modernization.

When it comes to Lynn White's analysis, technological transformation in the West is regarded as a function of the ethic of Latin Christianity. White, as a medievalist historian, seeks to identify the origin or roots of the West's technological advancement in things medieval. White's interpretation also differs from that of Mumford's in the scope of cultural preparation. Although White has also tried to dock technological development in the medieval period, his reference to cultural preparation is largely tied down to Christianity. Mumford

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[25] Debris because Mumford believes that before the adoption happens "the cultures from which the elements are drawn must either be in a state of dissolution, or sufficiently remote in time and space so that the single elements can be extracted from the tangled mass of real institutions. Unless this condition existed the elements themselves would not be free, as it were, to move over toward the new pole" (p. 107)

provides us with broader bases for the mechanization of life in the West – he especially identified three major sources, namely the army, the bureaucracy, and the Monastery (not to mention a plethora of other elements that he discusses throughout his *Technics and Civilization*).

White, by contrast, pins down only one element, that is Christianity (or Latin Christianity), as the cultural basis of technology in the West. White does not seem to give heed to the influence of other cultures. In fact, as we already noted, White's very analysis that Western technological advance was first and foremost an outcome of Christianity (more precisely, Latin Christianity) seems to oblige us to accept the process of technological transformation in question as something preordained. His inquiry into sermons from the Bible is very suggestive of this inclination.

As already discussed in the literature review, there seems also to be a similar inclination in Mumford to show that only the West had the cultural preparation for technological modernization in the proper sense of the term. However, a closer examination of his analysis shows that Mumford's interpretation significantly differs from White's in two major ways. Firstly, in Mumford's interpretation there seems to be no place for teleological explanation. His view of cultural preparation clearly recognizes the potentiality of other parts of the world to have the preparation in question. That is why he emphatically puts the contribution of inventions in Egypt, China, and other civilizations to Western technical tradition. Secondly, his notion of cultural preparation is broad enough to go beyond the role of Christianity. Mumford discusses a broad range of factors that led the Western world to the technical advancement that it has now. This again provides a wider conceptual framework to discuss technical developments in other parts or cultures of the world, or, more particularly, in line with our stake here, to discuss technology transfer.

5.3. The Phenomenology of Technology Transfer

However, we still need to go beyond Mumford's theory of technology transfer because our concern here is beyond the issue of how things move from one culture to the other. Our main concern here is how technologies affect cultures and how they get reconstituted into the cultures they affect. This obviously calls for a philosophy of technology that attributes active role to technological artifacts. Hence the choice for the postphenomenological perspectives we have been utilizing so far. Don Ihde and Peter-Paul Verbeek have presented a theory of

mediation that shows how in the technology-culture complex technology and culture mutually constitute or shape each other.

As has been shown in the course of our discussion, Ihde, in addition to developing the postphenomenological point of view, has also developed a conception of technology transfer that accounts how cultures meet or interact. For technology transfer for him is culture transfer.

We have already discussed how Ihde, through his notion of "multistability," has emphatically put the various uses that technological artifacts would have in line to their differing use contexts. The concept helps us to understand that technologies could only be technologies within use contexts. For example, the function of a hammer is not fixed once and for all to accomplish one task instead of another. It could be used to drive a nail or to hit a burglar. The multistability of technological artifacts could also be seen in an even clearer manner when they are used in different cultural contexts. Take the example of wrist watch. Whereas in the West its function is *largely*[26] to account time, for non-Western cultures it may largely serve as ornaments or status symbols; time-accounting would be their secondary function.

In the case studies we have already discussed in this thesis, the mobile phone examples clearly show the place of technological artifacts in their new cultural context. In addition to the impact that this technological system has exerted, it has also been culturally reconstituted in the sense that it has started to have new uses than it has in many other countries in the West and the East. Mobile phones in Ethiopia actively shape interpersonal relations. They are used to watch over and control the behavior of spouses. In traditional settings like we have in Ethiopia, and probably in many other societies in Africa and Asia too, women do not have economic and cultural freedom. Even in cities like Addis Ababa, even if a married woman may have a good job and more or less economically independent, she would have to be at home after work while her husband may have all the pretexts and, more importantly, the social approval to spend most evenings outside of his home.

Mobile phone technology has in this respect started to play a new role. For married women, housewives or otherwise, the mobile phone has

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[26] I said largely here because we see that even in the West a wrist watch may have other additional functions. It suffices here to mention ads for watches like Rolex and Roamer.

become like a strap to their husbands. They would call from landlines or their mobiles, and beseech or threaten their husbands to come home soon. It has become very common now to see men who relax in bars and restaurants literally running, putting their ringing phones on their palms, to the gates. Many run very carefully like having a ticking time-bomb on their hands. But in the context I am discussing here, the ringing phones are, more than metaphorically, they are time-bombs. If they answer the phones while they are amidst the music and noises of the bars, they are like playing with guns. Thus, they have to go far from the place of the noises. If they are reluctant to answer their ringing phones, it is even much worse and they should expect a big explosion when they are home. If the phones are switched off, it will worsen the situation. Better to talk on the noises than switching off.

This explains very well the multistability of technologies in the sense Ihde uses the notion. But there is a limitation to Ihde's analysis when it comes to cross-cultural contexts. I mean, he does not seem to fully exploit the notion for which he is the author. I have already hinted that this is the case when I was discussing the examples he uses in chapter 3, section 3.1. Parallel to his two-year old son whom he cited to have mimicked a calculator like a transistor radio, he cites how the New Guineans turned sardine cans that their Australian guests had dropped into headwear ornaments. When Ihde uses these two examples in order to illustrate his notion of multistability, he has failed to notice the implications of his own analysis. A closer scrutiny of the examples reveals that they are no more technological artifacts. Their new uses have totally disentangled them from the internal structures of the artifacts. The use of the calculator as a toy or mime transistor radio, or the use of the can as headwear ornament among the New Guineans has radically departed from the functions of the objects as technological artifacts. In fact, in the example of the sardine can, the New Guineans did not actually found them as technological artifacts in the first place. The cans were nothing more than disposed metals.

To further strengthen my point here let me return to the hammer example I just discussed. I have already mentioned two possible uses, namely the hammer functioning as a nail driver, and the hammer when it can be used to attack a burglar. These two functions are functions related to the internal functions of the hammer. But what if a certain cultural group turns it to an object of worship? Can we still say that it is a technological artifact? The answer is "No" because its new function is entirely alien to the internal structure of the object. Thus, the hammer here is a mere object, or a religious object, or an element

of a certain belief system. Ihde does not therefore seem to realize the implications of his own theory of the multistability of technologies because, as we have seen in the examples just mentioned, he is employing it to show how technologies could turn to non-technologies in cross-cultural contexts. Whereas, as we have seen in the examples related to mobile phones use – examples we discussed in this chapter as well as the previous chapter, the notion does have an explanatory power than its author seems to have realized.

The other central point we need to consider here is Ihde's formula that technology transfer is cultural transfer. As we have already seen in the previous chapter, Ihde's theory does seem to undermine the role of the culture that is at the "receiving" end because he is explicitly and singularly referring to the culture that "gives" the technologies. That is why he speaks of Westernization as an outcome of the transfer of complex technological systems from Western to non-Western countries.

My point here is not to argue against the view that technology transfer could be culture transfer. In reality, when technologies are transferred to other cultural geographies, they impact the new cultural environment as cultural ensembles. The impact – impact in view of translating the cultural values of the context of origin to the context of its use in another culture – of the technology may not of course be manifested with the same degree with all technologies. Digital satellite technologies that support Western television stations like the CNN and BBC do have clear and profuse influence on non-Western societies than technologies like calculators or transistor radios with only FM utilities.

Ihde's problem therefore lies in marking the influence of the culture that "gives" to the neglect of the role that the "receiving" culture may have in reconstituting the new technologies. I think the cases I have described and analyzed in chapter 3 have done enough to demonstrate what I mean here. As we have seen in the case of the introduction of the telephone system at the end of the 19th century or the introduction of mobile phones a few years ago, differing cultural agencies – such as the Ethiopian Orthodox Church, the nobility, and the emperor in the former case, and business people, government officials, and middleclass educated people for the latter – play their respective roles in defining and using the technologies in the way that fits in the cultural frameworks in question. Whereas Ihde's theory of technology transfer as cultural transfer narrates only part of the story.

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5.4 Pacey's "Dialogical" Relation to Correct Ihde's Theory

Arnold Pacey's conception of technology transfer as a process of "dialogical" relation helps us here. For Pacey, technological development is usually the result of interactions in between varying technical and cultural traditions. The interaction he calls it a dialogue because he sees in it the voice of the culture that takes in the technology as much as there is the voice of the technology and the cultural background from which the technology comes from. Nonetheless, so Pacey adds, the level of articulation of the dialogue may of course differ in accordance with the technical knowledge of the people introducing the technology. He relates:

> This process [technology 'transfer'] can be characterized as a 'dialogue', but how it proceeds must clearly depend on the knowledge and skill of the people who are encountering the transferred technology for the first time. When these people are already developing related techniques, their dialogue with the new technology is likely to be especially creative. If they have no relevant experience, but are nonetheless interested, they may still respond in the manner of a dialogue even if largely in non-technical ways, perhaps related to social arrangements for use of equipment. Either way, the experience, skill and inventive imagination which people contribute from their own cultural background is crucial. (Pacey 1990: 204)

I may add here that the level of *fluency* also depends on the complexity of the technology. The less complex the technology, the less difficulty we will have to dialogue with it.

In this respect, the line of argument that Pacey provides us here will help us to correct Ihde's theory of technology transfer. In line with Pacey's interpretation, what I am saying here is that the culture at the "receiving end" of technology transfer actively responds to, and shapes the technological artifacts that it has come to contact with. The introduction of piped water and telephone to Ethiopia (discussed in detail in chapter 3) demonstrated this very well. As Pacey notes, the nature and level of the dialogue or conversation with new technologies depends of course on the level of technical development that the people introducing the technologies have.

I have already argued in this line when I was discussing the case of the introduction of the piped water to Ethiopia around the end of the

19th century. I have tried to show clearly that the response of the people towards the piped water project had taken religious and aesthetic forms rather than taking "technical" or "scientific" bent because they did not have the necessary technical tradition that helped them, to use Ihde's term, to "read" the new technology in the way it had been read in its context of origin. But what matters here is that, despite the level of the "reading" capacity of the people using it, the technology was actively engaged and responded to. In other words, no matter the level of the conversation, the notion of dialogue helps us here to capture the crucial part that the "receiving" culture plays; the technology crossing the new cultural frontier would be shaped or constituted by the same culture that is impacted or shaped by it due to this interaction or conversation, or, as Ihde would say also at some level, due to the mutual constitution of culture and technology.

But, as we have already seen in some detail, Ihde's interpretation suffers from a flaw when it comes to the cross-cultural translation of technological mediation. It is flawed because it does not very well recognize the capacity of the social and cultural values that exists at the "receiving" end whereas, as I have already shown in the case analyses, cultures do not actually passively receive things. They rather try to reconstitute them in some ways. Cell phones in Ethiopia "discipline" – discipline in the Foucauldean sense – people within the cultural frameworks in which they are being shaped as well as used.

Related with this problem of Ihde's interpretation is the loose sense in which the term "culture" is used. In fact, as has been noted at several points of our discussion of Ihde's theory of mediation and technology transfer, he largely employs the term as an alternative to the macroperceptual experience. But, because the term is used very loosely, it has serious repercussion on his theory of technology transfer. When he says *technology transfer is cultural transfer*, he is in a way saying that technologization is Westernization because he overemphasizes the culture that "gives" the technologies to the utter neglect of the part that the culture that adopts technologies would play. But this is too easy a generalization because in reality what we see is rather an active and mutual constitution of the new technology and the culture within which the technology functions.

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5.5 The Need for a Theory of Culture

Of course, Ihde's phenomenological analysis of human-technology relations – classified as embodiment, alterity, hermeneutic and background – is known for its rigor and strong explanatory power. We may have therefore to raise a question here: Why does his analysis get weakened when it comes to cross-cultural level? In order to answer this question, Clifford Geertz's distinction between two contrasting ways of building theories of culture helps us here. Geertz, the American anthropologist known for his interpretive theory of culture, distinguishes between generalizations that work "across" cases and generalizations that work "within" cases. An attempt to build a theory across cases is for him an attempt to build, as he puts it, a "General Theory of Cultural Interpretation." He contests whether one can really construct such a theory. Even if one tries, he argues, "there appears to be little profit in it" because, for him, as an interpretive cultural anthropologist, the target of building a theory "is not to codify abstract regularities but to make thick description possible" (Geertz 1973: 26).

In this respect, a fruitful way of dealing with interpreting a culture is to work *within* the cases. Geertz takes us to the method of clinical inference – a method that is predominantly used in medicine and experimental psychology – in order to show how a theory can be used. Geertz is creating this parallel because he sees in what he calls clinical inference a model for how theory is (should be) used in cultural inference. The method in question works thus:

> Rather than beginning with a set of observations and attempting to subsume them under a governing law, such inference begins with a set of (presumptive) signifiers and attempts to place them within an intelligible frame. Measures are matched to theoretical predictions, but symptoms (even when they are measured) are scanned for theoretical peculiarities—that is, they are diagnosed (ibid.).

This can be used as analogy for working out a theory of culture whose end is, of course, "the analysis of social discourse" rather than therapy:

> In the study of culture the signifiers are not symptoms or clusters of symptoms, but symbolic acts or clusters of symbolic acts, and the aim is not therapy but the analysis of social discourse. But the

way in which theory is used—to ferret out the unapparent import of tings—is the same (ibid.).

This interpretive approach of Geertz's is useful here because it helps us to guess where Ihde's analysis of cross-cultural technology transfer goes wrong. I would say at this point that Ihde's phenomenological analysis of human-technology relation gives us a relatively complete picture of what that relation is because his descriptions or generalizations were made, as Geertz would note, **within** cases. It suffices to look into how Ihde describes *embodiment* relations, especially his analysis of the embodiment of visual technologies such as telescopes and eyeglasses (see Ihde 1990: 72-80). Whereas, when it comes to his "cultural hermeneutics" – a phrase he used to describe his theory of technology transfer, Ihde rather switches to generalizing **across** cases. For this reason his analysis starts to loose ground. Based on assortment of examples – examples which he seemed to have drawn rather arbitrarily from different historical accounts – Ihde moves to a generalization (in the sense Geertz calls "governing law") that in a way forces us to accept a precept 'technologization is ultimately acculturation, or Westernization'.

In relation to this, Ihde's interpretation of cross-cultural technological mediation would encounter a much more serious problem when we ask the question whether we can legitimately speak of "Western culture," or "African culture," or, for that matter, "Ethiopian culture," *as if* we have one cultural whole that responds to everything in unison. Whereas, as we have seen very well in discussing cases in Ethiopia and a few examples how the invention of Bell's telephone was received in the United States of America (not to mention the wide range of examples historians of technology account), various segments of society respond differently to new technological artifacts and cultural texts. It would therefore be very difficult to speak in terms of changes across cases and draw a conclusion or a theory that does not have a firm ground.

Describing what things do as well as inquiring into how humans are related to the world through things is of course a target which the postphenomenological theory of technology commits itself to. Geertz's line of argument, by virtue of being the result of an interpretive or hermeneutic anthropological approach, is not incompatible with the phenomenological philosophy. For Geertz, as for Ihde, Verbeek, and philosophers with phenomenological orientation, cultures are contexts within which things function. Geertz stresses that the semiotic approach to culture calls for the understanding that "culture is not a

power" to which beliefs, institutions, or we may add here, technological artifacts could be "causally attributed." Instead culture is a context within which these things could be described (Geertz 1973: 14). (Of course, as is the case with so many anthropological theories, Geertz's theory of culture does not seem to adequately address the role of materiality in social life.)

Thus, what the phenomenological philosophy of technology seems to be lacking in is a theory of culture. I suspect that this deficiency is shared by many other philosophies of technology that speak in terms of culture-technology complex. Thus what I am suggesting here is that any philosophy of technology that recognizes technology *and* culture as one complex whole calls for a corresponding theory of culture. And my next project, be it in the form of a PhD or otherwise, is to develop a theory of culture that could go with, and, at the same time, augment a variety of phenomenological theory of technology. Drawing on the interpretive frameworks both symbolic anthropology and phenomenological philosophy offer, I will be trying to develop what I tentatively call at this point "conversational theory of culture for technology" or "conversational theory of technoculture." The term "conversational" is not a mere qualification here. It is used to show, on the one hand, the dialogical relation that technology and culture have, and, on the other hand (and more importantly), to indicate the interpretive-phenomenological aspect of the relation. A phenomenological understanding of technology-culture complex necessarily calls for an elaborate theory of culture that accounts this interaction.

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