Being-human in the world of digital artifacts: holistic rethinking of design practices

Nathan Lakew

Supervisors:
Prof. Katarina L. Gidlund
Prof. Karin Hedström

Faculty of Science, Technology, and Media
Mid Sweden University, SE-851 70 Sundsvall, Sweden

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Nathan Lakew

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Department of Information Technology and Media
Mid Sweden University, SE-851 70 Sundsvall
Sweden

Telephone: +46 (0)771-975 000

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To Yuliya and Saron,
You are my everyday delights.
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Department of Information Technology and Media
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ABSTRACT

This thesis conducts a philosophical, theoretical, and practical exploration of digital technology design to examine how digital technologies can fulfill our two-facet of existentiality – identified in the thesis as belonginess and novelty. By belonginess, I identify human’s innate need for a feeling of connectedness and harmony with the self, others, and the natural world. The word novelty implies the human interest in exploration, invention, and desire for new experiences. This research suggests that contemporary digital technologies are largely novelty need-oriented, while our belonginess need is either ignored or its growth curtailed. The research question presented in this thesis is how and why can design enable digital technologies to mediate aligned existentiality? With this broad question, I will argue that an alignment between digital technologies and our two-facet of existentiality can be met through refocused design practices.

Strong arguments have been forwarded that novelty focused digital technologies can reduce our existential needs of belonginess. Digital technologies are leading consumerist commodities associated with creating unrelenting demand for new experiences. The search for constant stimulation and novelty has resulted in a fragmented and alienated state of being-human where the only way of feeling a sense of belonging comes from consuming more novel experiences. As contemporary everyday life is increasingly intertwined with digital technologies, their effect on our way of being-human becomes even more notable.

Against this background, the research attempts to ‘bring back’ our needs of belonginess to an equal footing with novelty in digital technologies. I have examined the current digital technology design’s philosophical, theoretical, and practical foundations to refocus design, from its too strong focus on developing novelty experiences to mediating aligned existentiality. With the aim of refocusing the design role, a theoretical framework based on holism has emerged that could provide design a background to focus on mediating aligned existentiality. Primarily
informed by three thinkers – Marin Heidegger, Karl Marx, and John Dewey – the proposed holistic theoretical framework aims to provide design with a basis to (1) embed belonginess values in digital technologies (2) redirect digital technologies from alienating values such as consumerism, and (3) provide a mediating materiality for digital technologies to advance aligned existentiality while in use.

The thesis further illustrates the proposed holistic dimensions – philosophy, theory, and practice – using three empirical materials. I argue that the proposed holistic foundation for design is also aligned with how digital technologies are being used in the everyday lifeworld. Consequently, by freeing design from its traditional responsibility of making technically savvy and novel artifacts and refocusing its role to mediating \textit{aligned existentiality}, design can itself be used to support our being-human in the world of digital artifacts.

**Keywords:** Aligned existentiality, the design role, belonginess, novelty, being-human, holism, dualism, digital technologies
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Nathan Lakew  
Karlsdalsallén, Örebro  
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This thesis is mainly based on the following ten papers, herein referred to by their Roman numerals:


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1. INVITATION

This thesis is about information systems (IS) design. I explore the philosophical, theoretical, and practical dimensions of IS design to critically examine how digital technologies can mediate our seemingly conflicting existential nature of belonginess and novelty. I identify human’s urge to discover new ways of engaging their everyday lifeworld as novelty. We can attribute needs such as creativity, exploration, curiosity, invention, discovery, or even the desire to conquer the unknown as needs for novelty. The word belonginess implies our innate desire to stay in a familiar territory to maintain our sense of being and place in the world. Contexts associated with belonginess may include sense of connectedness, one’s self-awareness and identity, authenticity, feeling of being valued and fit, forming and maintaining interpersonal relationships, transcendence, self-and-other acceptance, social responsibility, sense of existence, a need for a healthy and sustainable relationship with oneself, society and nature (Lakhotia, 2011; Levett-Jones, Lathlean, Maguire & McMillan, 2007).

This research suggests that the existing lens of the digital design field is trapped in a too strong focus on our existential needs for novelty which in turn disconnects us from our existential needs of belongingness. It is quite harsh critique and of course not applicable in all fields of design but the general settings available for digital design could be contended that it has lost in structures that needs to be disentangled and questioned in order for design to restore some of its original fundamentals i.e. creating meaningful artifacts that strengthen our feeling for belongingness. There are strong arguments made pointing towards an imbalance focus of technology on novelty in terms of the surge of the capitalist economic system and the indisputable position technology has been enjoying since being introduced to modern society.

For example, Bauman (2008) noted that the rise of capitalism has been the driving force for what he termed as ‘the consumerist syndrome’ where the unrelenting quest for novelty is the central focus of invention and production. Digital technologies are one of the leading consumption products which in themselves ‘constitute a consumerist experience’ (Wong, Brey, Briggle & Spence, 2012, p. 162). Furthermore, Feenberg (2006a) argues that technology has enjoyed a privileged position in the name of modernity and notes that such uncritical acceptance of technology resembles the pre-modern society restriction of questioning accepted myths and customs in the name of religion or hieratical dynasty. Technology, during its inception, has easily passed the verdict of modernism and has since became a taken-for-granted phenomenon, and at times a benchmark for being modern sapiens as much as to excel in traditional customs was in pre-modern society.

Such quest for novelty has kept human in the “state of disaffection” – a fleeting but seething anticipation for endless new experiences (Bauman, 2004, 26). Marx (2013) argued that such a ‘passive receptive’ way of being-human has resulted a
society that can only relate to the self, others, and nature through consuming new products; calling it an ‘alienated’ existence. With the same line of argument, Heidegger (1957) stated that an alienating way of being could make human vulnerable and a ‘standing reserve’ to consumerism order. Even though, the need to stretch toward novel experiences is one of our existential needs, an emphasis on novelty is argued to result an alienated-being of self-acting commodity.

By critically examining how digital technologies can mediate our both nature of belongingness and novelty, another possible philosophical, theoretical, and practical foundation for design has emerged. That is, we can aim to design technology to mediate both needs for belongingness and novelty; aligning two-facet of our existentiality through design. The research question forwarded in the thesis is how and why can design enable digital technologies to mediate aligned existentiality? With this broader inquiry, the focus of design shifts from the customary emphasis of developing a state-of-art technical artifacts to a new role of mediating aligned existentiality.

In particular, the thesis aims to ‘bring back’ and strengthen belongingness as an equal and peer to novelty in digital design doings and show how an aligned relationship between them could positively affect the artifacts we create. As a result of its elemental (innate) nature, belongingness can be used as a spring-board for human novelty endeavours. With such framing, I will argue that technological artifacts can best serve human needs if they are built on belongingness characteristics and aim to expand them. On its own, novelty quest is vulnerable to being taken advantage of by elite structural systems such as politics and economics as many (Marx, Bauman, Feenberg, Heidegger) argued before me. The main theses here is that one cannot deduce reason or values from science on how to use scientific or novel discoveries. We cannot scientifically answer what would be the ethical use of atomic knowledge. An example of the result of this inability is that the novelty focus tradition had to borrow values like consumerism from the economic scheme of capitalism.

Consequently, the thesis aims to formulate aligned existentiality in a setting where belongingness is a core focus to drive the source of meaning/values (i.e. why and what questions) while novelty inscribes the expansion and at times alternation of such meanings (i.e. how questions). My reference of the term aligned existentiality connotes such delineation. It should be noted that such delineation is not to imply that one of our existentiality is more important than the other, but simply implies their position in the aligned setting.

1.1. My understanding of design

I would like to, as early as possible, put forward my take of design in an openly declared context in order for the reader to appreciate how design is understood throughout the text. First, I would claim that design could be described as an ancient phenomena that equates the history of human existence. From the early Stone Age
tools such as Oldowan toolkits, hammer stones, and sharp flasks to the modern Internet of things, humans have been involved in the act of designing to both shape and understand their surroundings. For the most part of its aboriginal history, design was embedded in what Mitcham (2000, p. 136) called the “crafts of making”, where design has characteristics unique to a specific culture, people, and history. Postman (2011) reported that tools in such pre-modern societies are typically ‘non-intrusive’ toward society’s cultural way of living. In most such cases, the designers were also part of the ‘local’ users of that specific time and lifeworld. Design started and ended within a specific context, perhaps in a specific community, and plausibly defined their identity, perception of the world, and belonging to that particular time and space in the course of history.

The arrival of modern industrial design in general, and the concept of mass production and capitalism in particular, gave the act of designing a new focus. Mass production demands standardized and efficient way of producing and using artifacts; hence the detached and neutral way of designing artifacts. The modern design role aims to create general patterns, interchangeable and replaceable materials since the commercial market forces a continuous production. Most importantly, the act of designing becomes ‘scientific’, in a sense that its focus has shifted from qualitative and social values to quantitative ones such as efficiency, usefulness, order and stability, control, steering, and predictability (Fuchs, 2003). In the word of Herbert Simon (1996), notably quoted as the father of design science research, “the proper study of mankind” becomes “the science of design” (p. 69).

The change is by no means just an engineering account, but a philosophical one too. Fromm (2000) summarizes this shift as a privileged position extended to thought over practice. The modern era advocates an assumption that a true meaning of reality can only be reached through rational thinking (Fromm, 2000). Major emphasis is given to a detached thinking process about problems at hand, hence a dualistic form of separation between subject and object, designer and designee, observer and observed, or mind and body is presented as a necessary condition to have an accurate knowledge about what is ‘out there’. Without doubt, such dualistic thinking brings great successes to the scientific world. But, historically, it had had a very significant consequence on how we understand reality; the notion that factually validated and “correct thought is all that matters” (Fromm, 2000, 74).

As such, privileged thinking obliged the development of technique and rationality as means of finding correct thoughts and understandings our existence as human. This enables the modern world to modularize ‘realities’ to symbolic representations such as technological artifacts. It also changed our understanding of reality in the sense that if what we observe does not fit into methods of science, it may not actually exist at all. It is quite a philosophical turn from the pre-modern era where holistic experience, practical involvement, and qualitative values had more weight in the design process than calculative and pre-planned thinking. The dominant holistic and praxis based philosophical stand of the pre-modern era has
been replaced with a dualistic and detached way of thinking, which has also found its way into the IS design field.

In the last five to six decades, we find ourselves in yet another post-modern era where digital artifacts find their way into our daily life in the most proximal mode possible: as a mediator between us and our world. In this position, they become part of our understanding and interpretation of the world and ourselves. Ubiquitous technology, for example, make it possible for the development of tangible interaction with technology, effectively breaking the boundary between artifacts and our body. Embodied technologies lead not only to change the way we think about our world, but also how we touch, feel, and make sense meanings of our surroundings. Our understanding of what technology means is revised from the previous modern era of a tool that we use to get things done to a mediator of how we understand and present ourselves to the world.

The current understanding of what constitutes design in the information system field is strongly associated with the engineering concept of developing a digital artifact, primarily resemble to the modern era understanding of design (Hevner, March, Park & Ram, 2004). As such, the field forwards the role of design as producing efficient artifacts where the design research focuses on finding competent methodological and procedural steps in fulfilling the production of useful digital artifacts.

Finally, I would like to put forward how the word design itself is understood in this thesis. Flusser (2013) noted that the word design was originally derived from the Latin word signum, meaning sign, and it exists as both noun and verb. The term design, etymologically, can be read as de-sign. As a verb, it connotes ‘to draft’, ‘to fashion’ or ‘to sketch’, while as a noun it means to scheme, aim, intent or plot. Throughout history, Flusser asserts that the word design has been associated with cunning and deceit to the extent that designers are labeled as “plotters laying their traps” (p. 18). Consequently the original conceptualization of design implies more of an approach, a way of thinking, or an attitude toward a situation rather than a specific specialization, profession, or field.

Based on this understanding, the thesis conceptualizes design as a malleable enterprise while discussing its objective, philosophical framings or the logic behind the practice of design itself. Thus, it is possible to give design a role – hence the phrase ‘the design role’ – to reform a way of thinking or propagate what we would like to convey through technology. In this thesis, ‘the design role’ phrase implies the focus of a given design project; for example, whether the focus emphasizes producing efficient artifacts or ‘plotting’ on how to inset politics to technological artifacts.
1.2. Research problem and research question

The research is based on the practical and explanatory question *how and why can design enable digital technologies to mediate aligned existentiality?* Hence, the question itself indicates that an alignment between digital artifacts and our two-facet of existentiality can be attend through design – dubbed in this thesis as ‘the design role’. I will, therefore, with the help of several empirical undertakings and theoretical exploration attempt to show how a more balanced philosophical, theoretical, and practical footings for the design role opens up a possibility of creating digital technologies that mediates aligned existentiality. Consequently the research focuses on three dimensions: (I) an exploration of the philosophical foundations of the design role, which in turn is related to (ii) another exploration of design theories and the dominant knowledge bases of the design role and finally (iii) an enquiry into the bases of design role during the actual digital artifact development.

The first enquiry concerns the philosophical foundation of design. As noted above the change observed in the design field relates to the philosophical question of what constitutes reality and existence. In the previous section, two main philosophical foundations, the *thinking* and *praxis* tradition, were noted in passing. It is argued that the Western worldview of dualism, where the thinking tradition is a philosophical base, has been brought into the IS design field without being critically examined how it influences users’ being-human state. In addition, the choice we make to follow either tradition as our design philosophy will determine whether our product will ultimately propagate novelty or belongingness as its core interest.

The second concerns the knowledge base of design practice or customarily noted in the IS research as design theories. Design theories define what constitutes design issues and formulates design knowledge such as constructs and instantiations. Design theories, though highly correlated with their corresponding philosophical foundations, have a direct influence on the focus of the design role during digital artifacts development.

The third enquiry focuses on the practice of design itself. The existing consensus is that role of design on the operational level is to ‘map out’ users’ requirement into a manageable ‘problems’ using *contemplative* approaches and develop ‘ends’ in the form of digital objects. Such framing neatly fits the thinking philosophical foundation and the design knowledge that perceives *abstract* design environment as the only intelligible human lifeworld for design purposes. An alternative design practice basis is required for the design role to formulate the overall everyday lifeworld *activity* as a design domain.
Consequently, the following three sub-questions guides my research work:

- How can we formulate a philosophical foundation for design to have a role of mediating aligned existentiality?
- How can we formulate a design knowledge that enable the design role to have mediating aligned existentiality as its core interest?
- How can we articulate the basis of design role to focus on mediating aligned existentiality during the actual development of digital artifacts?

I will explore the design role foundations from these three dimensions to produce digital technology as a mediator of aligned existentiality. Such a design role challenges the traditional IS research discourse that often sees the design role as developing useful and efficient technological artifacts. I argue that these customary agendas ended up satisfying only human novelty quest while belongingness became a marginalized issue often left for consumers to figure out on their own. Instead the new refocused design role explores ways on how digital technologies can be made with mediating existentiality as their core interest.

1.3. My research journey

The structure of the thesis is as follows:

Chapter 2: Positioning my research work – It begins with discussing historical account of being-human followed by how technology has been influencing our way of existing as humans. After developing the relationship between the role of design and alignment of technology with our two-facet of extensionality, it concludes with brief discussion of the research knowledge bases that shapes my line of thought.

Chapter 3: Methodological reflection and empirical evidences – The general research topic, research design – goals, conceptual frameworks, methods, and validity concerns – are presented. In it, my research paradigm, knowledge claim strategy, and the empirical material will also be discussed.

Chapter 4: Summary of papers: A brief summary of the ten contributing papers will be presented.

Chapter 5: The philosophical dimension of the design role: A philosophical foundation based on the tradition of praxis is proposed as a theoretical framework, replacing the ‘the thinking philosophical tradition’. This section uses the conceptual frameworks of phenomenology, pragmatism, and Marxism.

Chapter 6: The theoretical dimension of the design role: Presents an ontological design theoretical framework in the place of epistemological-oriented design theory. Design constructs – things, design agency, design process, and appropriation – are developed from their ontological conceptualization.

Chapter 7: The practical dimension of the design role: Discusses the design practice focused on experience and activity of use. The activity focus framework for the
design role is proposed to de-emphasis the traditional contemplative focus framework.

Chapter 8: Being-human in the world of digital artifacts – Holistic Orientation of design practices: Brings the three dimensions of holistic approaches into one structure and evaluate its visibility using focus group study. In addition, a heuristic design deliberation is presented to illustrate the design role in holistic theoretical framing.

Chapter 9: Concluding remarking: Summarizes the main contribution of the research and discusses other related contribution of the present thesis to the IS research field. This section also includes the discussion of strength and limitation of the study, further research avenues, and reflections.
2. POSITIONING MY RESEARCH WORK

In the tradition of IS research field, the practical, and specifically the methodological aspect of design occupies the main focus of design studies (Truex & Avison, 2003). Accordingly, the design role is perceived as fulfilling design activities from defining requirement elicitation to computer abstraction to designing system object and properties. With the same assumption, a designer is someone with practical expertise to implement technical methods in the process of digital object development. The IS research field has a long tradition of ascribing design the role of finding new methods to produce more useful and efficient digital objects (Park, Boland Jr & Yoo, 2011).

The emphasis on method inquires is not unique to design research or even to IS field in general. In fact, it is a cornerstone of what is called dualism worldview and its overarching influence on Western philosophy. Dualism asserts that the truth about reality can be reached through rational thought with the right methods. That is, if we want to know about a certain phenomenon we would need to separate ourselves from it, look at it with a critical gaze, apply rational methods to analyse our conjecture/hypothesis about it, and derive logical conclusions. In this knowledge generation process, there is a need for a certain degree of separation between the observer and the observed.

In the opposite aisle, we find holism that see engagement and activity as an integral part of what makes us human. On this front, existential-oriented philosophers such as Socrates, Lewis Mumford, Nietzsche, Heidegger, Jaspers, and Patočka have analysed that humans are primarily exist as practitioners. We not only practice to exist, but we exist because we practice. You are a teacher because you teach. But you also teach because you are a teacher. In addition, holism associates our present existence with what has already come-and-passed with what will be coming; thus our existence is ontological in the sense that with what we strive to design and we will be designed (Fry, 2007).

The role we give to design, digital technologies, and how they affect our being-human are all closely relates to the mind-set we have about how we define ourselves as human. This chapter will develop how our understanding of being-human has reflected in the history of technology, technology use, its onus on the design role, and ultimately the effect on our two-facet of existentiality.

2.1. History and being-human

“What does it mean to be human?” This question was asked some 2400 years ago by the then-renounced but historically renowned Confucius (Hughes, 2015). Around the same time frame, both Socrates and Buddha discussed similar inquires under the theme of ‘knowledge of the human good’. Confucius introduces a concept called REN as the main characteristics of being-human that are solely concerned
with human inner growth to develop harmony with the self, other humans, and the environment (Chang, 2010). Buddha illustrated, through his notion of Nirvana, that one must aspire to purify and transform the inner self by removing the many external futile desires, and create a complete harmony with the environment at large (Matsuoka, 2005). Such a need and its subsequent fulfilment comes from within, and by living consistently with ethical virtue one can attain a satisfying and meaningful existence. Socrates saw one’s own cultivation of ‘the soul and existence’ as opposed to conquering the external world of things as a way to achieve what humans are meant to be (Učník, 2013).

Modern philosophers have also expressed the same notion in their work; Spinoza emphasizes exercising the ‘right conduct of life’, Marx urges unity and personal transformation, and Freud uses his psychoanalysis to show the need for an “ever deepening experience of oneself” for well-being (Fromm, 2000, 73). What was common among these thinkers is that human subjectivity, inner transformation, self-actualization, societal values, relationships, and concern to create harmony with oneself and the lager world defines what constitutes being-human. In this thesis, I ascribe the word belonging to denote such human innate needs. They are innate in sense that they exist in a being state as oppose to a having state. That is, we cannot achieve belonging through possessing or conquering the external world precisely because, according to belongingness notion, we are already part of that world. Instead, we achieve such endeavour by becoming or growing into be part of belonging experience.

Examples that involves belonging may include one’s self-awareness, transcendence, intimacy, authentic identity, secured attachment and relationship, autonomy and social responsibility, positive self-evaluation, sense of existence in the world, a need for a sustainable relationship with society and the environment, and nurturance (Lakhotia, 2011). As a backdrop Seeman (1991), in his seminal work titled ‘Alienation and anomie’, characterized human non-belonging state as powerlessness, meaninglessness, normlessness, culturally estranged, socially isolated, and self-estranged existence.

The ancient world’s concern with internal fulfilment and belongingness does not mean that it has never been interested in the external world nor strives for finding novel ways to become efficient. In fact, tool designing and technical practices to forward one’s curiosity are as ancient as human history. In this thesis, I will use the word novelty to indicate the general human inclination to look forward to a new and improved lifeworld experience. Hence, the concern for novelty may include; creativity, our need for exploration, curiosity, invention, and to some extent our quest for new knowledge and explanations. What was acutely significant in the pre-modern world was, however, the privileged position that belongingness asserts in the society. In addition, the pursue of novelty, invention, and the making of tools were guided and flown out from within, and aimed to serve that same ‘within’ or what Foucault (1980a) called the “technology of the self”.
Note that the early world of understanding makes little to no distinction between human life and the now-known world of things. In “Heretical Essays in the Philosophy of History”, Patočka (1983) claims that the world as a whole was not conceived as an external object, since biologically speaking, we had literally strived out of it. In the year 1620, Francis Bacon (1990) famously declared that “knowledge is power”, and subsequently urges both knowledge and power to join force to conquer and control the natural world for human desires (Brey, Briggle & Spence, 2012). As such, modern thought create a distinction between human life and the external world, where our modernity is defined by our victory over the external world.

For the first time in human history, the well-being of human existence becomes ‘a matter of controlling and exploiting the external’, rather than nourishing and extending the internal world (Brey et al., 2012). Učník (2013) noted the change as follows:

“This new possessive understanding of nature extends to our entire human condition. The mode of possessiveness defines our relationship with others. Instead of compassion, selflessness and the care for the soul, we categorize, classify, catalogue, and label others in accordance with their usefulness.” (p. 89, bold font added)

The new perspective has paved the way for a new kind of meaning to being-human that makes discovering and possessing novel experience the starting point to fulfill our meaning and need for belongingness. The privileged position of belongingness as a basis for pursuing human’s ingenuity and innovativeness became a marginalized locus.

One can relate the notable change that led the change-over of belongingness and novelty to what Latour (2012) described as a disengaged relationship between ‘nature and society’. Nature has suddenly become an ‘enemy’ to conquer and a reserve to be exploited. Noticing such creation of illusionary enmity, Arendt (2013) commented that the most visible of such evidence was seen when human sent a manmade object to the moon and declared it “a step toward escape from man’s imprisonment to the earth”, as if though human have been in servitude of the Earth (p. 1)

But the quest of becoming modern and free, Latour reiterate, makes us ‘victims of our successes’, as scientific discoveries continues to out speed us by decades to realize their effect (Arendt, 2013; Latour, 2012). The unrelenting pursue for novelty products ‘conditions us’ in ways that we are not aware of nor have a time to adjust ourselves to (Arendt, 2013). On the one hand, and on a bigger scale, this has led humans to absorb an immense power which they may be unable to apprehend how to best serve the overall living and non-living beings. Harari (2014) commented that the sudden advance in scientific knowledge led to humans becoming a “banana
republic dictator” filled with ‘fears and anxiety’ resulting from an “over-hasty” development of being very powerful (p.13). On the other hand, and in a less subtle way, we are lost in a somewhat hazy way of thinking that prompts a never-ending novelty as way of being-human.

It can be misleading to perceive the change-over between belonginess and novelty as just a place change. What was also significant in this position change is that the nature of earlier novelty itself was altered. That is, novelty no longer has the meaning it had for past generations. As it became the basis of fulfilling human needs, it needed its own starting point. The ‘new-novelty’ finds its footing in the coupling of science and the capitalist system of mass production and consumerism. On the one hand, science has always been interested in finding truth and “seeks to know” new ideas (Dakers, 2006, p. 5). Such pursuit also needs technical rationality and methods of inquiry that fulfill the interest in ‘finding the truth’. The thinking tradition provides a viable path for such an endeavour. On the other hand, since the dawn of industrial revolution in the 16th century, the capitalist system pursued mass production and mechanization of labour that results in the culture of consumerism. As Wong (2012, p. 158) argued, consumerism informs its users “what a good life is and how to live it”; hence a new way of being-human based on novelty was introduced. Dreyfus and Kelly (2011) resembled the contemporary needs for novelty with nihilism that neglects the ‘meaningful aspects of life’ – identified in this work as belonginess.

This ‘new-novelty’ based on consumerism and science has flourished for the last 500 years. While science’s philosophical basis of the thinking tradition dictates the method of production, the capitalist system informs what kind of values we follow in our existence while using these products. Sociologists Adorno and Horkheimer (2007) remarked that the world of consumerism has succeeded in presenting itself as an integral part human needs of belonginess. But it does so by simply portraying that what we buy/consume can surely provide a path toward what we think is valuable to us, such as social relationships, family, or ‘inner-peace’. They added that such ‘manipulation’ can readily be seen in the well-crafted advertisement where a display of what we really want (e.g. different belonginess features) immediately followed with buying novel things. (For example, a happy family advertisement segment followed by an introduction of a new car; presenting happiness as dependent on buying the new car).

In what follows, I will briefly present how tools and later digital technologies were used to communicate our two-facet of existentiality using the field of history of technology. For simplicity I will divide the discussion into pre-modern, modern, and post-modern technology1. The commonly used epochs are customarily divided

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1 We can find comparable classification in the literatures such as Postman’s (2011) culture classification of ‘tool using, technocracy, and technopoly’, Mumford’s (1967)
based on the ‘dominate philosophical systems’ of the time; hence uses the suffix ‘isms’ to show their different approaches (Hoffman, 2006). That is, each era has followed (been dominated by) different philosophical approaches to make sense of the world, though there is no specific time or decade that can be pinpointed as the time when the transitions took place. Pre-modernism epistemology was guided by a strong belief in knowledge being revealed by authorities such as God, religion or superstition. Nature, humankind, and other imaginable beings aim to live in harmony; hence a holistic understanding of a world system. Modern society emerged from rebelling against such settings.

With the scientific revolution coming into the picture (around 16th century BC onward), the belief system turns to findings facts through rigorous scientific methods. The philosophical system of modernism perceived the essence of reality as a rationally ratified phenomenon. The burden of rightness through rational thinking also spread to judgement of whether natural or non-natural beings are valuable or not. The ‘modernized’ society demanded cultural restructure, and even human restructure, to prove their value in order to be accepted as worthy in the society. From its inception, technology has passed this modernity judgment fairly easily (Feenberg, 2006). Since the 1960s and onward, we have seen a call for somewhat restraining position based on ‘epistemological pluralism’ to understand our surroundings (Hoffman, 2006). This postmodern era follows a much more flexible position to understand reality and presumably open to embrace both ‘spiritual’ and ‘reasoned’ conceptualization of the world; hence holistic in its nature. However, in many ways, modernism is still a self-evident foundation to understand the meaning of reality among the Western culture (Hoffman, 2006).

2.2. Technology and our two-facet of existentiality

Though recent development, the philosophy of technology offers a path to articulate the influence of technology in human history (Mitcham, 2000). Philosophy in this sense is not about debating between two competing sets of values; in fact defining philosophy as such diminishes its reflective potential, since such a scenario presents ‘values or beliefs’ as ‘given’ or ‘founded’ opinions waiting to be proven as true or false. Rather, philosophy is an active inquiry that involves a continuous process of reflective struggle with inherited values and traditions. The study of the philosophy of technology is no exception.

Mitcham and Briggle (2012, p. 43) advanced three philosophical understanding of technology: technology is thought to be dependent on or embedded with other phenomena; (2) technology is thought to be independent of or dis-embedded from ‘eotechnic, paleotechnic, and neotechnic’, and Gasset’s (1961) technology of ‘chance, technician, and artisan’ ages.

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‘eotechnic, paleotechnic, and neotechnic’, and Gasset’s (1961) technology of ‘chance, technician, and artisan’ ages.
other phenomena; the technological and non-technological are thought to be interdependent.

In the first case, the meaning of technology/tool depends on the setting where it is used or by whom it is used, rather than the technology per se. In this sense, we can dictate the implementation and design of tools as desired; a gun in the hands of a police officer has a different meaning than a gun in the hands of a criminal. This emphasizes that technology is dependent on the values it is provided with, and the setting where it is being used. Feenberg, for example, emphasizes how value precedes the means we use to accomplish the value (Feenberg, 2002). Using Marx concept of capitalism and alienation, he argues that freeing technology from consumerism and reification can lead to a technology that can be used for the wellbeing of human.

An anthropological approach to technology studies recounts the assumption of dependent thoughts. Mumford (1967) rejects the idea that humans are, first and foremost, 'tool makers (homo fabers), then homo sapiens (users of cognitive activities)'. Instead, we use technology/tools in a sense that corresponds to our wellbeing – which he calls “broadly life-oriented, not work-centered or power centered” (p. 9). He argued that modern technology with values borrowed from both thinking traditions and capitalism turn humans into ‘homo faber'; pursuing the exploitation of their environment and power. Seconding Feenberg, Mumford argued that only when values and our nature as Homo sapiens precedes toolmaking, then we can serve our true nature of being-human through technology.

If we look at the pre-modern era with this as background, it corresponds to the dependent definition of technology. Tools originated from human cultural values and needs, where they did not threaten the legitimacy of social norms (Mumford, 1967). Postman (2001) asserted that such norms in fact “directed the invention of tools and limited the uses to which they were put” (p. 23). It is a similar notion that we find in the praxis tradition where the inner world (belonginess) guides the new novel experiences. In addition to its supporting role, the need for novelty aims to extend the existing belongingness; thus has limited power to dictate the lifeworld.

Though the premodern era is not typically identified by its advanced tools, it was not technically improvised either. The tools were well integrated with existing social settings and technics had an expansionary role. That is, theological assumptions and culture “served as a controlling ideology” and guiding principles for the design of tools (Postman, 2001 p. 26). Noted that the ‘field’ of designing tools has always been a concern not only of practice but philosophy. What was evident in the premodern era is that the later had dictated and exploited the former.

The second understanding of philosophy defines technology as an independent actor in human lifeworld. In this setting, technology has a nature of its own that cannot be deduced from its maker. Though independent proponents admit a certain level of control exists in the creator or the context where the system is being used, technology can be decisively independent and make users act, think, talk, or even
develop a certain way of being-human. A gun cannot kill without someone triggering it, but it can create the illusion of power for the holder and make the holder use it if a ‘seeming necessity’ arises such as being angry on someone. On this recounts, we find the sociological approach of studying technology and its proponents such as Marx, Ellul and Heidegger. Heidegger (1957) asserted that technology has contributed to the change of being-human in which humanity became no more than a standing resource to be used by technology. In his essay, “The Technological Order”, Ellul (1962) concluded that not only does technology assert its place as independent actor but it also has the capacity to ‘reinforce its power of use’ as a result of its technical nature. That is, regardless of our best interests (context), the use of technology ultimately results in being used by it. In the same line of argument, Marx (1969) stated that technology alienate people from their ‘being-species’ as it will change both the power dynamics by giving control to the powerful and make it impossible for the workers to see their fruit of labors.

**Modernism** came to existence where technology amplified its role to an independent actor. The change was driven by the modern society’s rebellion to premodern rituals, customs, and religions (i.e. social and cultural changes). Science and its ‘thinking tradition’ was no longer limited to lab rooms and universities, but became a new way of understanding our everyday world. Marx (2012a) argued that even social relationships and customs began to be evaluated based on ‘thinking traditions’ – which he called ‘social rationality’. The new capitalist system demands mass production, and makes it possible for consumerziem to become a way of being-human. With it, we externalize our being-human and became consumers of others’ values, relentelsy creating new needs and looking for novel ways to be human.

Modernism has modified our two-facet of existentiality structure by giving emphasis to the novel and innovative ways of being-human. Using sociological approaches, Ellul (1962) argued that technology has played a crucial role as an independent means-to-end actor. First, it facilitates a world of easy mass production and consumption. With the help of ‘thinking tradition’, it becomes easier to compartmentalize assembly lines for a fast paced production. In addition, technology became deterministic and more controlling as it defines/demands users to have such and such way of being. Our technological tools became synonymous with who we are and we strive to find meaning in using them.

The third recount of technology is the interdependent relationship with its users. In this position, technology has a sort of symmetrical locus in that it has an agency of determining what the users will do as much as users’ power of determining outcomes. Latour (2005), in his Actor-Network Theory (ANT), argued that both technology and user contributes to what he calls ‘composite’ involvement during network of interaction, where it is no longer possible to point a finger on who causes an outcome. Using the gun metaphor, he argued that both the gun and the killer symmetrically contributes to the crime. There is a hybrid or ontological relationship
between technology and users in that ‘what we decide to design will continue designing’ while in use (Willis, 2006).

Postmodernism, which also includes our times, came into existence when technology became an ‘embodied experience’, functioning as a lens through which we understand the world, and also a way to express ourselves (Dourish, 2004). Our interaction with technology is transparent and interdependent in the sense that we continually shape technology, and by using it, it shapes us back. With ubiquitous technologies increasingly becoming a part of us, humans are closely intertwined with the technological lifeworld and it is impossible to reject technology as a sociological approach proposed by proponents like Heidegger and Ellul.

Though the postmodern era of technology becomes proximal in defining our identity, the modern era of marriage between the ‘thinking tradition and capitalism’ still continues to play a critical role in the design of postmodern technologies. As a result, the postmodern world of being-human reflects the novelty based belonging structure where the external world have more influence over who we are than our insides. The difference is, however, postmodern technologies have a more pronounced effect on who we are as they become part of our expression and lens to understand our world.

2.3. ‘The design role’ – design as means to align technology with two-facet of existentiality

The previous two sections have attempted to briefly present a historical account of being-human and the influence of technology on our nature, in particular in our two-facet of existentiality. First, it is shown that the history of technology use has been consistently holistic in its nature. We interact with the external world (other humans or things) from the position of a holistic understanding of our surroundings. As such, the technology lifeworld, first and foremost, is not about the essence of technology but the holistic existential nature of being-human, or as Sartre (1985) puts it “existence precedes essence”.

Riemer and Johnson (2013b) argued that the dualistic influence on IS research has generated a misalignment within different design issues. Dualism as a core has the power to attribute what a design role should be in the process of technology design. The problem arises when these central assumptions negate the actual use of the technology. As such, the design field struggles to make sense of what is happening in holistic way of technology use since a dualism core is used to design for holistic technology lifeworld. The result is a confusion in both design and design-in-use, as a holistic way of technology use do not submit to the core dualism assumptions.

The other misalignment is connected to whether the dualistic setting is competent enough as a foundation for designing life-fulfilling technologies. That is, whether the dualistic product of novelty can actually fulfill a true human need to
find new ways of extending our lifeworld. What came to be novelty based on
dualism assumption (identified above as the ‘new-novelty’) is not ‘the original
novelty’ we find in the context presented in aligned existentiality. Heidegger (1957),
for example, makes a distinction between what is correct and what can be taken as
true. He emphasized that epistemology-based reasoning may not be a satisfactory
base to accept reality as true. Heidegger noted that an ontological questioning of a
phenomenon assures whether the advanced reasoning represents the true nature of
reality or not. ‘For that reason the merely correct is not yet the true’, he wrote, ‘only
the true brings us into a free relationship (ibid., p. 6). On the same line of reasoning,
while it can be considered correct that dualism fulfills the need to find new ways of
improving our lives, it does not guarantee that it fulfills our true needs of novelty.

Consequently, when technology promised us happiness with an
epistemologically crafted design, it kept leaving consumers ontologically ‘starved’.
The answer to such a problem from an epistemologically based tradition is to have
more technology. The novelty we are able to develop through the epistemological
‘how’ knowledge satisfies a superficial curiosity, hence needs to be repetitive if one
wants to retain the stratification from novelty. Nihilistic consumerism is defined by
this rule, and continuously provides new things that may not fully satisfy our true
need of novelty.

Finally, the change we witnessed in the nature of post-modern technology is in
direct contrast with the dualistic understanding of the design role. Technology is no
longer something we use as a tool, but a way of shaping our own understanding
and presenting ourselves to the world. In particular, the mediation role of embodied
computing follows a holistic approach to human experience. These technologies
make the usefulness and functionality of design issues a default expectation, all the
while bringing the mediating ability of technology to the fore. Thus, the dualistic
framing of design may not only be inconsistent with technology use but also with
the nature of postmodern technology. Consequently the inconsistency between how
we design technology (dualistic) and how it is being used (holistic) makes the role
of design quite unclear, and gives way for a ‘political’ upper hand to the powerful
such as designers and the capitalist system of consumption.

To explore the possibility of alighting digital artifacts with our both existential
needs, the discussion of philosophy of technology provides a good starting base.
Both dependent and interdependent understanding of technology advanced the notion
that we can influence technology to promote a desired societal goal. John Dewey,
for instance, argued that the pre-modern and postmodern understanding of
technology can be used to conceptualized and design technology for human well-
being (Dewey, 1916; Brey et al., 2012). That is, we can value-script technology with
well-being features (dependent conceptualization of technology) and redirect
human action toward the good of human and nature (interdependent
conceptualization of technology) (Mitcham & Briggle, 2012). In addition, the
interdependent conceptualization of technology underscores how ‘composite
structure’ comes to exist through subject-object interaction (Latour, 2005). That is, practical engagement/activity, not contemplative knowledge as dualism suggests, matters more in the interdependent relationship. This is an important piece in the puzzle if one needs to influence users’ way of being-human while interacting with digital technologies.

The independent conceptualization of technology can also provide an input toward aligning technology with our two-facet of existentiality. Independent conceptualization proponents strongly criticize the deterministic nature of technology, as they considered technologies’ innate nature to originate from technical rationality. Their critique holds water if the thinking tradition continues to design digital technologies. In this thesis, I propose a change in philosophical grounding of design to address the independent proponents’ sensible concern.

As such, a re-assessment of IS design from independent, dependent, and interdependent conceptualization perspectives can guide the interest of mediating aligned existentiality through digital artifacts. First, the philosophical base of technology should be re-evaluated to ‘tame’ the deterministic nature of technology (i.e. independent thoughts). Second, there is a need to revisit the existing capitalist values of consumerism and replace them with human well-being scripts (i.e. dependent thoughts). Finally, technology should be understood as having an ontological relationship with users, where both human and technology influence each other, and it is during the interaction between technology and human agency that one can develop a desired ‘composite’ structure (i.e. interdependent thoughts).

My approach to these tasks starts by revising the IS design focus, and aims at shifting the traditional design role of developing a state-of-art technical artifact to a new role of mediating aligned existentiality. Using the school of thoughts of philosophy of technology, I will underscore the influence of current theoretical settings on the design role, and subsequently propose alternative philosophical, theoretical, and practical theoretical frameworks to be used as a new setting for the design role. These three areas are my main research inquiry, and correspond to three sub-research questions.

The first task relates to a philosophical basis that would make it possible for the design role to have a focus on mediating aligned existentiality. In line with independent conceptualization of technology concern, the highly deterministic nature of technology that results from thinking philosophical footing needs to be revisited. As such, Chapter five will develop the praxis tradition as a viable alternative based on Heidegger’s phenomenology, Dewey’s pragmatism, and Marx’s notion of alienation. The leading sub-research question is: How can we formulate a philosophical foundation for design to have a role of mediating aligned existentiality?

Secondly, the dependent conceptualization of technology has shown that we can influence technology by scripting well-being characteristics into technological artifacts while describing features that hinders aligned existentiality such as consumerism. In this regard, both Chapter 6 develop a design theoretical foundation
for the design role to have a ‘redirective practices’ ability to both democratize and
democratization in line with aligned existentiality (Fry, 2007). The theoretical
discussion also supports the interdependent conceptualization of technology that
stresses the ontological relationship between human and digital technologies. The
existing design knowledge foundation stresses epistemological neutrality and
rationality, whereas the ontological context stresses creating a direct interdependent
relationship between digital artifacts and human.

The ontological conception of design knowledge enables the design role to
consider both dependent and interdependent understanding of technology. On the
one hand, design can be used to script values to digital artifacts or to describe
existing ones (i.e. a depend concept). On the other hand, we can expect that with
what we have designed as an artifact, the technological lifeworld will be designed
(i.e. an interdependent concept). The leading sub-research question driving the
discussion of the design knowledge theoretical framework of design is: How can we
formulate a design knowledge that enables the design role to have mediating aligned
existentiality as its core interest?

Thirdly, the existing practice of developing the actual artifacts uses the notion of
contemplative approaches where cognitive mapping of end-users’ everyday life is
presented as a means to design digital technologies (Ardent, 1957). As a result, the
design role is narrowly defined as formulating ‘problems’ into manageable ‘ends’
and developing functional properties to these end goals. The traditional system
engineering practice assumes the everyday lifeworld to operate based on a ‘mental
plan of actions’, and expects that the design role is to map these out and produce
digital solutions accordingly (Suchman, 2002). The expectation of straightforward
‘means to end’ mapping is refuted by both dependent and interdependent
conceptualization of technology as both perceived activity/practice, not mental contemplation defines the result of a ‘composite structure’ between human and

In addition, such mental mapping applies a reduction method on the design
domain to create objective and logical series of requirements. Such reduction
method suits to develop a somewhat nihilistic novelty where subjective societal
values such as belongingness features will be ‘polish’ from the end result of design
requirements. Thus the design role on the operational level needs an alternative
setting that enables it to target everyday practice/activity as opposed to the abstract
representation of mental mapping. The leading sub-research question driving this
discussion is: How can we articulate the basis of design role to focus on mediating aligned existentiality during the actual development of digital artifacts?
2.4. Literature foundations for exploring being-human

In broader terms, the following seven research knowledge bases have shaped my line of thought in the present research: phenomenology, Marxism, pragmatism, philosophy, critical theory, deconstruction, and activity and instrumentalization framework.

Phenomenology is a philosophical exploration of human experiences and consciousness. Edmund Husserl, often quoted as the father of phenomenology, defines the field’s interest as ‘a return to the things themselves’ (Husserl, 1964). Husserl use the word *lifeworld* to describe the ‘raw’ existence of the world, before representation and reflective analysis about it – thus, the world ‘as lived’. In this thesis, two of Heidegger’s phenomenological works, ‘Being and time’ (1927) and ‘Poetry, Language, Thought’ (2001), are used to explore the nature of humans, artifacts, and their transformation during their interaction. Heidegger’s phenomenology is used to develop the main structure of *praxis philosophical foundation* proposed in Chapter five.

Marxism is a quite extensive, and I have used only a fragment of concepts that underline the discussion of being-human (Marx calls it *being-species*), the effect of mass production and consumerism, the established relationship between science and capitalism, and its effect on being-species, which he termed as *alienation*. The main reason why Karl Marx’s work is included in the study is to emphasise how the modern context of consumerism and mass production affects the nature of technology and how we can democratize technology from its alienating features.

The contribution of pragmatism in this research is its input to design practices. As one of the pillars of praxis philosophy, pragmatism is used to formulate the actual development of technical artifacts. It strongly informs the steps we take to script belonginess in the materiality of artifacts. In addition, technology’s *mediation* role of aligned existentiality bases the concept of pragmatic inquiry of design. I have used the field of philosophy to explore different features of design. I have identified the uncritical adoption of the philosophical *thinking* tradition into the IS research as a main research problem. As noted in the independent conceptualization of technology above, this research problem demands a new philosophical foundation for the design perspective, which is proposed as praxis tradition in Chapter five. In addition, the philosophical discussion of technology illustrates that the field of design is less about material production, and more about values embedded in the material that can continuously be a subject to refinement.

During the formulation of the research question and goals, it was apparent that the core interest of belonginess in the process of design is a marginalized focus while novelty has been a core interest. Chapter two presented the main reason as the new focus the design role was given by the dualistic project accompanied by capitalist economic systems. It is also noted that the belonginess interest has been inverted from being the core interest to becoming a marginalized interest. This inversion has
led to different misalignments in the technology lifeworld experiences. Consequently, I have proposed to invert back the core interest of belongingness to its original place to solve these misalignments.

To guide the inversion process, I have applied the concept of *deconstruction*. Mainly popularized by Derrida’s work *Of Grammatology* (1998), deconstruction is a tool used to de-center a focus from a core agenda of a phenomenon to its marginalized story. In so doing, it gives a primacy to the previously relegated story, while shadowing (not eliminating) the previous core focus. My use of deconstruction is justified based on the argument that the overall technology lifeworld story and the traditional design role being used to achieve that story are in contradiction as a result of the core holistic story replacement with the dualistic story.

Different methods of deconstructing is available in the literature, including analyzing text based on its core premises or finding a marginalized story in the text to invert the focus from visibility accepted thought with the hidden and unacknowledged assumption of the text (Beath & Orlikowski, 1994). Two methods can be applied to accomplish this inversion – *overturning* and *supplement*. Overturning is used to bring out what is marginalized to the core focus while supplement concepts can be used to show the interdependent relationships between core and marginalized stories.

In case of *overturning*, we exchange a core theme of a given phenomenon with its marginalized story. For example, Truex et al. (2000) developed what they call amethodolgy to give a voice to non-methodological information systems development. Thus, overturning gives an equal footing to marginalize ideas, and at times de-emphasis the old core or influences how the old core should be interpreted. Deconstruction can also be used to explain a *supplementary* sort of relationship between two concepts, when one concept is given a full focus while the other is *deferred*. Beath and Orlikowski (1994) demonstrate such a relationship by illustrating a relationship between design and programming. When we talk about design, we deferred the programming aspect of design issues as programming cannot start, in most cases, until design is completed. But the deferred programming concept is *equally important* for the privileged design notion since no tangible results can be made without programming. I have used the *overturning* concept to underscore how holistic understanding come first in line while the now-marginalized thoughts of dualism *supplements* the primary thoughts of holism.

The thesis uses critical theory as methodological guideline to reflect on the self-evident design foundations. Critical theory is historically associated with a long tradition of successive German philosophers’ efforts, developed mainly based on the Marxist notion of *emancipation*. As such, critical theory distinguished itself as ‘different’ from other traditional theories based on its emphasis on both ‘revealing’ and ‘transforming’ the given phenomena to a better situation (Bohman, 2002; Ngwenyama, 1991). In this thesis, I have applied the notion of critical theory in
different ways. First, the theoretical stand of critical theory enables to reveal the deterministic influence that comes with the technology controlling behavior. Secondly, critical theory’s main goal of emancipation provides a means to transform the current situation into a better state. In this thesis, for example, Marx’s discussion of democratizing ‘social rationality’ is used to ‘emancipate’ users’ from technology control by insetting well-being features into the materiality of technology. Finally, as Ngwenyama (1991) pointed out a critical perspective enables researchers not only to ‘challenge the status-quo’ but also to find alternative avenues to better the given phenomena. One such taken-for-granted assumption is the philosophical stand of dualism and its adoption in the field of technology design. In Chapter five, this philosophical stand is critically examined, and an alternative holistic philosophical stand for the practice of design is proposed.

Finally, relational design was one of the notions of the knowledge base that I have explored to supplement the discussion of design practice. The main premises of relational design is the notion that ‘human interaction with the world is mediated by constructed artifacts’, and their interaction results in an artifact becoming an instrument – called ‘instrument genesis’ (Folcher, 2003). As such, everyday human activity is instrumentally mediated, and by turning artifacts into instruments, users continue the ‘design’ of the artifact (Rabardel & Beguin, 2005).

In this thesis, I will use the relational design concepts in two main ways. First, activity theory supplements the understanding of design environment as lifeworld full of actions, articulations, and to some level contemplations before it is rationally broken down for traditional design methods. Secondly, using the notion of instrumentalization, the design practice focuses on expected users’ activity of instrumentalization. Thus, from the design practice point of view, the design role is to develop mediating artifacts for instrumentality purpose as opposed to a means-to-end tool.
3. METHODOLOGICAL REFLECTION AND EMPIRICAL EVIDENCES

In this chapter, I will present my overall research design and how the empirical evidence I have analyzed contributed to both clarify and provide a foundation for the exploration of the research interest. This chapter has two main sections. In the first, the research topic will be briefly described as to how my research interest has developed into the issue of the design role and subsequently into my specific interest in the design role’s foundations. The second section discusses the overall research design. In it, research goals, conceptual basis of my research, research strategy for knowledge claim, research paradigm, empirical evidences, and the validity of research is presented.

3.1. Research topic – ‘the design role’ as a research interest

In the very beginning of my PhD study, I had the opportunity to participate in a project where we compare business professionals’ system analysis reports with IT professionals’ reports to evaluate the effectiveness of what is called ‘work system template’ developed by a research colleague Steve Alters (2011). My role in this project was to read and evaluate these reports based on five competency criteria. In total there were 301 reports, or briefings as we called them, with an average of 10–12 pages. After the briefings went through a simple validation of data readiness for research work, I selected 84 briefings for closer analysis. The ‘content analysis’ process, its result, and its implication for IS design were subsequently published in a design research conference (Paper I).

Even though the main interest in that project was to evaluate 1) the effectiveness of a work system template, 2) non-IT professionals’ quality of system analysis reports, I was able to see end-users’ unplanned work practices, adaptations, experimentations, workarounds, and tinkering’ are an integral part of everyday technology use. In addition, it was clear from this project that the non-IT professionals’ reports were more interested in finding ways to accomplish an overall everyday work practice such as articulations, while IT professionals’ reports were interested in solving daily problems by using IT as a tool. This also means that for an average everyday IT user, what is important is finding ways to go by their daily activities, not their use of IT solutions per se.

Thus, I began to look more closely at the role of technology in human everyday practice and technology’s meaning for an everyday user. The preliminary questions I have developed in the first two years of my PhD work was limited to the analysis of what users expect from digital technologies and how the design role can be aligned with those expectations only in terms of design activities and processes. During my halfway PhD seminar, with a partial and preliminary empirical analysis, I presented a framework that aims to change the focus of design activities from
producing artifacts with *usefulness* characteristics to *fitness* characteristics that evolve with users’ needs.

But when I started exploring the longitude empirical materials and expose to a broader design knowledge base through IS design literature, it became clear that my first inquiry focus on design processes were limited to explaining what constitutes the design role, let alone critically analyze it. Therefore, I reworked the design role inquiries to include not only design activities but also broader subjective design issues such as culture, beliefs, ethics, politics, and societal values. These issues are naturally *philosophical*, though shaped through the *engineering* nature of design. With this new perspective, I have broadened my research topic from exploring the design role of developing fitness characteristics of technology into exploring a theoretical framework for the design role to mediate *aligned existentiality*.

### 3.2. Research design

In developing my research design, I have used two important contribution of qualitative research design works in the field as a guide – “Designing social research” by Blaikie (2009) and “Qualitative research design: An interactive approach” by Maxwell (2012). Blaikie’s straightforward approach and, to some extent, logic-based constructions between his nine research elements (p. 43) makes it easier to grasp the research design process in a factual and prescriptive fashion. Maxwell’s presentation of five design components in an *interactive model*, however, illustrates the constant relationship building between research components. Both works, like other social research design works (Creswell, 2007; Mason, 2002), can provide suitable guidelines for doing qualitative research on their own. Their different ways of relating research components made their works (at least in my opinion) supplementary to each other. To guide the overall research design – “a *working document prepared by a researcher*” (Blaikie, 2009 p.12) – I have implemented Maxwell’s five component based interactive model (see Figure 3.1).

In his model, the two upper level components are goals and conceptual components. *Goals* represents what research issues we want to clarify. *Conceptual frameworks* are existing theories, frameworks, prior findings, and literature review that help to find not only what has been done, but also conceptual building blocks. The lower level of the model includes methods and validity. *Methods* component represent how we are going about the research question(s). *Validity* component related to how the research knowledge claim presented in the research passes the test of scientific research. *Research question* situated in the middle to have access to both upper and lower level components. Maxwell (2009) suggested that different ‘contextual factors’ influence these main five components (p.6). For example, contextual factors for methods component may include research settings, ethical standards, or research paradigm. Blaikie’s (2009 pp. 81-109) two main design
elements, research paradigm and research strategies, in particular will part of my research design.

Figure 3.1 Interactive Model of Research Design (adopted from J.A. Maxwell, 2012. © sage)

3.2.1. Goals – why am I doing this research?

The main intellectual goal deals with understanding the phenomena of interest (the design role) and why it ‘behaves’ the way it does. Once I have formulated the phenomenon of interest as the design role and its place in IS research (chapter 2), I have explored why it is currently conceptualized the way it exists in the literature. Different factors were identified as reasons in three dimensions – philosophy, design knowledge, and practice foundations. The thinking tradition is presented as the main culprit for the design role to have rationality and logical thinking as its main ‘behavior’. Design knowledge, combined with consumerism values, gives design the role of optimizing design concepts from the perspective of epistemology (how question) standpoints. The development of artifacts has a base in the dualistic tradition that promotes the contemplative way of thinking about the design domain where the design role is defined as finding optimizing means of logical contemplation and means of applying these contemplations.

With this background, the present research practical goal aims to give design a new role, that is to mediate aligned existentiality – hence answering the how part of the main research question. As noted earlier, the existing design role nature comes from its three identified foundations; philosophy, design knowledge, and practice. To make the design role to ‘behave’ as a mediator of aligned existentiality, I have
identified these three areas as a research focus that needs alignment. As such, the main practical goal is to formulate three theoretical frameworks as a foundation for the design role in the area philosophy, design knowledge, and design practices respectively so that mediating aligned existentiality become the main focus of digital technology. These three theoretical frameworks are also the main knowledge claims of this research.

Research knowledge claims can be developed with different contribution in mind—descriptive, explorative, explanatory, predictive, prescriptive, understanding, change, evaluation, and assess impact’ (Blaikie, 2009). The research questions and related goals discussed above have provided a direction as to what type of knowledge claim the proposed theoretical frameworks are aiming for – explanatory and change knowledge contributions. All the three frameworks have, in one way or another, explained why the design role ‘behaves’ as it does. It should be noted that, explanatory contribution can overlap with descriptive contribution (Blaikie, 2009). Frameworks aiming for change describe how a given phenomenon of interest can be changed for the better. The three frameworks propose an idea of change by bringing alternative foundations for the design role. Research works that aim at change contribution can also overlap with predictive and prescriptive contributions. One can see all the three frameworks as predictive of change in behavior in the design role or heuristic deliberation presented in Chapter eight as prescriptive, which in both cases can be ‘somewhat’ accurate argument.

What I mean by theoretical framework contribution

In the natural science disciplines such as mathematics and logic, notations and the means of “Cartesian validations” (i.e. $x=y$, $y=z$, $\Rightarrow x=z$) are applied to claim knowledge in the form of argumentations and theorems (Love, 2000). Disciplines such as IS research that use a contribution of ‘reference fields’ as diverse as natural and social sciences, a notation based theoretical and logical explanations provide a limited opportunity to develop subjective-oriented theories. As such, alternative research approaches and theoretical explanation development is needed for research areas such as the present work.

Theoretical explanation building is a matter of creating a sensible and valid relationship between concepts. In order to achieve that, we should understand the nature of these concepts and their basic building blocks. For social research work, ontological and epistemological questioning achieved just that. Ontological and epistemological questions for theory building are the equivalents of Cartesian validation or as Jung (1987) noted ‘sources of coefficients’ for social studies. For example, if one wants to theorize ‘human agency’, the attempt to do so begins in defining human specificities (coefficients) with questions such as ‘what is the nature
of being-human or what does makes us human’ (Jung, 1987). An example of such analysis can be found in Heidegger’s work on being-human analysis based on human existentials such as care, being-in-the-world, or existing as a practitioner.

In each of the research dimensions – philosophy, design knowledge base, and design practices – I have proposed a theoretical framework as a knowledge creation route. Theoretical explanation is the preferred way of presenting claims when set(s) of theoretical settings exist for a particular phenomenon of interest (i.e. the design role) and one aims to present a selected set of frameworks as a viable option (see paper VIII). Chapter five through seven begin with elaborating different concepts/elements of the phenomena of research at hand in the abstract level before summarizing them into relationship-oriented frameworks. The concepts were drawn mostly from existing conceptual frameworks noted at the end of Chapter two and triangulated with empirical evidence.

3.2.2. Conceptual framework – what is already exist in the literature that I know

In the previous chapter, I have discussed seven conceptual frameworks that are used as a literature base to explore the design role and the notion of being-human: phenomenology, Marxism, pragmatism, philosophy, critical theory, deconstruction, and activity and instrumentalization framework. Hence, this section briefly discusses where I situated my research work (research paradigm).

I have followed a critical approach as a research paradigm. The purpose of a research that follows critical approach not only reflects on a given phenomenon but also aims to transform it to a better condition (Ngwenyama, 1991). In particular, my analysis explores taken-for-granted assumptions in the IS discipline related to the human-technology relationship. Critical insight into the human-technology relationship (reflection) provides an alternative way of thinking (transformation) about how we can design technology aligned with critically reflected insights (Feenberg, 2002).

I have implemented critical approach as follows: First, I have explored what an everyday end-user’s lifeworld experience with technology looks like both when adopting new technology and ‘living’ with it based on a longitudinal study of technology appropriation case study (reflection). Using the case study and literature, I reflect on taken-for-granted human-technology relationships assumptions in the discipline related to the social (users), the material (IT artifacts), and the socio-material (relationship between the two). Second, in order to explore an alternative design focus I have used phenomenological understanding of human-technology relationship and was able to construct what a holistic understanding of human-technology relationship looks like (reflection and transformation). Using holism lens, I
could tell a different story about users’ expectations from the technology lifeworld, the nature of technology itself while in use, and the role of technology in everyday practice. Finally, I have attempted to reformulate the focus of IS design according to the understanding of a holistic technology lifeworld experience in three dimensions as discussed in chapter five through seven; philosophy, theoretical knowledge base, and design practices (transformation).

3.2.3. Research question(s) – what do I want to understand?

The main research question was developed based on the premise that the role we have attributed to design and designed digital products are misaligned with what users want from technology lifeworld experiences. I have examined the history of technology use, which in turn has shown that users’ way of applying tools/technology has been consistently holistic in its nature. In addition, using empirical evidence, Paper VI and XI demonstrated that end-users’ technology-life world is consistent with holistic way of using technology in everyday life. Based on these discussions, I have proposed ‘how and why can design enable digital technologies to mediate aligned existentiality’ as the main research question.

The research question is formulated to connect an understanding of the design role in influencing technology (the why question), and the practical goal of aligning design with our two-facet of existentiality (the how question). In line with Maxwell model, I will answer the why question mainly based on the upper level components (goals and conceptual frameworks) and the how question with the lower level components (methods and validity). Using the conceptual framework knowledge base, chapter two has identified the sources of a misaligned relationship between technology lifeworld and current design setting – bringing up the three concerns and formulate them as independent, interdependent, and dependent. Adding this with the discussion of design practice over three epochs (pre-modern, modern, and postmodern), I have deduced three sub research questions that enables the main research question to connect to the lower level of research design components.

3.3.4. Methods

This section has two parts; 1) research strategy that I follow to claim knowledge, and (2) empirical evidence and their contribution toward formulating and answering the research questions.

Research strategy

Research strategy guides how we are intended to produce knowledge. Blaikie (2009) noted that there are four research strategies that can be used to answer
research question (p. 84) – inductive, deductive, retroductive, and abductive. Retroduction, sometimes called a “hypothetical inference” (Peirce, 1885, p. 181), is an approach that enables conceptualization of both deductive and inductive thoughts of empirical and theory based knowledge production. It can start with an ‘empirical lift’ (Alvesson & Sköldberg, 1994) or researchers’ literature based ideas or theories (Ragin, 1994). Sæther (1998) noted that Ragin’s (1994) development of retrodution for social research can enable researchers to deduce analytical frameworks from structured social theories (in my case the identified conceptual frameworks). With this ‘deductive part of retrodution’ at hand, the next step is inducing the ‘theory laden empirical evidence’ or to make sense of the deduced framework based on the empirical material (Sæther, 1998). The result is what Ragin termed as ‘images’ – an idealized abstractions/conclusion report that assist researchers to connect empirical evidence to deduced analytical framework. The interaction between these images and deduced analytical frameworks is called retroduction; resulting in ‘progressive expatiations’ and knowledge claims in the form of notions, frameworks, ideas, or theories. A retroductive research strategy model proposed by Ragin (1994) is presented in Figure 3.2.

**Figure 3.2** Retroductive research strategy for knowledge claim (adopted from Ragin, 1994)

I have adopted the retroductive strategy based on the following three reasons. First, as noted above, the proposed theoretical frameworks aim at explanatory and change knowledge claims. A retroductive strategy is better equipped than any of the other strategies to accommodate both knowledge claims (Blaikie, 2009, p. 105). Second, the research paradigm I have selected (critical theory) is aligned with both the purpose of knowledge claims and retroductive strategies. Blaikie (2009) noted
that the choice of strategy does not commit us to a particular paradigm, but the “reverse may be the case” (p. 97). Since the research work is committed to critical theory, retroductive is the most suitable strategy. Third, my research questions are primarily aimed to answer the questions of ‘why’ and ‘how’. The explanatory nature of a ‘why’ question, in particular, and the change knowledge claim of ‘how’ are best developed based on retroductive strategies (Blaikie, 2009, p. 105).

I have applied retroductive strategy as follows. ‘Why’ the design role is the right focus to align digital technologies with technology lifeworld is answered based on the notion that it was design in the first place dualism has influenced that results a misalignment between technology and everyday lifeworld. This misalignment is further illustrated in each of the design dimensions identified – design philosophy, knowledge, and practice. In answering the how question, I have applied retroductive approach in proposing holism as a core understanding of being-human while dualism as accompanying perspective in all the three dimensions (chapter 5-7). After discussing each dimensions using a retroductive research strategy, I have used the dimensions’ result to formulate an overall holistic foundation for design to have a role of mediating aligned existentiality. Chapter 8 reports the result of this in the form of retroduction using a focus group empirical evidence. My overall knowledge claim research strategy process through retroduction is presented in figure 3.3.

Figure 3.3 Knowledge claim research strategy
Empirical evidence

The main empirical material for this work comes from a longitudinal case study of new technology appropriation processes on three campuses at a Swedish university. The Learning Resource Center (LRC) was responsible for overseeing the adoption of a new learning management system. In addition, the LRC staff and two system developers were responsible for administrating and providing system support throughout the process of implementation. Two other empirical evidences have supplemented the research work: work system briefings and focus group study. I will start with the case study description.

1) Case study empirical material

The university in question used the WebCT learning management software for almost a decade before deciding to move on to the Moodle open-source system. At the time of implementation, the university had more than 1,500 teachers and 13,055 students on three campuses, situated in three different cities. When starting to gather the empirical data, there was approximately 250 courses in Moodle, and it was connected to other IT systems (e.g. Ladok) which runs on ATLAS software and the Student portal based on LIFERAY software. Other apps connected to Moodle includes Kaltura (media management software) and Alfresco (file management software).

Moodle was implemented on a phase by phase basis in parallel with WebCT for a period of one year before WebCT was completely phased out. The first implementation was in the summer of 2012 for a limited number of members of staff, after it has been tested on the university testing platform server for a period of six month, starting December 2011. The system is fully operational and replaced WebCT in January 2013.

During the implementation of Moodle, the university nominated (on a volunteer basis) 16 so-called Moodle champions (super-users) who served as a focal point in their respective departments. The champions participated in training organized by LRC. The champions were able assess the appropriation process of Moodle among the over 1,000 members of staff at the university. When I carried out an interview Moodle had been in use for a period of time; thus the Moodle champions and LRC staff were interacting with both new and fairly experienced end-users.

The empirical material gathered consists of 32 one-on-one interviews and a content analysis of 515 messages sent by users to LRC during the technology deployment process. A friendly relationship and social gatherings with both the LRC manager and Moodle implementation project manager has provided me with a
greater access to the rich context of the university’s planning and implementation of Moodle. Overall, I was able to collect a rich empirical material consisting of notes, recorded interviews, graphs and illustrations of the implementation process, email correspondence, and documentation. My first contact with the Moodle project was in the autumn of 2012, shortly after the Moodle trial period, and final contact was in the late summer of 2014.

The formal interview process was planned as follows. I conducted interviews on two different occasions; in the first few months of Moodle deployment and after 14 to 18 months, when the system is considered to be in long-term use. In my research work, interview_1 refers to the first round of interviews, between December 2012 and March 2013, while interview_2 refers to the second round conducted between March and June 2014. With the exception of the LRC staff members, most of the interviewees were Moodle champions who volunteered for the position. As champions, there were assigned to create Moodle templates for courses at their department. Table 3.2 provides facts about the interview empirical materials.

<table>
<thead>
<tr>
<th>Participants</th>
<th>No. of Participants</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRC administrators</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>LRC staff members</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Moodle champions</td>
<td>10</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Moodle developers</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

I have conducted semi-structural interviews with all Moodle champions spanning on average 45 min. each. In the first phase of the interview, I focused on how the new technology affects users’ everyday life in the work place. In building a new relationship with technology, I was also interested in the discussion of functional properties that were important for the user in the beginning of the new technology adoption. In the later phase, I concentrated on the gradual growth of relationship building with the new technology and how, if at all, users came feel comfortable with the technology. Overall, I tried to focus on outlooks, beliefs, conviction to grasp users’ experience when a new technology comes into their lives and their struggle to accommodate this change into their everyday lifeworld.

In addition to interview empirical material gathering, the LRC manager was willing to provide users’ helpdesk inquires sent to LRC between August 2012 and April 2014 (i.e. a period of 20 months). After removing metadata fields, the LRC manager extracted empirical material from Nilex (helpdesk ticket management
system) to MS Excel form. In total, I received 588 messages with anonymous ID, date, body message, and LRC reply records sorted according to date. The analysis of these messages is presented in Paper XI.

Once the empirical materials was gathered, all interviews were transcript and transferred to the qualitative analysis software ATLAS.ti, while each Nilex messages were read to validate their consistency and importance for the research work. In total, 588 messages were reviewed; 73 were discarded and 515 messages were accepted for analysis. I have used long term IS use area of research to thematized the case study within the IS field.

Human-technology relationship has been studied under different research interest in IS field including IS acceptance, adoption, actor-network agency relationship, socio-materiality, organizational studies, IS continuance use, or simply IS usage (Hasan, 2006; Gefen & Straub, 2000; Leonardi, 2012; Latour, 2013; De Guinea & Markus, 2009a). As such, the field is rich in theorizing human relationship with technology, though different focus doesn’t always mean different philosophical foundations. I have thematized my research work in the field of long term IS use as long term IS use study focus is wide enough to study the progress of human-technology relationship building. Long term IS use study provides a time frame to understand how users’ habits and everyday lifeworld experience were affected in a lasting way through the experience of new technology (see Paper XI for detail analysis).

The methodology for the analysis of the empirical evidence was based on content analysis (Manning & Cullum-Swan, 1994; Klein & Trux, 1995). I have followed a two-step process; manifest and latent content analysis. Manifest content analysis was applied to describe what the text is obviously says and deals with the obvious aspect of data while latent analysis involves a deeper analysis of a text that aims to identify the relationship aspects of empirical evidence and involves an interpretation of the underlying meanings using theoretical constructs (Grameheim & Lundman, 2004). Categories and theme were derived from manifest analysis which, in turn, were used to validate theoretical constructs developed to understand long-term human-technology relationships (see Paper XI for a detailed method of analysis).

The case study empirical evidence contributes to the thesis in three ways. First, it plays a role in formulating the research question. It had played a role in validating the holistic understanding of being-human is also reflected on technology lifeworld experience. Secondly, I have used the case study to investigate human existential features such as care, the development of users’ attachment with artifacts, technological lifeworld and social identities, and the relationship growth between users’ and digital artifacts. Thirdly, the case study is used to further the visibility of
the proposed inverted frameworks. In this capacity, the proposed praxis foundation of the design role, for example, is analyzed using users' actual experience of the technology lifeworld.

2) Focus group empirical material

The second empirical evidence comes from the focus group study. The focus group study was conducted in a local consulting company (hereafter named Xyz) involved in the business of software development and integration and organizational strategy, as well as leadership consultations. Xyz has eighteen employees and was established in its current form in 2007. The manager of Xyz states that the company aims to operate in the framework of ‘people, business, and IT for a better society and a better world’. The focus group participants were expected to be six, but due to an unforeseeable circumstances one of the participant was unable to partake in the discussion.

The group dynamics reflected a good atmosphere among the participants. The company was willing to dedicate 5 hours divided into two sessions for this study, which also includes lunch socialization. During the first session (10 a.m. – 12 a.m.), I was able to introduce the design theoretical framework proposed in Chapter six and the overall holistic approach toward design field. In addition, the managing director introduced the company and its plans for the future. The first session also included discussion about design philosophies in design field and how the company’s philosophy of design fits into the design literature. After participating in the first session, one of the developers had to leave for the day.

During the second session, I started by handing out sample questions from the heuristic deliberation (chapter eight) as a basis for discussing the four ontological design concepts – things, design activities, appropriation, and design agency – proposed in Chapter six. In addition to verbal comments, I also encouraged the participants to use the white board and posits to give their thoughts on the holistic understanding of the design role and the overall holistic approach. In order to accomplish this, I have drawn Chapter seven’s proposed theoretical framework on the whiteboard where they can either use makers or posits to write comments placing them into the squares where they assumed their comments belong. Figure 3.7 shows the whiteboard we used in session two. Both sessions, excluding the lunch break, were tape recorded.

The methodology used to analyze the material followed a qualitative ‘content analysis’ technique (Myers, 1997). The aim of the analysis was to develop a descriptive narration on how the proposed holistic design thinking and theoretical framework in general, and heuristic deliberation in particular, fit into the picture of
real-world design practices. As such, the main part of the analysis is similar to the first step of ground theory ‘open coding’ stage or ‘manifest data coding’, where effort is made to ‘delineate blocks of raw data into categories’ (Blaikie, 2009, p. 211; Graneheim & Lundman, 2004). To be specific, I have followed the following steps:

1) I have transcribed the recorded sessions and uploaded them to Atlas.ti for coding purposes. At this point, each participant was given different colors to understand the group dynamics (i.e. individual vs. group consensus opinion).

2) The group discussion was first read and re-read for conversation level analysis purposes. Codes were assigned based on the specificity of a particular discussion. For example, when a conversation about designer personality or skill was discussed among the participants for a period of time, it was coded as ‘design agency’.

3) After the coding was completed, the codes were iteratively read once again to merge patterned codes to create a more merged and generalized code. The merged codes were compared with the original conversations where the individual codes came from to validate their representation.
4) Using the new merged codes, four patterned categories – holistic oriented design role remarks, general comments, recommendations on heuristics, missing concepts – were emerged (see Table 3.2).

![Figure 3.4. A whiteboard was used to write general comments](image)

The main contribution of the focus group study to my research is to test out the overall holistic conceptualization of design in real-life practice and to illustrate what
a design role would look like in holistic setting. The focus group study should not be seen as a one-on-one validation of the more than 100 questions included in the heuristic deliberation. However, the focus group feedback on sample heuristic questions has provided an opportunity to improve the heuristic deliberations for a future heuristic deliberation ‘version’.

<table>
<thead>
<tr>
<th>Table 3.2. The four main categories of the conversation-based coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories</td>
</tr>
<tr>
<td>Holistic oriented design role remarks</td>
</tr>
<tr>
<td>General comments</td>
</tr>
<tr>
<td>Recommendations on heuristics</td>
</tr>
<tr>
<td>Missing concepts</td>
</tr>
</tbody>
</table>

3) Work system ‘briefings’ empirical material

The third empirical material used in the thesis comes from a project I was involved in at the beginning of my PhD studies aiming to develop a template-based work practice analysis form for both IT and non-IT professionals. The template was used a theoretical framework forwarded by Steve Altar’s work system method (Alter, 2011). The project had already collected more than 300 completed reports (called briefings), where both IT and non-IT professionals were invited to analyze
their everyday work practice and prepare a requirement elicitation document for system development. The main goal was partly to improve users’ participation in system development process and partly to improve the template form. The result of this work was published in Paper I.

There were two implicit insight of the material that supplements this research work. The first contribution relates to what two different groups of analysts (IT and non-IT professionals) considered important input for the requirement elicitation document. On the one hand, the majority of IT specialist briefings aimed at finding concise and manageable problems, and it is what is often provided as an important part of requirement elicitation. On the other hand, non-IT professionals were adamantly focused on workarounds, non-IT artifact contribution on work practices, and users’ expressions, and at times considered the work system template outline a problem for their big picture way of thinking. Their approach magnifies a more holistic understanding of the design domain, naturally reflecting mundane everyday practice. This insight motivates/supports the notion of activity-based design practices, and affects how we perceive the design domain and our expectations of digital technology in use. In particular, Chapter seven considers this insight and presents users’ lifeworld nexus as a target for the design domain.

Secondly, the work system exercises demonstrated that users are competent in analyzing their work practice and recommending IT-based solutions, regardless of their background. In fact, non-IT professionals were found to be more attentive to the ‘invisible’ yet important connection between technology and the work practices such as articulation, workarounds, and “effective manual systems” (Lederman & Johnston, 2011, p. 510). With this evidence, the design practice in Chapter seven presents both users’ redesigning (‘secondary design’) of technology during appropriation and their participation in design activities, particularly in the first stages, as a necessary and welcoming effort. Paper VI furthers the notion of secondary design using the case study material.

3.2.5. Validity

In the final part of the research design, Maxwell (2012, p.243) raises two research bias threats: researcher’s own bias and the effect of researchers on the setting or individual studied, also known as reactivity bias. In my research, the main potential source of bias comes from my preconceptions and analytical frameworks that I have applied to understand the empirical evidence. One of the ways that I have deal with this bias is to triangulate my final result with an empirical evidence other than the main case study material. The case study itself has provided another ‘bias control’ in which different sources were used to collect the empirical evidence. Though the
analytical framework used to analyses the materials is resembling, each dataset provides a different perspective in terms of what is amplified as a main result.

However, my main effort was not directed to avoid bias completely, but to ‘keep the integrity of research results (Maxwell, 2012). In particular, three more efforts were help to achieve this endeavor. First, the empirical evidence is composed of four types of dataset; interview, document report analysis, users’ electronic helpdesk request, and focus ground study. As such, triangulation has assisted to reduce systematic bias and increases the chance of the research’s result generalizability. Second, my case study has involved a longitude rich data that enables me to collect a more complete observation and a general picture about the empirical setting. Finally, when possible I have adapted Becker’s (1970) suggestion of using a quasi-statistics method to produce descriptive statistics. For example, the case study report includes a descriptive statistics data to present the progression of technology adoption over 18 month (see Paper XI). In addition, while analyzing non-IT professionals’ ability to carry out system analysis tasks, a quantitative method was used to develop a relationship between participants and different variables of competence (see Paper I). The over research design is presented in figure 3.5.
Research question(s)

How and why can design enable digital technologies to mediate aligned existentiality?

- How can we formulate a philosophical foundation for design to have a role of mediating aligned existentiality?
- How can we formulate a design knowledge that enable the design role to have mediating aligned existentiality as its core interest?
- How can we articulate the basis of design role to focus on mediating aligned existentiality during the actual development of digital artifacts?

Goals

- Understand why design perceives novelty as a core interest (explanatory knowledge contribution)
- Propose theoretical frameworks for design to mediate aligned existentiality (change knowledge contribution)

Method

- Retrospective research strategy
- Research articles
  
Empirical material

- Case study
- Focus group
- Document content analysis

Validity

- Triangulation
- Long-term involvement
- Quasi-statistics
- Rich data

Chapter 2

Conceptual frameworks

- Philosophy
- Deconstruction
- Phenomenology
- Pragmatism
- Marxism
- Relational design
- Critical theory
- Instrumentalization

Figure 3.5. The overall research design

Chapters 2, 5 – 8

Chapters 3, 4
4. PRESENTATION OF PAPERS

The included papers have different foci ranging from philosophical discussion of IS design to holistic understanding of human-technology relationship to methodological discussions of technology lifeworld experience. Due to their various theme, I will present the papers based on their chronological order. In addition, I have structured the chronological order into four groups to illustrate how the publications gradually shaped my PhD work while progressing overtime to its current state. Noted that the chronological order implies the period when the papers were written/drafted rather than their actual publication dates as some had to go through different length of review time.

Cluster one

Three months into my PhD study, the first paper has motivated the interest of IS design and the notion of alignment between IS use and digital technology design. In addition, non-IT professionals’ ability to analysis and report their everyday lifeworld even at times better than IT professionals’ analysis briefings has shown end-users’ competence to delineate a design domain. I will briefly summarize the paper as follows.


Short description of the paper: The paper reports the difficulties related to user participation that has persisted in relation to specification of requirements and business/IT alignment. It discusses a possible path toward addressing these problems by empowering non IT professionals to analyze systems in business terms rather than in formalisms for IT specialists. The research evaluates 84 system analysis briefings reported by both IT and non IT professionals over 7 consecutive academic terms, concluding that business and IS professionals are able to use the work system template to effectively analysis their work practice.

Contribution to the thesis: The main contribution of this paper is in formulating my research question toward the issues of alignment between design and digital technology use. In addition, the research work exemplifies what is important for end-users’ in everyday life when it comes to their expectations from IT systems. Finally, the research work demonstrates non-IT users’ competence in developing their work practice into system requirements. In particular, users’ ability and proximity to their work practice gave them an upper hand to formulate the requirement elicitation from the perspective of everyday articulations and
workarounds. While the empirical evidence particularly supports the discussion on Chapter six, the overall result of the paper shapes my research topic.

My contribution to the paper: I was mainly involved in the emeprical evidence anlaysis of the work pratice briefings and report of the results. The co-authors were involved in developing the stracture of the paper.

Cluster two

In this cluster, I have included four papers. They represent my first attempt to discuss alignment between technology lifeworld experiences and IS design. In addition, I have tried to develop the notion of implementing technological artifacts as a mechanism for self-reflection, where users can learn new ways of everydayness. This notion lay a ground work for the later discussions of using technology as a platform to ‘politicizes’ different wellbeing values. By the end of this stage, I was also preparing for my midterm seminar (50% of my PhD study evaluation) where most of the works were focused on design activities from epistemological design knowledge perspective that aims to develop IT artifacts with users’ contextual use. The cluster represents a transition of my work toward the philosophical discussions of design, where I found Heidegger’s phenomenological works as a theoretical anchor. I will briefly summarize the papers as follows.


Short description of the paper: The paper presents an analytical framework to formulate the relationship between two IT systems attributes: usefulness and fitness. The framework founded on a relationship that exists between biological organisms and their landscape. The concept draws on the notion that sustainable relationship between two systems can be achieved through structural coupling results from mutual perpetuations as it exists in the natural world. In this setting, while contextual usefulness is established in the end-users’ environment, IT designers perpetuate fitness into the conceptual environment. Based on the empirical evidence, the paper illustrates how end-users are better equipped to define their contextual usefulness of IT systems while IT designers’ should aim to design artifacts with attributes that facilitates end-users’ contextualization. Such setting, the paper argues, may lead to long term use of digital artifacts.

Contribution to the thesis: I have used the paper to demonstrate the nature of interdependent relationship that exist between human and technology, which can be seen a co-constituted ‘composite structure’. In addition, the paper has implicitly indicated that in order for such co-constituted structure continues, traditional designers should aim to facilitate users’ way of contextualizing digital artifacts in
their daily practice, later recognized in chapter seven as instrumentalization. By identify an end-user as contextual designer, the paper also supports the thesis’s notion of secondary designing (also presented in chapter seven).


*Short description of the paper:* The paper reports how users’ past ways of contextualizing technology in everyday practice, identified as residuals, affects new technology adoption. Using Leonardi’s (2011) *imbrication* metaphor, the paper discusses the implication of user’s residual sociotechnical entanglements for new IT implementation. The residual pattern developed can result in two seemingly opposite effect for IS adoption and design activities: Iron-cage effect and end-users broader participation. On the one hand, users will always look for familiar way of doing things in newly adopted technologies, hence iron caged. On the other hand, a broader familiarity with different digital media can enable users to participate in design processes as users are becoming increasingly digital natives using personal information system.

*Contribution to the thesis:* the paper supplements the thesis’s notion that the definition of being-human has always sits in past historicity and in that past way of technology lifeworld residuals play an important role in defining both users’ way of adopting new technology and how they will be participating in designing projects. Users’ local logic and workarounds are presented as the fundamental residuals that affects new human-technology relationship, hence further supports personal historicity as a fundamental understanding of technology lifeworld experience. The discussion presented in this paper support Chapter five’s philosophical discussion of phenomenology in praxis tradition.


*Short description of the paper:* This paper explores the possibility of using digital technology as ‘cognitive tools’ to create technology-driven organization. In this capacity IT plays the role of creating an environment that facilitate reflective thinking, learning and collaborating with users. Basing this role, the paper also proposes a new way of evaluating IT investment criteria. The paper uses Heidegger’s ‘tool analysis’ framework to investigate the new role of IT which aims to facilitate knowledge as its materiality content. The paper argues that the role of design should move from seamless match making of users’ requirements with IT
features to situating and accommodating users’ self-designing processes. It also identified human-technology relationship as holistic and experimental.

**Contribution to the thesis:** This paper is my first main attempt to refocus the design role from the traditional dualistic role of producing useful and efficient artifacts to users’ secondary designing, using a philosophical discussion of holism. It has also explore the design role form the ontological perspective where digital technologies can be used as cognitive artifacts; a facilitator of knowledge which later redefined as mediator of knowledge.


**Short description of the paper:** After introducing two main worldviews of understanding reality, holism and dualism, the paper develops four contingent IS design principles that are embedded in contextual use. The paper discusses two dualism cores that defines design and use; externality and determinacy. With reframing the focus of design using work system theoretical framework to discuss users’ context, it proposes holistic based IS design principles and their application in different IS design activities. It concludes with highlighting the need for further study of contextual oriented IS design principles.

**Contribution to the thesis:** The main contribution of the paper is its presentation of IS design principles based on Heidegger holism thinking. The attempt summarizes the philosophical base for most of the preceding papers that were aiming to develop technology based on users’ IS contextualization activity. In addition, it has introduced the notion of alignment between holistic IS use and holistic IS design, which was used as base for discussing misalignment in the traditional technology design and use.

**My contribution to the paper:** I did the empirical gathering and analysis and develop the dualistic and holistic philosophical discussions. The final analytical discussion plus the organization of the paper was developed with Katarina Lindblad-Gidlund.

**Cluster three**

After the midterm seminar, five more papers were followed, which I have divided into two clusters. In this cluster, three papers are presented. Based on the feedback from the midterm seminar and with the longitude empirical evidence coming to a picture, I have rework my focus from just one design concept (i.e. design activities) to a more broader design issues. As the new extended design issues were subjective in their nature, I have also explored ontological understanding of design issues as a base to formulate the nature of design concepts. I started with analyzing the appropriation design concept based on users’ existential way of responding to
new systems (paper VI). A journal version of Paper V was also re-worked with the aim of changing the design activities’ focus from epistemology to ontology using holism philosophy. The literature review work started before the midterm seminar slowly evolved to include the philosophical nature of design concepts. I will summarize the papers as follows.


*Description of the paper:* Using the HCI design field research, this paper presents how the practice of design is greatly influenced by active knowledge harnessed during requirement elicitation (RE). After arguing how such approach misfit with postmodern era technologies where the world of ICT moves towards user-centric computing with needs for evolving features, it presents human existential way of engagement with other entities as a guide towards design that is not pre-determined by RE, but by users’ natural response to changes (secondary design). The case study presented in chapter three is applied to support the paper’s assertion of users’ secondary designing. It is argued that secondary design is not ‘unfaithful use of technology’ but a sensible human response with known triggers and effective re-designing processes aiming to fit new features with practices and identities.

*Contribution to the thesis:* I have used the paper to demonstrate how our existential nature of responding to newness can better explain why users’ involved in secondary designing and how such understanding can be used in traditional design stage. The paper supplements the discussion of understanding appropriation design concept ontologically (Chapter seven) and practical design (Chapter seven). It explores users’ participation in the design process in the form ‘secondary design’. In addition, the paper attempts to relate the present research with interaction design field as most of the design role basics discussed in Chapter seven are well developed in HCI field of research. In chapter seven, the paper is used to underscore how a non-binding and open to change information systems can facilitate easy instrumentalization.

*My contribution to the paper:* While I did the Heideggerian theoretical understanding of being-human discussion and the empirical gathering and analysis, Arun Aryal has developed the HCI part of the paper.

**Paper VII:** Lakew, N., Lindblad-Gidlund, K. “Aligning IS design activities with technology appropriation—Holistic philosophical foundation for design practices,” (under review: International Journal of Technology Human Interaction (IJTHI))

*Description of the paper:* The main aim of this paper is to examine the philosophical grounding of design practices. After presenting two core elements of dualism,
externality and determinacy, it discusses their influence on IS use and design research inquires. In addition, it propose holistic ontology as an alternative philosophical ground based on Heidegger’s tool analysis framework, and contrast the proposed alternative using the case study presented in chapter three. It, then, infers holistic oriented IS design practices and illustrate them on different IS design areas; from delineating users’ requirements to developing IS artifacts’ properties and functions.

Contribution to the thesis: This paper aims to critically examine the concept of design activities from its ontological understanding based on holistic philosophical discussions. This journal version has removed the work system theoretical perceptive from its workshop version (paper V), and has instead focused on underlining an ontological interpretation of the four design practices – defining problem domain, formal representation of user requirement, abstractions to computer representation, and development of objects and properties. These practices are also the bases of design activities discussed in both chapter six and seven. In addition, the journal version has included more empirical evidence that enables me to illustrate the *overtur* process of deconstruction where dualistic design activities are refocused with holistic ones.

My contribution to the paper: I did the empirical gathering and analysis and inversion process of dualistic with holistic design practices. The theoretical discussion and the literature review plus the organization of the paper was developed with Katarina Lindblad-Gidlund.

Paper VIII: Lakew, N., and Karin Hedström. "In search for a coherent meta-theoretical structure: a literature review of Philosophy of design", Accepted to Special Interest Group in Philosophy ICIS 2016

Description of the paper: This paper explores the possibility of building a coherent knowledge base for philosophy of design in IS research. After identifying and categorizing what is considered as design issues in the IS field, it proposes a taxonomy of design abstractions in the form of meta-theoretical structure. Based on the proposed hierarchical taxonomy, it presents a concept centric literature review on four leading IS research journals published during the period of January 2011 – July 2016. The result shows that the IS field struggles with different misalignments of philosophy of design issues including constructing design theory, research positioning, and inconsistent knowledge base in design subject areas such as ethics and aesthetics. It is suggested that the integration of philosophy of design to IS research can potentially contribute to the development of coherent body of design knowledge. The paper conclude with postulating a model to both study and integrate philosophy of design within the IS research field.

Contribution of the paper: I have used this paper to conduct a literature review on design concepts from their philosophical perspectives. The paper is also used to
develop what constitutes design and identify design concepts which are used as a background for chapter six. Finally, I have used the paper to discuss what does a theoretical contribution connotes in IS research and how one can develop a design theory.

*My contribution to the paper:* While I did the theoretical discussion that includes philosophy of design and design issues plus the literature review, Karin Hedström has contributed in the general theoretical discussion development and formulation of the paper.

**Cluster four**

The final cluster is consisted of two papers which attempt to understand the overall holistic understanding of human-technology relationship in order to align such understanding with design practices. The papers present phenomenology as both a philosophy and research method. As a philosophy, Paper IX shows how phenomenological understanding of *being-human* better suits to explain our relationship with technology than dualistic explanations. As a method of understanding human-technology relationship, paper X illustrates the application of phenomenology using one individual story extracted from the main case study.


*Description of the paper:* In this paper, the thesis’s main case study is presented in the research context of long term IS usage. After discussing both dualistic and holistic understanding of long term IS use, it proposes a holistic ontology as an alternative philosophical positioning and demonstrate its application by developing holistic oriented theoretical framework. The alternative framework formulates long term use as an emerging ‘structure of understanding’ evolved overtime. It further illustrates the alternative posture with empirical evidence from the longitude case study presented in the previous chapter. The analysis showed that what is traditionally reported as unwanted users’ resistance, failures, maneuvers or scenarios generally portrayed as unwanted messiness of human-technology relationship are, in fact, an integral part of relationship building process or even at times relationship ‘glues’.

*Contribution to the thesis:* The main contribution of this paper is to demonstrate the result of my empirical evidence in the context of human-technology relationship. In addition, the paper applies phenomenology as a philosophical base to illustrate how users’ implementation of technology in their lifeworld resembles a holistic form of everyday existence. As such, it further validates users’ technology lifeworld resemblant with holistic understanding of being-human. The philosophical and
theoretical dimensions in chapter five and six uses the case study to implement the induction part of the retroductive research strategy. This paper is referred throughout the thesis when empirical evidences are invoked to support conceptual argumentations.

My contribution to the paper: I did the main part of Heidegger’s holism discussion, the proposed conceptual framework in the paper, the empirical evidence gathering and analysis. The co-authors had contributed in the theoretical discussion and formulation of the paper.


**Description of the paper:** The paper presents an interpretive phenomenological approach (IPA) as a viable alternatives to study a complex historical and environmental influences on individual technology experiences. Basing Heidegger’s hermeneutic phenomenology, it proposes IPA as a potential interpretive method of inquiry to understand how and why we engage with information systems. It argues that IPA provides a tool to both critically explore and hermeneutically interpret phenomena of lifeworld experiences based on users’ interpretation of their own experiences. The approach also provides a means to understand participants’ object of concern and their experiential claims using hermeneutical and critical questioning. In addition, the approach can coherently contextualize participants’ interpretation within their environmental and cultural settings. The proposed method was illustrated using a case study presented in chapter three. The paper intends to contribute toward the discussion of interpretive research methods in the field of information systems.

**Contribution to the thesis:** I have used the paper to underline how phenomenological approaches such as IPA can assist to understand technology lifeworld in comparison with dualistic notion of mental mapping discussed in chapter seven. By presenting how the use of causal and statistical model explanations to understand design environment and evaluate IS adoption may not always aligned with holistic human-technology relationship, the paper supports the presentation of chapter seven in which design domain is portrayed as a subjectively rich equipment nexus.

**My contribution to the paper:** I did the empirical gathering and analysis and the theoretical discussion of interpretative phenomenological analysis. The co-author had contributed in the general theoretical discussion development and formulation of the paper.
5. THE PHILOSOPHICAL DIMENSION OF MEDIATING ALIGNE EXISTENTIALITY

There is no escape from philosophy. The question is only whether a philosophy is conscious or not, whether it is good or bad, muddled or clear. Anyone who rejects philosophy is himself unconsciously practicing philosophy (Karl Jaspers, 1960, p. 12).

My attempt in this chapter is to develop a holistic philosophical foundation for the design role to focus on mediating aligned existentiality. In particular, this chapter is a response to the concern of independent conceptualization of technology proponents who portray technology as having an unavoidable adversarial effect as a result of its technical roots (Heidegger, 1982; Ellul, 1962; Jaspers, 1961). Consequently, the chapter’s contribution can be seen as an attempt to ‘neutralize’ technology from its inherited undesired effect by refocusing its core philosophy from thinking to praxis tradition.

Three core foundations are used to develop a praxis philosophical framework. Phenomenology, as the main anchor of the framework, is used to examine technology lifeworld and as a means to bridge the ethical and subjective base with the practice-oriented base of design. The tradition of Marxism supplements the concept of design for aligned existentiality through the discussion of democratizing technology with the aim of freeing technology from its alienation and reifications effect such as commodity fetishism.

The discussion of pragmatism brings the engineering part of design to the fore. Mainly based on Dewey’s (1931) work, pragmatism assists to counteract the romanticism of premodern craftsmanship illustrated by scholars such as Marx and Heidegger. Though their nostalgic claim at times can be supported with valid reasoning, generalizing scientific development as adversarial can result in what Harmon called a “monotonic” way of thinking about human achievements (Harman, 2013). Nevertheless, Dewey has discussed his work of pragmatic experiences using phenomenological works such as Heidegger’s being-human, hence makes the pragmatism a good companion within praxis tradition.

This chapter proceeds as follows: I begin with the discussion of thinking tradition and its influence on the design role behavior. After introducing the praxis tradition briefly, each of the three praxis tradition components and their contribution to the holistic philosophical foundation will follow. In section two, I propose the praxis philosophical components as a base for ‘the design role’ to mediate aligned existentiality. Then, the following two sections will attempt to induce the praxis tradition components through empirical evidence. The chapter concludes by propose a praxis based theoretical framework as a representation of philosophical foundation for ‘the design role’. This retroductive process and the flow of this chapter is portrayed in figure 5.1. Each sections in the present chapter represents the retroductive boxes apiece. The leading research inquiry for this chapter is: How can
we formulate a philosophical foundation for IS design to have a role of mediating aligned existentiality?

Figure 5.1. The discussion of philosophical dimension of the design role

### 5.1 Philosophical ideas for the design role

#### 5.1.1 The ‘thinking tradition’

The ‘thinking tradition’ inherit its name as it gives more emphasis for a rationalized and ‘regulated’ way of thinking. Jardine (1990) commented that the thinking tradition project can be traced back 2,400 years, to Plato and Aristotle, when the latter made the following remarks:

*For not to have one meaning is to have no meaning and if words have no meaning, our reasoning with one another, and indeed with ourselves has been annihilated; for it is impossible to think of anything if we do not think of one thing: but if this is possible, one name might be assigned to the thing.* (Aristotle, *Metaphysics*, 1039a emphasis added)

For Aristotle, the idea of right thinking about anything automatically leads to the assumption ‘a non-contradict and correlative principle about the identity’ of that-thing. In other words, when we speak about the identity of an entity and attribute a character to it, that “entity *is or is not* what is attributed to it” (Jardine, 1990, p 217). There is no room for ambiguity about the identity of the entity, and all entities in the world can ‘skin-off’ to their factual identities. Plato, considered by many as the
founder of Western philosophy, has delivered a road map for the thinking tradition. He was interested in ‘truth, correctness, and theoretical understanding’, or as Dreyfus puts it ‘he was drunk on theory’ (Ruspoli, 2010, “Being in the world - DVD”). In his ‘Theory of Forms’, scattered across several of his works, such as ‘The Republic’, ‘The Symposium’, and ‘The Meno’, he noted that we understand things, their real essences, and even their use only when ‘they are abstracted away from their all particular details’ (‘Sean Kelly’ - Ruspoli, 2010, “Being in the world - DVD). We understand the world around us through deep and abstractive ‘thinking’ – hence the name ‘thinking tradition’.

Later René Descartes (1955), arguably the most influential advocate of dualism, has expensively explored different scenarios to find a starting point from where all realities can be collectively conceived. He argued that all human problems arise from our lack of logical discourse when it comes to our daily conduct. His main research question was ‘how can we know about anything for certain’. He commented that he was suspicious about his own five senses as he finds them misleading at times, so is his own realness as he could be dreaming. He wrote (1955):

I resolved to assume that everything that ever entered my mind was no truer than the illusions of my dreams (p.29)

In line with the thinking tradition, he declared that there is only **one certain** place from where all realities can be deduced, including our own reality. No matter how unreal his experiences or thoughts were, he cannot be deceived that he exists as a ‘thinking thing’. He felt he can be sure of this more than he can be about his bodily parts – hence goes his famous quote “Cogito Ergo Sum” or “I think, therefore, I am”. Basing this foundation, Descartes felt that he is now ready to find out about other ‘things’ in the world; including the question of reality. To understand life and things in it, we ‘must disconnected ourselves from them, break them down to manageable objects and reconstruct’ them again while we look at each objects with a rational gaze (Jardine, 1990). This way, he paves the way for a dualistic form of ontology conceiving reality as mind vs. body, dark vs. light, evil vs. good or devil vs. God. Foucault (1973) remarked that such a ‘rational gaze’ becomes a common way of thinking about most of every lifeworld situation. For example, he noted how the advanced profession of medicine treated patients with what he called the “medical gaze”; implying that patients are now seen as a set of organs, rather than a complete human beings (p. 9).

Using thinking tradition setting, Leibniz (1952) later further developed what is called the ‘identity of indiscernible’ where he identifies two things to be identical if, and only if, they have the same **exact** quality (i.e. x=x) simultaneously. Leibniz’s **identity law** is used in the dualistic tradition to develop a comparison between two entities by reducing them to their core. In the system design tradition, for example, users’ requirement elicitation applies the same principle to develop comparable two-side stories: users’ environment vs. developers’ construction of users’ environment ‘identities’.

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Heidegger (1984) remarked about the level of clarity and accuracy acceptable to Leibniz’s definition of knowledge as ‘where confusion is no longer possible, where the reduction into marks and moments of marks can be managed to the end’ (p. 62). The reduction of knowledge into marks and numeric representation in Leibniz’s thought includes quantifying unclear thoughts and ambiguities into quantifiable ‘frequency of errors’ in the process of knowledge production (i.e. statistical computation) (Jardine, 1990). In the face of this, all human stories that do not fit to precision are either cornered for further ‘quantitative inspections’ or considered irrelevant (Lakew & Lindblad-Gidlund, 2015). Dualism also emphasize that there is only a single story worth considering and representative enough regarding the phenomena of interest, whether it is about an individual (i.e. stereotypes) or a technology (i.e. considering it just as a tool). Habermas (1972) described such single stories as the ‘monologic’ understanding of scientific inquiry (Jardine, 1990).

Although each of the above thinking tradition arguments are up for critique, together they represent a similar notions – 1) True knowledge can only be achieved through rational and external (detached) examination of things using logical methods, (2) there is only one best single story that can be taken as the true understanding of a given reality, and such knowledge can only be achieved through rational methods of inquiry, Only rational and logical thoughts lead to the well-being of human. One can think of many advantages and ways to apply the thinking tradition. However, the thinking philosophy not only develops an alternative way of thinking, but also presents itself as the only way of finding the truth about reality resulting in dogmatism or as Fromm (2000) comments ‘[it] led to dogma and science – to the Catholic Church and to the discovery of atomic energy’ (p. 74).

**The thinking tradition and ‘the design role’ behavior**

In the information system field, the influence of the thinking tradition can be observed from the ascription given to ‘the design role’; which answers the question of ‘how to design’ a highly efficient and functional artifact. In their extensive literature review to delineate ‘design in IS field’, Park et al. (2011) reported that synthesizing artifacts and analyzing the process of design have occupied most of the topic of IS design literature. The literature review presented in Paper VIII also supports Park et al.’s assessment of IS research field. Such focus can be seen in the influential Simon’s (1969) work that aims to distinguish the design of the ‘artificial’ from the ‘natural’. In his two of the four expected features that distinguish designed artifacts from the natural world, Simon concluded that ‘artifacts are synthesizable (2) the design focus is concerned with methods and functions of the artifact in the outer environment’ (1969, 5-7).

In addition to the ‘method inquiry focus’, the thinking tradition created a new outlook that perceives contextually rich users’ environment as a potential landscape for mechanized and laborly divided production processes. The scientific
development comes with the thinking tradition promoting an industrial mass production and consumption. With declarations such as ‘the proper study of mankind is ... the science of design’, the design role took up the torch to favor the new focus of creating patterns for mass production (i.e. generalizability), short-lived solutions (i.e. as opposed to sustainability focus), and fast-track testing (Mitcham, 2000). In essence, the thinking tradition created and cements, through its methods of inquiry, a new way of being-human that promotes mass consumerism and continuous production.

Consequently, the design role of digital artifacts in the contemporary society has developed to be synonymous not only with methods, but also with producing a new nihilistic oriented novelty for three reasons. First, it is new in its way of revealing itself as an imposer on society, or as Feinberg (2006) would put it, “seek(ing) to control” by presenting itself as a respond to our human innate needs of curiosity (p.1). Secondly, the thinking tradition facilitates the design role to jump-start the notion of satisfying our belonginess needs through technology from the perspective of novelty. Put another way, the pursuit of novelty drives new technology production all the while painting the chase as a belonginess quest.

Thirdly, the thinking tradition paves the way for what Bauman (2004) called a ‘new way of being-in-the-world’ as a result of the ‘consumerist syndrome’. The new way of being-in-the-world uses ‘novelty (or newness)’ as its corner stone’(Wong et al., 2012, p. 160). In this setting, the design role is to focus not only on providing new artifacts, but also making sure that the next new exciting thing is necessitated by the current new.

Fourthly, and perhaps paradoxically, the thinking tradition’s promise of novelty is ‘inauthentic as it dissolves us to be the same with others’ (Germonprez, Pallud & Monod, 2011). The use of novel technology could provide us with the promise of being totally ourselves and unique in the society, but at the same time it makes all its users the same and average. In fact, we start to feel that we are losing our belonginess feelings as we become a part of the ‘general expectation’ regarding the way we lead our everyday life. A Facebook user may feel the system allows unique expression, but all the while makes them to be defined and judged by others. Thus, as Heidegger (1996) puts it ‘we read, see, and judge the way they see and judge’ (p. 127). The design role in this setting becomes developing an efficient standard for pattern production. Dreyfus (2010) has illustrated such an effect in how we build similar houses with the same shape, color, and size after discovering an efficient way of constructing a house, and where everybody will learn how to live in such houses. There is a need for making everything interconvertible, replicable, replaceable, and standardized enough to be patterned and reproduced.

Finally, the design role founded on thinking philosophical tradition fails to successfully address what Rittel called ‘wicked problems’. Rittel (1972) defined the nature of design problems as tame and wicked. Tame problems can be formulated exhaustively, and solutions are naturally looked at in a separate knowledge base, while wicked problems are unpredictable in nature, conditional and highly
contextual. According to Rittel, applying the thinking tradition’s characteristics, such as logical explanations to wicked problems, only leads to short-term solutions. In addition, the application of the thinking tradition on wicked problems constraints the evolving nature of the design outcome. The design role aimed to produce tools based on causal logic neglects the very nature of wicked problems, which can be solved by extending users’ own ability to solve problems by playing the role of mediation.

The next section presents the praxis tradition as an alternative core philosophical foundation for the design role to mediate aligned existentiality.

5.1.2 The Praxis tradition

The roots of the praxis tradition can be traced to Karl Marx, Lukacs, Freire, and later to the Frankfurt school (Feenberg, 2014). The word praxis does not connote just practical action, though that is a central concept of the tradition. It represents ‘human in its totality’ – activities that transform nature and society, human to human and human to nature relationships, the act of engaging, realizing, thinking ideas, and way of existing as a human. Praxis has a distinct type of characteristics that ‘embodies certain qualities such as commitment to well-being, intuitiveness rather than contemplativeness, and striving for a deep contextual and interpretative understanding of the world (Smith, 2011). For example, praxis is fundamental to the practices of Eastern religion, such as meditation and mindfulness, where emphasis is given to first-hand experience by the individual. In such traditions, instead of a dualism form of servant-god relationship, the servant strives to be part of God herself. Later, in Chapter seven, I will contrast activity vs. contemplation as two methods of designing digital artifacts.

Jung (1987) identified three basic natures relating to the notion of praxis. First, praxis is not just a practical activity but a description of the human being in its totality, or as Kosik (1976) puts it, ‘praxis is the sphere of human being’ (p. 137). Thinking (rational reasoning) is just part of the activities of being-existed as human in the world. Second, praxis includes an activity that transforms both human/society and nature as a whole (i.e. the basis of critical theory). Human action that transforms nature, the ‘artificial world’ as Simon (1969) would call it, is identified in the praxis tradition as ‘the world of artifacts’. Such transformation is expected to bring ‘a mode of togetherness’ for lifeworld experience – hence develops what Arendt (2013) articulated as a ‘conception of participatory democracy that stands in direct contrast to the bureaucratized and elitist forms of politics’ (d’Entreves, 2014). Consequently, praxis targets and builds human experiences based on a participatory approach. Thirdly, praxis identifies the human species as ‘social through and through’ (Jung, 1987, p. 311). This nature of praxis makes the tradition ‘political’ in the sense that any values that ‘alienate’ humans from themselves, their natural habitat, or their social spheres are considered contrary to existential needs. In addition, the praxis
tradition actively advocates values that it considers to be in line with human well-being without being dogmatic as portrayed by the dualist tradition.

In what follows, three traditions that make-up what is customarily identified as the praxis tradition will be presented. Each tradition will fulfill what is outlined in the preceding three paragraphs. Phenomenology, as the main anchor of praxis, develops the basis of aligned existentiaility using Heidegger’s fundamental ontology of care. Mumford’s (1967) notion of keeping human as Homo sapiens within the natural world is deliberated using “Marx’s concepts of man” (Fromm, 1961). Finally, pragmatism is used to build such experience by using the world of artifacts toward the mode of togetherness with both human and nature. I begin with the discussion of phenomenology.

The philosophy of Phenomenology – how we exist as human

Phenomenology is both a ‘research approach and a philosophical’ perspective (Flood, 2010). In this study, the research approach has been applied to discuss users’ technology lifeworld experiences, and this is reported in the papers VI, VII, XI, and X. Here, the philosophical perspective of phenomenology is presented and will draw on Heidegger’s phenomenological analysis of being-human and how our main existential characteristics of care drives us to look for belonginess and novelty in our surroundings.²

In his seminal work “Being and Time” (1927), Heidegger, among other things, discussed our way of being in the world, and the mode of nonhuman things’ way of existence from a human perspective. Being and Time also identifies the notion of care as a motivation for our interaction with others. He identified the care we show for other humans as concern (Besorgen) and care for our things (i.e. artifacts, nature, or even routines) as solicitude (Fürsorge). In his later work “Building Dwelling and Thinking” (1972), he illustrated how we develop our innate beingness of care for both Besorgen and Fürsorge (for a detailed discussion see paper IX). In turn, such feeling of belonginess would lead us to develop what he calls an ‘authentic being’.³

² For a general introduction to Heidegger’s philosophical work, I would recommend the documentary work of Tao Ruspoli (2010) ‘Being in the World’, where renowned philosophers explains Heidegger’s line of thought and its relevance to our time.

³ It is not uncommon among some Heideggerian scholars to see Heidegger’s work as ‘early Heidegger’ and ‘later Heidegger’, even at times divided into three different works. Some (Pattison 2013) have gone as far as suggesting to rediscover Heidegger’s old work using ‘his new lenses’. In my work, I would consider all Heidegger’s work as an evolving and extending body of knowledge, where the focus continues to be being-human as care (Dasein in his early work and being in his later work), while his early work focuses on Dasein existence as temporality, his later work focused on its way of recounting the world as dwelling. That is, in his early work the question was rather “What is the meaning of being?” while the question later extended to “How does being essentially unfold?” (Wheeler 2013).
Heidegger’s main ‘research question’ was: How do things (including human) exist in the world? To answer this question, he begins by looking at the different modes in ‘which we exist and encounter’ the outside world. The way we exist or the way we are being-human (or ‘Dasein’ as he calls it), is for Heidegger through ‘engagement in practice’ (Riemer & Johnston, 2013a). That is, Dasein is existing as practitioner and the way of being Dasein is by engaging in practice. The mode of human existence is this-and-this by doing this-and-this. Dasein is a term that can be translated as a human’s way of being or existing as a human. Our mode of existence cannot be explained without encounters or engagement in practice with our world. The word practice echoed in Heidegger’s work as the main existential characteristic.

After defining the human mode of existence, Heidegger continues to explain how human encounter world entities. Our frequent interaction with the outside world is not with a mode of ‘consciousness’ but in a ‘taking-them-for-granted’ mode as in everyday life activities (Harman, 2010). However, we selectively choose to give attention to specific things, we continue to fail giving meaning to the surrounding environment that make the current reality true. For example, the whiteboard hanging in front of my desk is outnumbered by the many ‘invisible’ matters that support this reality: the wall, the building foundation, the surrounding mixture of gases, and many other factors. For the most part, these supporting entities are hidden (withdrawn) from my conscious reality and continues to perform ‘their unnoticed labors’ (Harman, 2010). Heidegger calls this reality our ‘ordinary everydayness or everydayness intelligibility’. Things surrounding us are ‘intelligible’ to us, not because we interact with them in a conscious mode but in the form of ordinary everydayness. Heidegger’s findings also show that there are occasions where we engage with the external world with a conscious and logical mode. In extreme circumstances, this mode resembles a dualistic way of thinking. Heidegger maintains that these are not ordinary situations, but originate from our effort to make things go back into ordinary everydayness activity.

Heidegger argued that the characteristics of Dasein, including its way of creating a relationship between human and non-human, can only be understood in terms of its ways of existing in the world; calling them existentials characteristics. He wrote:

Because Dasein’s characteristics of being are defined in terms of existentiality, we call them ‘existentialia’ (Heidegger 1962, p. 70).

Dreyfus (1990) explains that Heidegger’s notion of understanding underlines a know-how familiarity that needs some sort of practical engagement. Heidegger continues to describe two more ‘twin’ Dasein existentials: space and time. He explicitly portrays Dasein as spatial.
Dasein is spatial... but Dasein is ‘in’ the world in the sense of a familiar and heedful association with the beings encountered in the world. (Heidegger, 1996, pp. 111, p. 105)

Yoo (2010) points out that this space is not given a priori, but is actively constructed through human actions and experiences. Implicit with the nature of space is the notion of time. To engage successfully with its surroundings, Dasein calls upon pre-existing experiences accumulated over time (Cole & Avison, 2007). Dasein’s spatiality is temporary as Dasein can also be ‘thrown’ into a different world of experiences (Winograd & Flores, 1986).

Dasein’s mode of engagement with entities is another existential feature we find in Heidegger’s works (1962). The first mode is a ready-to-hand engagement in which a meaningful structure of understanding has already been developed between two entities such as technology artifact and user. Artifacts have been successfully domesticated to the point where they can be used almost instinctively in everyday practice. They are, in a sense, equipment or in the mode of ready-to-hand. Opposite of the equipment status, technological features may appear to be unhandy, unfamiliar or lacking a background to understand their use. In such cases, the structure of understanding mirrors a non-ready-to-hand relationship, or what Heidegger called a present-at-hand mode of a relationship (Heidegger, 1962).

Finally, Heidegger describes Dasein’s core existential feature as care to portray Dasein’s ‘concern’ (Besorgen) for its cautiously collected non-human resources and ‘solicitude’ (Fürsorge) to describe its feeling for other humans (Heidegger, 1996; Wollan, 2003). Care unifies Dasein’s way of being-human and always looks toward the future (novelty quest).

**Care, dwelling, opening-up, and existential authenticity**

Heidegger’s understanding of care as a fundamental way of being-human is one of the basic elements of phenomenology. He argued that our main reason to (1) exist and feel ‘at home’ (dwelled), (2) open-up to new things and interact with the outside world, comes from the existential characteristic care. Kierkegaard (1958) uses the same notion of care, but he went further to describe it as our innate need for being nurtured, and as part of an individual being. In fact, some have suggested that Heidegger’s discussion of care originates in Kierkegaard’s thought, though Kierkegaard focuses on individual research work (Reich, 1995).

Heidegger defined the characteristic of care as one that unites all Dasein’s characteristics. Inwood (2000) commented that the ordinary definition of care, caring for someone/something or taking care of things, are part of Heidegger’s care concepts. But Heidegger also believed that even in the ordinary sense of being ‘careless or carefree’, humans are still care to be carefree. As such, the concept of care implies more than its dictionary definition: attitude toward caring or not caring. To be caring or carefree toward something is preceded by a care of wanting to care or
not to care about ‘that-something/someone’. In fact, the concept of care is equally compatible with ‘neglect, contempt, and hater; the only entities that lack care, concern, and solitude are those that are wholly incapable of them, such as trees, stones or animals’ (Inwood, 2000, p.73). Thus, the concept of care is a ‘mode of existence to understand oneself in one’s relationship with the world’ (Lavoie, De Koninck & Blondeau, 2006, p. 3).

<table>
<thead>
<tr>
<th>Dasein existentials</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being-in-the-world</td>
<td>Way of being-human, way of existence, way ‘to be’ as such and such.</td>
</tr>
<tr>
<td>Understanding</td>
<td>A know-how knowledge that makes it possible to engage with entities.</td>
</tr>
<tr>
<td>Spatiality</td>
<td>Dasein’s vicinity or space existed for it as in its system of boundary, and naturally temporal.</td>
</tr>
<tr>
<td>Equipment</td>
<td>An intelligible mode of an object that has already passed through meaningful dealings with humans; hence unlike interacting with conscious reflection, it can be engaged in absorbed mode</td>
</tr>
<tr>
<td>Engagement/involvement</td>
<td>Dasein’s default state in the world, as in thrown into context, with no option but response. Dasein is always in the world as practitioner.</td>
</tr>
<tr>
<td>Care</td>
<td>Dasein’s feeling toward its surroundings and familiar entities. Care is also a core motivation for Dasein to involve with other existentials. It represents our sense and way of exist in the world.</td>
</tr>
</tbody>
</table>

Table 5.1. Basics of Dasein’s existentials

Heidegger defined care as having a three-fold structure: being-already-in-the-world, being-alongside, and ahead-of-itself (see fig. 5.2). He wrote (1962):

*The formally existential totality of Dasein’s ontological structural whole must therefore be grasped in the following structure: the Being of Dasein means ahead-of-itself-Being-already- in (-the-world) as Being-alongside (-entities-encountered-within-the-world). This Being fills in the signification of the term ‘care’ (p. 237).*

**First,** Dasein is formulated as being-already-in-the-world. That is, Dasein’s existence does not start from a clean slate, nor can it be reduced to mind-body logical calculations. In fact, Dasein ‘born’ into an already-formed world with rich subjective
context. Heidegger uses the concept ‘thrownness’ to emphasize his point of being-already-in-the-world. In any given situation, engagement in practice is not something we choose to do. Dasein is ‘thrown’ into a context, where it cannot choose but act (engage). Dasein is always in the midst of action and it is also ‘thrown into an-already made up world’ (Riemer & Johnston, 2013a).

Second, Being-alongside (-entities-encountered-within-the-world) further illustrates how Dasein continuously engage with the world, and as noted above this characterization of Dasein is one of its primordial existentials. How do we engage with the world? Here, other existentials noted above also come into play. Dasein uses its ‘historicity’ or the past understanding it has developed through lifeworld experience to engage with both new and everyday ordinary situations. Two modes of such engagement have been introduced above; ready-to-hand and present-at-hand. In the ready-to-hand mode of engagement, Dasein finds itself in a ‘home coming’ environment where most of its ‘world of artifacts’ are familiar to it – calling them equipment. It is as if we are in our home that we know most of our things and engage with them skillfully (Heidegger’s word). This is also where my concept of belonginess resides in the structure of care.

In his later work Building Dwelling and Thinking, Heidegger (1972) developed on how such a belonging feeling ‘built’ over a period of time. (Paper IX presents a detailed account of both building and dwelling experiences using a longitude case study presented in Chapter three). According to Heidegger, we strive to keep our ‘dwelling’ feeling which brings a sense of ‘wellbeing, safety, security, and orientation’ (Aravot, 2002, p. 202 emphasis added). Heidegger wrote:

> To dwell, to be set at peace, means to remain at peace within the free, the preserve, the free sphere that safeguards each thing in its nature. The fundamental character of dwelling is this sparing and preserving (Heidegger, 1962, p. 149).

While residing in our ‘space’, one of the Dasein existentials, we strive to keep that familiarity in our daily life. Some (Foltz, 1995) have argued that Heidegger is trying to recover earlier Greek ideas of ethics that helped human to ‘come into their fullest of themselves’ or ‘coming into [the] right relationship’ with themselves and with nature (Ladkin, 2006, p. 92). When we achieve such peace and such a meaningful relationship within and with the outside world (both human and non-human), we care about what we have accomplished in our boundary and ‘in essence love and favor them’ (Nelms, 1996, p. 373).

Dasein continuously finds itself being ‘thrown’ into different worlds of reality. As such it constantly needs to familiarize and build a relationship with new realities. This brings us to the second mode of engagement; present-at-hand. In general, building familiarity with new realities heavily depends on what we already know or, as Heidegger calls it, on our ‘historicity’. We use our dwelling knowledge to familiarize ourselves with the new. But the process is not always smooth, since such
situations puts Dasein in unfamiliar territory and feelings of insecurity. Such disruptions would also mean a dis-assemblage of emotions, embodied relationships with objects and people, plus local logics and practices that constitute the very feeling of belonging.

Heidegger presented the third structure of care as Dasein’s characteristic of looking toward the future or ‘ahead-of-itself’. Here, Dasein is defined in the ‘context of [its] openness to future possibilities’ (Reich, 1995). Elsewhere, Heidegger (1957) uses the term Poiesis to denote that one strives toward its full potential. Poiesis is a Greek word meaning ‘making’ or bringing-forth what is hidden. Poiesis is etymologically the source of modern poetry (Merriam-Webster, 2011). Heidegger uses the term as ‘arising of something out of itself’ as in ‘the bursting of a blossom into bloom’ (Heidegger, 1957). My understanding of novelty originates from this third structure of care, where our needs to ‘stretch’ toward newness arise from what Heidegger noted as ‘bringing-forth within itself’. Applied in Heideggerian term, poiesis is not something that is imposed on us, but represents our willingness to further maximize our dwelling boundaries.

![Figure 5.2. Heidegger's threefold structure of being-human](image)

In fact, one of the forms of poiesis, autopoiesis, denotes two plastic organisms (e.g. environment and living organisms) that are working together for their own benefits (blossoming). Heidegger’s mode of revealing, as in bringing-forth, is in line with the understanding of structural coupling in biology, where two systems reveal each other’s potential and work together harmoniously for the sake of their own improvement (Maturana & Guiloff, 1980) (Paper II discusses this human-technology relationship resemblance with the biological autopoiesis relationship). In another form, poiesis can be used to reveal ordering or what Heidegger (1957) calls a ‘challenge-forth’ effect on our belonginess. Instead of extending our beingness, it challenges us back to the point where we become a ‘standing reservoir’ for continuous novel things to be ‘tried upon’. In this setting, a human relationship with nature can no longer be based on care (concern), as both nature and humans are seen as a reservoir for exploitation.

Dasein’s structure of care looks forward to the future in the sense of bringing-forth uses the existing belonginess knowledge as a base. That is, humans unify the
anticipation of what is to come with what it has already become known to engage with what is now (Merleau-Ponty, 1962; Morrison, 1978; Yoo, 2010). The argument here is that our novel experiences, no matter how new they look, already existed inside us. To quote King Solomon “There is nothing new under the sun” (Ecclesiastes 1:9). We use our pre-existing understanding of the world to both create and adapt to new situations.

These three structures of care unifies Heidegger’s phenomenological discussion of our existence as humans. First, we are thrown into a world with an already ‘set-up’ social, cultural, and political system. There is always a past or ‘historicity’ that shapes our way of understanding the world. Second, we will become accustomed to our way of engaging with the world, which in turn gives us a sense of belonging or dwelling. Third, we are always moving to extend our belonginess, adding novelty to our lifeworld experiences.

Heidegger concluded that unquestioning one’s thrownness situation into the world and lack of attentiveness to praxis may lead us to be followers of the herd and rituals “approved by the masses das man”(Wollan, 2003, p. 35). This is a notion similar to what Jesper Juul (2012, p. 66) called ‘role-playing’ – ‘obliged to act like and behave in a way one images the right way’. As a result, we see ourselves through others, and much of our choices in life originate from and look into ‘the-they’. Heidegger described such existence as inauthentic, where humans understand themselves ‘first and foremost through what they do for a living or their mundane everyday activities’ (Wollan, 2003).

The thinking tradition is well-known for developing conformist social norms, societies, and standardized ways of living using its designed products. Germonprez et al. (2011) noted that, specifically, novel experiences makes us feel as if we are different from the masses, but ‘ironically we withdraw from the great mass as the way they withdraw and ended up acting like everyone else . . . we are uprooted and our present existence has no meaning’ (p. 8). If our everyday activity involves inauthenticity, our ‘self-understanding’ will equally become inauthentic’ (Mulhall, 2013). Our dealing with others (i.e. concern and solitude) and our potential to open up to the future diminishes. At its lowest point, ‘extreme depression and suicidal thoughts are the closest we can get’ to being unaware of our existence as care (Wollan, 2003).

In Heidegger’s world, the meaning of authenticity is synonymous with one’s effort to search for authenticity. That is, questioning our existence and searching for meaningful life in itself constitutes authentic life. In his own way, Heidegger follows Socrates creed of ‘unexamined life is not worth living’. We are essentially bound to be inauthentic as we are thrown into the world, often not because of our own doing. To be authentic, therefore, is to appreciate that one cannot be authentic as given, ‘but only by asking, searching, and becoming’ (Golomb, 2012, p.62). For both Kierkegaard and Nietzsche, authenticity starts the same way as for Heidegger where one questions everydayness, finds the inner self and a sense of identity, and live
accordingly with ethical and moral values (Steiner & Reisinger, 2006). But for Heidegger (and later for Sartre), ‘authenticity precedes morality’ (Golomb, 2012). That is, one can still be authentic while breaking moral laws and values so long as s/he is authentic about it. In addition, authenticity necessitates being-in-the-world of already formulated values and norms, hence is not a solitary journey. Consequently, there is no need for a monastery sort of living to become authentic; in fact true authenticity is social through and through.

Heidegger (1996) has also identified ‘seven characteristics of inauthenticity’; being-among-one-another, distaliactivity, averageness, leveling down, publicness, disburdening, and accommodation (pp. 118–122). Steiner and Reisinger (2006) have gave the following summary:

“Being-among-one-another refers to the human tendency to identify with others. Distaliactivity refers to the efforts people make to artificially distinguish themselves from others with whom they identify, usually by emphasizing their status. Averageness refers to the lack of distinctiveness and specialness among one’s shared possibilities. Levelled down possibilities are the result of averageness which restricts one’s choices to the safe, tame things that others might do. Publicness is a person’s sense that the world is as others experience it, that the public view is right. Disburdening is the abdication of one’s responsibility to interpret the world from one’s own perspective, deferring instead to the popular shared view. Accommodation is how people deceive themselves that their shared views are their own.” (p.307)

Interestingly, these inauthentic experiences are discussed with relation to ‘postmodern society obsession with constant search for novelty’ (Steiner and Reisinger, 2006). Venkatesh (1992), for example, contended that the search for constant stimulation and novelty through consumerism as a leading reason for ‘identity confusion’ and ‘the fragmentation of authentic self’ (Kellner, 1995;Steiner & Reisinger, 2006).

Leading an authentic life requires what Heidegger calls ‘resoluteness’, since being-in-the-world authentically can be very stressful or, to use Heidegger’s words, can cause ‘anxiety’ (Gauthier, 2004). Resoluteness connotes accepting the fact that our choices in life are our responsibility, and as such taking responsibility for them for better or worse. Such resolute frees us to be authentic with both humans and nature. As in one of Dasein’s structures of care, ahead-of-itself, resoluteness is ‘anticipatory’ in its nature (Wollan, 2003). By being aware that our earthly life is ‘finite’ or even, anticipating one’s death can ironically lead to freeing ourselves from a narrow form of ‘fear’ (Gauthier, 2004). Our respond of being inauthentic as a result of narrow fears such as breaking norms is not worthy. The anticipatory type of fear ‘toward-death’ reminds us that such narrow fears amounts to nothing in the bigger pictures. In other words, anxiety helps to remind us that ‘our days are numbered’, and it worth living it with authenticity (Psalm 39:4). In his 1961 lecture, when Heidegger
was asked how to live our life, he replied that we should spend more time in graveyards.

Phenomenology brings an essential philosophical element to the praxis tradition, namely the holistic understanding of being-human. Concurrently, a phenomenological conceptualization of being-human is strikingly different to how we would perceive our existence as human from the basis of the thinking tradition. To fully grasp the meaning of our existence and relationship with others (human and non-human), we must not, as dualism urges, ‘disconnect and re-connect’ ourselves from the world around us (Jardine, 1990). The main danger of the thinking tradition for our being-human is its success of presenting a non-accountable lifeworld practice as progressive, modern, and genuine. Using the care structure, Heidegger have succeeded (of course, depending on who you are asking) to illustrate the conceptualization of being-human as a holistic and connected lifeworld experience. In addition, his work exhibited how a holistic conception of lifeworld presents a possibility to live an ‘authentic’ life based on the totality of being.

As Mitcham (1994) states, Heidegger is a philosopher in the tradition of Socrates, who raises questions and awareness rather than provides answers. In what follows, I present two holistic traditions that compensate this lack. I will develop the practical application of the praxis traditions from two perspective: politics and practice. The design role and its ‘political side’ is discussed with the help of Marxism while the practical vantage point is developed based on Dewey’s pragmatism.

The philosophy of Marxism – democratizing social and technical rationality

Heidegger’s assessment of being-human provides a detailed understanding of our existence as humans in the praxis philosophical sphere. Marx’s concepts are, however, ‘politically potent than those of Heidegger as they insisted on the political shaping’ of humanity as a whole, and science and technology in particular (Wendling, 2009, p. 178). Thus, my aim to add Marx’s concepts to the praxis framework originates from the assumption that it can provide a direction for how to protect authentic life in and by using technological-lifeworld.

Marx has focused on the specific problems of modernism in his time, at which point was in its infancy. As such, a ‘modern critical lens’ is needed to read his work and to put his thoughts into perspective. The Frankfurt School of critical theory attendees including Markus, Foucault, Feenberg, Fromm, and to some extent Heidegger, have developed their ideas on Marx’s work. Heidegger’s work of inauthenticity, for example, resembles Marx’s alienation idea, while Heidegger’s ‘falling’ refers directly to alienation. For the purpose of this thesis, I have mainly turned to Feenberg’s work on the ‘critical theory of technology’, and to a lesser extent Fromm’s discussion of being vs. having to compensate Feenberg’s lack of discussion of consumerism and the modern nihilism oriented novelty quest.
Using Marx’s ideas, Feenberg has drawn attention to the free ride technology has been enjoying with no one to criticize its makeup. Feenberg is one of the leading scholars discussing the need for a democratization of technology. He emphasizes that technology provides the ‘major sources of public power in modern society’, thus, just like any publically elected officials or positions, it should also be under scrutiny (Feenberg, 2003a, p. 652). Here, his four main theses will be used: Formal bias, Deskilling, Democratization of technical relationship, and Mediation. These concepts contribute to the freeing of ‘the design role’ from the rationalist notion of the thinking tradition. His main argument, in short, underlines the importance of giving more attention to ‘the social or economic system on which technology is embedded’ rather than the nature of technology itself (Brey et al., 2012, p. 91). But departing from Marx, he saw modern technology’s potential to be used for human advantages. The latter concept is in line with the idea of using technology to mediate aligned existentiality.

Erich Fromm, using his work of *The Sane Society* (2012), develops a ‘humanistic interpretation of Marxism’ as a solution to consumerism (p. 205). Later, he devoted an entire book, *Marx’s Concept of Man* (1961), to the thought of Marx’s humanism to discuss how we can be emaciated from alienation, a condition in which Marx finds human beings estranged from their natural self, fellow humans, and nature. Fromm, like Feenberg, believed that there is a ‘real possibility for the capitalist society’ to emerge as non-alienated being without Marx’s thoughts of dramatic discontinuity and total revolution (Anderson, 2015). Fromm’s main focus was Marx’s alienation concept and a way out of it from the perspective of capitalism, and by proxy consumerism. Here, both Fromm’s and Feenberg’s ideas of a ‘modern era lens’ will be used to contextualize Marx’s philosophy of praxis and its relevant thoughts to formulate the design role for, to quote Fromm, “the sane society”.

Marx was able to ‘join-force the concept of alienation with labor class discussion’ to create what is now known as the philosophy of Marxism (Feenberg, 2002). The concept of alienation ‘remained to be the main theme throughout his life’, even though its application alternated overtime (Wendling, 2009). Fromm and Bottomor (2004) remarks:

*Alienation (or “estrangement”) means, for Marx, that man does not experience himself as the acting agent in his grasp of the world, but that the world (nature, others, and he himself) remain alien to him. They stand above and against him as objects, even though they may be objects of his own creation. Alienation is essentially experiencing the world and oneself passively, receptively, as the subject separated from the object.* (p. 37)

The first person to use the word alienation was Hegel, and like Marx, for Hegel the idea of alienation represents a human existence alienated from its essence (Hegel, 2001). Fromm and Bottomor (2004) claims that the concept of alienation in
Western philosophy can be traced back to ‘Bible’s Old Testament concept of idolatry’. The worship of idols was condemned, not because of the multiple gods as opposed to one, but because it was worshipping gods made by humans – transferring their own essence to their own creation, instead of experiencing their essence as a creator. That is to say they transferred the power of (their own) creation to a ‘thing’, and in a sense became a ‘thing’ themselves.

_He has become estranged from his own life forces, from the wealth of his own potentialities, and is in touch with himself only in the indirect way of submission to life frozen in the idols… The more man transfers his own powers to the idols, the poorer he himself becomes, and the more dependent on the idols, so that they permit him to redeem a small part of what was originally his_ (Fromm & Bottomore, 2004, p. 39).

The concept of alienation represents a state of ‘disharmony or corruption of human life . . . [hence] man has to regain a state of unity with his essential reality’ (Bollen, 2016, p. 2). Such a state of disharmony resembles what Heidegger has conceptualized as ‘homelessness’ – the opposite of *dwelling* or *belonginess* (Heidegger, 2001). Historically, humans have applied/looked for different methods to solve this disharmony with oneself, others, nature. Idols is one example. The concept of religion, hierarchy, possession, and God had/has an ‘idol’ sort of role in the human effort to feel ‘dwelled’. Both Marx and Nietzsche, for example, have shown their strong distaste for religion-related pursuits; calling it ‘opium’ (Marx) and ‘narcotics’ (Nietzsche). Nietzsche (2011), commenting on religion’s numbing effects, wrote:

*Powerlessness became goodness, baseness became humility, submission to people became obedience, and not-being-able-to-take-revenge turned to forgiveness…Every feeling of weakness was overlaid with a sanctifying name, and made to seem a voluntary achievement, something wanted, chosen, a deed, an accomplishment* (De Botton, 2001).

Marx, however, had a different solution for human disharmony – our capability to develop a satisfying relationship between work and the fruits of our labor. For Marx, work is an ‘activity that relates human to their own power of creativeness’ which in turn makes them feel related to themselves, others, and nature (Fromm & Bottomore, 2004). In other words, Marx identified *work* as one of the most rewarding experiences adding to the well-being of one’s lifeworld, on the condition that workers can see and actualize their contribution in the end result. A connection between our product and us demonstrates the sense of what we can externalize and become creators in our own domain. Such self-actualization, Marx noted, is taken away once specialization and particularization becomes a norm in production for
the sake of efficiency, and from where he stands technology and scientific revolution were the culprits.

As the capitalist system developed with the help of technical advancement and rationality (which originated from rationalistic thinking, according to Marx), the division of labor and private property was flourishing. Fromm and Bottomor (2004) commented that labor started to lose its power to be an expression of human’s creative power, but both labor and human power separated from their source; became privatized by the capitalist. Marx (2012a) commented:

*This fact expresses merely that the object which labor produces – labor’s product – confronts it as something alien, as a power independent of the producer. The product of labor is labor which has been embodied in an object, which has become material: it is the objectification of labor. Labor’s realization is its objectification. Under these economic conditions this realization of labor appears as loss of realization for the workers … The worker therefore feels himself at home only during his leisure time, whereas at work he feels homeless.* (p. 22)

Labor is no longer part of the source, as such the source ‘does not affirm, but denies himself, does not develop freely his mental and body but ruin his body and mind’ (ibid. 23). As a result, humans identify themselves on their basic conditions, such as ‘eating, drinking, and procreating’ and such functions make us feel ‘anything but an animal’. (Marx, 2012a, p. 23,24). It is similar to Heidegger’s notion *inauthenticity existence*, where we lose the power of contemplating on our everyday lives, and exist through ‘the-they-lens’.

Like Heidegger, Marx saw humans as *species-being* (i.e. Marx’s humanism); hence humans are understood not only as individual beings, but the human *species* as a whole. Just as care is Dasein, Marx describes the essences of *being-species* as non-alienated praxis, which is ‘social through and through … in producing, making, and doing’ (Jung, 1987, p. 337). Marx’s expression of a non-alienated being relates the notion of belongingness and dwelling with care. Heidegger’s understanding of the Dasein primordial existence as ‘a practitioner’ has the same notion as Marx’s *being-species way of existence*. For him, the new rationalist economy not only convert labor

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4 Max Weber (2002) has a different take on the origin of capitalism. He proposed a theory where religion, specifically the Protestant faction, was a potential landscape for people to see their work as a scared obligation coming down from heaven. As such, they cannot revolt against anything that would ultimately disrupt their work and lead them to lose the ‘grace from heaven’. Weber contended that their (Protestants’) Catholic counterparts have a setup to confess their sins in their churches, while the Protestant community was under God who hides his opinions until the final moment (after their death) to pass his judgment on whether they were ‘good enough’ to have his grace. Hence, there is no room for thinking about revolting against what is seen as sacred.
into an independent and alienating object but also takes away the essences of being-human. He wrote:

The object of labor is, therefore … (to) duplicate himself (Aakhus et al.) not only, as in consciousness, intellectually, but also actively, in reality, and therefore he sees himself in a world that he has created. In tearing away from man the object of his production, therefore, estranged labor tears from him his species-life, his real objectivity as a member of the species and transforms his advantage over animals into the disadvantage that his inorganic body, nature, is taken from him (Marx, 2012 p. 24).

In discussing his concept of being-species, Marx introduces the notion of appropriation to denote ‘humans’ general activity of incorporating the external world they come in contact with’. (Delaney, Timbrell & Chan, 2008). Ollman (1971) stated that in the capitalist system Marx sees the activity of labor making the natural way of being-species through appropriation an activity of alienation.

Thus the more the worker, by means of his labor, appropriates the external world, the more he deprives himself of the means of life.” (Marx, 1977, p.69)

In Marx’s thought, the capitalist systems objectified human labor, and this labor becomes a transparent means of ‘object’ toward alienation. Thus, the worker appropriates the outside world through this object, which is now transformed to ‘become the most effective medium between the individual and the outward’ (Ollman, 1971, p. 137). The implication of such mediation is that the object is now transparent enough to mediate the ‘original’ values aimed to transmit ‘an orientation’ toward consumerist values.

Marx’s notion of alienation was further illustrated in his concept ‘commodity fetishism’ discussed in ‘Capital’ (Marx, 2012b). Commodity fetishism connotes a perception that any human relationship that involves product(s) will be seen not as a social relationship but a relationship of exchange of money and product. That is, what is actually produced by a ‘relationship among people’ is presented as just a product available for a specific sum of money.

Fromm (1961) suggested that production under capitalism transforms human relationships to their fellow humans and oneself into the characteristics of ‘things’. Labor is no longer used ‘to satisfy self-expansion of existing values’ (p. 41). As noted above, the expansion of belongingness, using novel experience, is one of the important processes of achieving aligned existentiality. Instead of the product of labor being an opportunity to expand oneself, the product is provided with its own being. In addition, this new being (i.e. the product with values of its own) will turn into ‘an objective power above us, growing out of control, and thwarting our expectation’
As humans move closer toward the new experience of being a master of nature, they increasingly turn into slaves to ‘things and circumstances’ – a direct copy of their own ‘idol’ (Fromm & Bottomore, 2004).

Note how Marx argues that a non-expanding experience can become our master and alienate us more and more from ourselves (belonginess), others, and nature. He forecast the finale of such alienated-beingness as follows:

> Every man speculates upon creating a new need in another in order to force him to a new sacrifice, to place him in a new dependence, and to entice him into a new kind of pleasure and thereby into economic ruin. Everyone tries to establish over others an alien power in order to find there the satisfaction of his own egoistic need. With the mass of objects, therefore, the re also increases the realm of alien entities to which man is subjected. (Fromm & Bottomore, 2004, p. 44)

The alienated-begin becomes a self-commodity, who knows only ‘one way to related to him/herself’, by having and consuming more and more (Fromm & Bottomore, 2004, p. 46). In this way, Marx was able to forecast the consumerism society readily thriving today using his concept commodity fetishism. He remarks:

> The less you are, the less you express your life, the more you have, the greater is your alienated life. . . Its product is the self-conscious and self-acting commodity . . . the human commodity (Marx, 2012a, p. 37).

Now, I will turn to the modern thinkers discussing Marx’s work and its meaning for our times. Erich Fromm, one of the Frankfurt School scholars, further developed the concept of Marx’s self-acting commodity in his book “To have or to be” (2013), asserting that the search for novel experiences through consumption (i.e. to have) seemed to be a choice of free will, while in reality it alienates from being (i.e. to be) and creates a conformist societal structure – a ‘passive-receptive’ society. ‘This commodity-man knows only one way of relating himself to the world’, Fromm (1961, p. 45) wrote, ‘by having it and by consuming [using] it.’

The danger of modern novelty is that it presents itself as if it is based on ‘social logics’, while in reality it operates under the rule of exchange – perceiving both social relationships and humans as expendable (Baudrillard, 1998). Bauman (2004) insisted that the modern ‘new-novelty’ is an essential ingredient of such commodity exchange system that keeps human ‘in a state of disaffection by promising a way out of disaffection (continues to find way out of disaffection using more novelty)’ (p. 26). Take, for example, the emphasis given into ‘real-time’ feeds in modern social media technologies. Wong (2012) commented that the structure of such technology embodies the essence of novelty and immediacy with constant questions such as ‘What is on your mind?’ and constant calls for updates. Ironically, the technology structure also presents its basic logic as ‘social’ or as Baudrillard (1998) puts it a
‘social myth’. The claim became a ‘myth’ because in reality it operates on the exchange concept of consumer fetishism.

Feenberg argued that Marx’s analysis of technology makes us ‘free from the heavy philosophical burden technology inherit from science studies’ (Feenberg, 2010, p.2). Marx saw technology as a phenomena ‘contingent on social relations’, which makes its design knowledge and outcome, first and foremost, a social discussion. Marx viewed ‘the requirement of capitalist production’ (which is political and value-laden) to have a more determining effect on technology than its way of design (i.e. technique and knowledge of design) (Feenberg, 2010, p.2). This makes technology, Feenberg continued, political in the sense that ‘its developmental path [is] subjected to (social) debate and choices’ (p. 3).

One such social debate is the notion of ‘social rationality’, which was first forwarded by Marx and discussed in detail by Max Weber and George (Lukács) Lukács, who attempted to co-join Marx’s and Weber’s concept of social rationality (Weber, 2009; Lukács, 1971). Feenberg (2008) remarked that social rationality has a structure similar to ‘rationality as we find it in scientific disciplines’. Using Weber’s concept of rationality, Feenberg (ibid.) stated that a socially rational society obscurely follows the three common structure of technology, marketing, and organizations namely; exchange of equivalence, classification and application of rules, and optimization of efficiency. These structures curiously resemble the ‘thinking tradition’ noted above, so is their effect on society.

Marx’s systematic approach to criticize such rationality was to reveal the hidden bias of social rationality, which makes sense at first glance, but gives an upper hand to the capitalist class to exploit the lower-class. For example, two people can be evaluated in the same examination, but one of them does not have, and more importantly could not have a background making him/her competitive, which can be a result of gender, ethnicity, language barrier, etc.; reasons that cannot be naturally overcome. However, these reasons have no connection with the subject of competition, and can give an advantage to the first person. The examiner could ‘justly’ claim that the conditions of examination are fair, but, as Marx points out in his example of capitalism surplus, they tacitly gives an advantage to one over the other. Feenberg calls such bias ‘formal bias’, and has developed it to critically examine how technology can be designed to either benefit the powerful or ‘democratized’ from such bias.

Feenberg’s reflection on social rationality enabled him to derive what is known as ‘critical theory of technology’ and ‘generalized instrumentalization theory’, which can be found in his book Questioning Technology (2012). His assumption reflects the idea that there is a way to ‘democratize’ social rationality without dismantling the system of capitalism itself. For Marx, even profit-sharing ideas based on social value was not acceptable. He disregarded his contemporary thinker, Charles Babbage, who ‘suggested that work with machines will not eliminate skill altogether but rather facilitate the development of new technological skills among the working
class’ (Wendling, 2009, p. 183). However, Feenberg noted that ‘reform and transition are continuous phenomena in modern society’ that need to be taken advantage of (Feenberg, 2014, p. 221). That is, we should not wait for a reform until a ‘struggle to topple the existing system’ is finalized or even started. In fact, struggle, reform, and transition happens at the same time, all the time, and has never ceased. The key is to explore effective means to accomplish this goal.

One strategy to democratize rationalistic technology is to use technology’s own strong point – rationality itself. That is, if technical rationality has the capacity to faithfully propagate the ‘capitalist’ message, it has also the same ability to spread democratic thoughts. Feenberg writes:

Rather, rationality in its modern technical form mediates cultural expression in ways that can in principle realize a wide range of values. The poverty of the actual techno-culture must be traced not to the essence of technology but to other dimensions of our society such as the economic forces that dominate technical development, design, and the media (Feenberg, 2003b, p. 15).

Technology’s rationality, as social rationality, is not a ‘contextless force’ with pure power (Feenberg, 2003a). In fact, it is just a bottle capable of carrying different messages. The same technology can be used for different purposes with different effects on users – alienating or dwelling. My main research question identifies the main technology ‘design role’ as a mediator of aligned existentiality. There is a wide range of values that can be mediated through design for such aligned existentiality noted in the next chapter. The point here is that technology, however, has a functional rationality, it has also social meanings (knowledge). In his theory of power/knowledge relationship, Foucault (1980b) presented the ‘double aspect of technology’ as going hand-in-hand. Technology cannot have the rational power of alienation if its knowledge base comes to light and democratized (Feenberg, 2003a).

Marx’s democratic socialist agenda lays the ground work for the democratization of technological rationality. Feenberg (2003a) agreed that to some extent democratizing technology can be seen as an extension of socialism. Marx’s alienation theory and labor exploitation has proved the capitalist rational design. As such, a socialist technology design would have an agenda (i.e. politicized) of belongingness values as a social meaning attached to functional rationality. Chapter 7 further discussed the practical application of such ‘value politicization’.

Related to value politicization is Marx’s concept of the ‘interdependence relationship between the social and technical’ (Feenberg, 2010). In examining the deskilling effect of machines on humans, Marx argued that deskilling starts with the division of labor (Braverman, 1998). That is, when production is broken down into parts to be performed by separate laborers, it became easier to replace them with machines. The smaller and more meaningless the parts of labor becomes, the more it is susceptible to be replaced by automation. It is possible that this scenario only
demonstrates how machines are automating the labor work. But the decision of breaking down labor work into smaller parts is a social one; usually obscured and presented as a technical decision in the name of advanced technology. Such obscurity is what the ‘technology constructivist’ and STS (Science, Technology, Society) scholars termed underdetermination (Leplin, 1997). Underdetermination is a situation where there seems to be insufficient evidence to determine which combination(s) of options have led to the existence of reality. Whichever element (social decision or technical advance) plays the biggest role, it is at least clear that they have co-constructed the reality of what Marx called ‘mechanically monotonous activity’ (Marx, 2012a, p. 39).

The concept of deskilling does not only point to that we are at the mercy of technical advancement, even if that does seem to be the case. Surely, our era seems to be dominated by technology advancements, and we could easily give in to technology determinism and embrace our reality as such. But what is equally true is that there is a relevant power relationship between technology and social decisions. In their seminal work *The Social Construction of Technological Systems*, Pinch and Bijker (1987) demonstrated technology design situations where social meaning directly dictate the rationality of technology; ‘bringing social needs to the very heart of their example of bicycle gears’. Taking Marx’s thoughts of co-construction into account, we can see that not only technology ‘designs’ our way of life, we can also construct how technology serve our innate needs. In the *The challenge of responsible design*, Tatum (2004) gave the following concluding remarks:

> If we embrace an STS image of the world; if we accept the underdetermination of science and technology, the vastness of the range of technical and socio-cultural possibilities, and the consequentiality of technology; and if we accept the political construction of technology, the existence of competing images of reality, and the discursive significance of ultimate ends; then designers play a role of profound significance in the world. They make, or participate in the making of, the choices that shape the patterns by which we live (p. 14).

Finally, the concept of reification provides another insight into how the ‘thinking tradition’ obscures social values embedded and spread through technology. Reification means ‘treating human relations as relations between things’ (Feenberg, 2014, p.62). Reified attitude, as Lukács (1971) describes it, ‘involves a detached attitude toward people and things’ – as the literal meaning of the word reification, which is ‘objectification’ (Feenberg, 2011, p. 104).

In a sense, the thinking tradition, with its close association with consumerism and mass production, was able to mediate a reified sort of relationship among technology users that ultimately makes them feel alienated from their own being and fellow humans. Their relationship to themselves and the world reflects a ‘subject-object dualism sort of contemplative materialism’ lifeworld – always
unfulfilled and on the look for new experiences (Rooke, 1998). In Lukács view, one must transcend from such a cogito tradition by realizing that ‘reality can be understood as action’ (Arnold, 2015). This is precisely how the holistic tradition of Heidegger’s care defines being-human in that we always exist as being-alongside, engaging with the world from our belonging space.

Against this background, Marx’s notion of reification under capitalism ‘occurs precisely because individuals adopt a ‘contemplative attitude’ toward nature, ‘conceiving themselves as individual agents, interacting through objective systems such as markets” (Arnold, 2015, p. 138). We can dereify (Feenberg’s term) ourselves based on an awareness of ourselves as a ‘social self’, and in that our relationship with the world (human and non-human) originates from our belongingness. Such ‘social being’ can be mediated through modern technology if conscious effort is made to align ‘the design role’ with our well-being, which Feenberg (2010) remarked as inserting ‘technical code’ – social meanings and values that are closer to us and our belongingness.

Consequently, it is possible to include our well-being in the form of ‘technical code’ as it demonstrated in Marx’s different concepts. In the following sub-section, the final philosophical foundation of pragmatism is presented as a background to inset such technical codes.

**Pragmatism – technology as ‘mediating instrument’**

The final pillar of the praxis tradition included in this chapter is based on the contribution of the pragmatism tradition advanced by Dewey and later communicated to the discussion of technology by Hickman and Durbin (Hickman, 2001; Durbin, 1972). The main contribution of pragmatism to the praxis philosophical framework is its anti-essentialist, but to some extent ‘progressive’ and instrumentalist outlook of technology. Specifically, Durbin’s (1972) interpretation of pragmatism introduces the discussion of social responsibilities among engineers without abandoning technological instrumentalism – to some level aligning pragmatism to the critical theory camp. But its welcoming attitude to technology advancement opens up for the practical application of technology to design value-laden objects in order to mediate aligned existentiality.

The pragmatic tradition hopes to tame the interpretation of essentialism (i.e. fear of technology) propagated by the main figures of phenomenology, e.g. Ellul and Heidegger, but still provide a basis for the use of technology as a value mediator. Dewey sees problems associated with technology in its non-technological make up – philosophical inquires, social values, and political ideologies. To him, ‘non-technological’ issues are the problems of technology, not technology itself; in fact the more technology, the merrier.

Pragmatism provides a ‘practical turn’ for deterministic epistemology (thinking tradition based design theory), using its roots in the praxis tradition (Bohman, 2002).
For a pragmatist, ‘the meaning of an idea or a concept is the practical consequence of the idea/concept’ (Goldkuhl, 2004). Even though the study of phenomena (e.g. empiricism) and subjective interpretation is important (e.g. interpretivist), pragmatism has a great deal of interest in practice. Goldkuhl (2004) reports that the notion of practice ‘has been put forth as a holistic notion’ in that it encompasses a web of different actions around a specific phenomenon of interest.

Hickman (2001) has provided an extensive discussion of Dewey’s work on pragmatism and its notion of applying deterministic epistemology based on practice rather than theory. Hickman defends the pragmatism stance of technology use and Dewey’s position as follows:

Dewey’s understanding of technology is thus positive without being positivistic and scientific without being scientific ... Technology is the invention, development, and cognitive deployment of tools and other artifacts, brought to bear on raw materials and intermediate stock parts, with a view to the resolution of perceived problems (p. 34)

Dewey’s approaches, according to Hickman, is to use technology as a means to ‘tune up’ our tools and life lasting education to secure what is good – a ‘self-correcting’ method (p. 35). The argument is that we can have a stand similar to the holistic tradition, but it is technology, not political discussions, that should be considered as our means to tackle the thinking tradition. My position is that both political and technology discussions can find a way to supplement each other to the well-being of humans. That being said, I will briefly address two concerns toward Dewey’s work, before pointing out its contribution toward the proposed praxis tradition framework.

The first is about Dewey’s stand that strongly focus on exploring ‘the-how’ part of technology discussion. Feenberg (2003c) noted that such focus makes Dewey appeared to be a pro-positivist, something he has strongly denied. The line he drew between being positivistic vs. positivism lacked support as he did not present an extensive and critical work on the political and social human-technology relationship (Feenberg, 2003c). Dewey’s ‘dismissal’ of ontological questioning as a merely ‘unproductive’ effort has also backfired (Hickman, 2001). As such, he is seen by many in the critical theory project as fanatic technologist, and to some level positivist (Feenberg, 2003c).

The second ‘concern’ comes from his strong stance of solving technology problems with more technology. Interpreting Dewey’s stand on technology, Hickman (1990) remarks the following:

Where technology fails to be responsible (i.e. become not good to human wellbeing), it is not because a method of technology has failed, but because inquiry and testing have been misdirected, subsumed into non-technological ends, or aborted. Fixed
Noted that on the one hand, Dewey saw what critical theories understood; the problem with political ideologies. On the other hand, he provides an alternative to rational experimentation and science as a solution. As Mitcham comments, Dewey ‘perceived’ problems that are associated with technology as non-technological problems and can be solved ‘not by less technology, but by more’ (p. 75). His outlook on technology and technological tools have a striking similarity, in my opinion, with essentialist monotonic thinking that all technological and scientific thought leads to exploitation, expect for him all roads leads to more technology. In addition, it resembles the dualistic way of thinking noted above in that ‘a solution to gun problems are more guns’.

However, when we aim to use technology for the purpose of mediating values, there is no escape from the engineering work of technology. Dewey’s conceptualization of ‘engineering’ provides the best option as his pragmatic works reflects on the ‘complex social character of technology’, which gives it a constructivist perspective (Feenberg, 2003c, p. 1). Being an educator by profession, Dewey was also considered ‘progressive’ in the sense that he continuously informed his philosophy with new development compared to contemporary philosophers (Ihde, 2006). While Husserl, for example, was struggling with the Hegelian distinction between conscious and body in his work of ‘bracketing’ to describe human experience, Dewey had already left Hegelian legacy and moved to the Darwinian thought of evolution, emergence, and self-referentiality in developing human everyday experience (Ihde, 2009). Ihde (2009) pointed out that Husserl was imprisoned by Descartes’s and Kant’s understanding of the subject-object discussion while Dewey avoided this problem as he departed to the Darwinian ‘organism-environment’ autopoiesis to discuss lifeworld – an approach similar to that taken by Heidegger (Flores, 2011).

But perhaps most importantly, Dewey’s pragmatism support to the praxis agenda comes from his effort to embed episteme into a practical context. From this, pragmatism deduced that any truth should be judge based on its practical consequences; calling it ‘practical turn’ (Bohman, 2002). Bohman (2002) further commented such a ‘practical turn of epistemology’ provide social inquires to find a path to reach technological epistemology within the context of practical activity. I consider this practical turn as the main contribution of pragmatism to the praxis tradition – acquiring a path to epistemology from an activity point of view.

From this perspective, pragmatism considers the praxis of design, to some extent, the same way as Heidegger’s poiesis understanding of ‘making’ or bringing something into reality. Pragmatism develops an aligned ‘way of thinking’ with phenomenology in that experience and activity are the main characteristics of
technological design, and (2) technology can be used instrumentally to mediate values. My goal with including Dewey’s work in the praxis tradition is to use it as a foundation for the engineering side of the design in line using the holistic approach (Chapter 7). In particular, the focus lies on how technology can become ‘instrumental’ to mediate aligned existentiality within a praxis tradition context. Based on this goal, some of his notions that support ‘the design role’ as a mediator of aligned existentiality, namely experience, situational analysis, inquiry, technology as an instrument of mediation, transformation, emergence and self-referentiality, ethics, and aesthetics and sublimes will be introduced.

**Experience**

Dewey understands experience as ‘an activity and the consequence of that activity, and the motivation behind it’ (Glassman, 2001). He disavows Hegel’s (and by proxy Descartes’s) way of creating a distinction between thought and practice. Glassman (2001) comments that Dewey saw no difference between ‘method and content’ in that it is impossible to think an action of experience without actually engaging with it. This conception is aligned with Heidegger’s Dasein existential interpretation – understanding. The word understanding is not conceptual, but in its existential meaning it connotes a know-how knowledge. But Dewey was also focused on consequences of experience similar to what Weick called ‘sense making’ (Weick, 1995). The concept of sense making is used to further discuss the meaning of the experiences of a long-term use of technology (Griffith, 1999). Paper X demonstrates how users’ experiences with technology can be extrapolated.

Later, Dewey developed another understanding of experience; calling it ‘primary and secondary’ experience. The primary experience is our everyday mundane experience; secondary experience involves reflective activities; again resembling Heidegger’s ready-to-hand (primary) and present-at-hand (secondary) experience. Dewey brought Heidegger’s normative knowledge of everyday experience into action by showing their ‘bi-directional’ relationship as a source of a new hypothesis for future experience. Glassman (2001) commented that primary experience was not only used for everyday coping, but a test bed for secondary experience. Once developed, the hypothesis became a part of the inquiry (Dewey’s other concept) to develop new experience.

**Situational analysis**

The concept of situation is almost synonymous with Heidegger’s equipmental-nexus (discussed in Chapter seven) where humans/things’ existence can only be assess based on their relationality to the whole. Dewey points out that it is ‘impossible to inquire about any subject without its cultural environment’; thus subjects have ‘qualitative wholeness’ (Shook & Solymosi, 2014, p.66). He wrote (1998):
What is designated by the word ‘situation’ is not a single object or event or set of events. For we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a ‘situation’. (p. 67)

Dalsgård (2009) commented that Dewey saw a situation as ‘determinate’ when stability and alignment existed between different elements of the situation or ‘indeterminate’ in which the subject considered the situation as problematic and begin the process of inquiry. We could say determinate/indeterminate ideas, once again, resemble Dasein’s ‘dwelling’ and ‘building’ states.

Inquiry

Once regarded as indeterminate, Dewey claims that a rational inquiry should be initiated (2013). He defined inquiry as ‘the controlled or directed transformation of an indeterminate situation into determinate to convert the elements of the original situation into a unified whole’ (ibid. p. 104). Here is where Dewey departs from essentialist thinkers like Heidegger by introducing engineering oriented steps into his work. He introduced a five-stage model to ‘straight-up’ indeterminate situation. In his book, Science as a subject-matter and as method (Dewey, 1910), he defined the first stage as having a ‘felt like’ sense in a given situation where there is a problem to be determined (p. 3). Next, the problem should be defined in a qualitative but specific manner. After which a hypotheses and suggestion of possibilities should be observed. Dewey strongly related this stage with the subject’s past experience as he wanted to relate the ‘suggested possibilities with the observation of existential conditions and perhaps the collection of data’ (Wellman, 2016, p. 2). He believed that possibilities from existential experiences provide a relevant solution that already exists, but is not sought.

Next is the reasoning stage, where the subject applies different methods to suppositions and hypothesis in order to create ‘deliberative and professional knowledge’ from implicit hypotheses (Erart, 1994). This stage implicates suppositions to workable deliverables. The final stage is an ‘experimentation of conjectured ideas to verify and monitor practice intervention’ (Ixer, 1999). Dewey argued that his notion of inquiry cannot be ‘disassociated from the context (situation)’ where the subject of inquiry is located, nor can it be imposed from the outside. He remarked that his inquiry is social, and enables practitioners to be reflective by ‘allowing a rehearsal of action’. The notion of inquiry has been widely accepted in design fields, and its implementation can be seen in research works such as Schön’s The reflective practitioner (Schön, 1999).

Technology as an instrument of mediation

Based on Dewey’s discussion of inquiry, Hickman (1990) summarizes how technology could be understood in Dewey’s formation:
Every reflective experience (in inquiry) is instrumental to further production of meanings, that is, it is technological (p. 41)

In this sense, technology has a dual purpose. It plays an instrumental role in shaping our understanding of an inquiry in the ‘situation’ and it contributes to design our reality for a better supposition as formulated in the inquiry. Dalsgård (2009) comments that it formulates our meaning of the world, framing our understanding of a given situation, and ‘supports our reconstruction of it’ (p. 69). Instrument is a mediator between us and the world; not only do we understand the world through it (as a lens), but we also use it to present ourselves to the world. Yoo (2010) argued that technology no longer has a means-to-end function, instead it is a part of the users’ medium to understand and interpret their everyday world. This is what makes an instrument different from an artefact; an artefact becomes an instrument ‘through the subject’s activity’ – mediating the process of perceiving the world or to construct it (Beguin & Rabardel, 2000, p. 175).

As such, the first main mediating role of an instrument relates to our perception of the world. This role is, perhaps, best expressed in Ihde’s ‘post phenomenology’ work, where he bases Dewey’s’ pragmatism work to discuss phenomenology in practice (Ihde, 1995). Ihde showed that technology mediates a ‘sensory relationship with reality’, resulting in a definition of what we perceived. He developed a notion of amplification and reduction, noting that technology mediates one’s reality over another by ‘amplifying some aspect of reality while reducing other aspects’ (Verbeek, 2006).

Dewey’s second instrument story is more relevant for my work, as it is where he developed his notion of using instruments as mediators. Dewey knows that such effort needs the dualist notion of ‘isolating and tacking the problem of a situation’, but he reasoned that it could still be used under the context of holism. In his book (2002) “Human nature and conduct”, he remarked that ‘the love for certainty is a demand for guarantee in advance of action’ which ignores the reality that we are all products of evolutionary experimentation. But we are so accustomed to the dualist worldview, we demand such commitments in most situations in life. He pointed out that both ‘fanatic’ holism and dualism are dogmatic from this view; hence rejecting both essentialism and dualism. Instead he proposed to develop a goal (he called them end-in-view) rather than fixed ends that drive humans to ‘infinite pluralism’. He writes (2004):

In fact, ends are ends-in-view or aims. They arise out of natural effects or consequences. . . . These consequences constitute the meaning and value of an activity as it comes under deliberation. Meantime of course imagination is busy. Old consequences are enhanced, recombined, modified in imagination. Invention [creativity] operates. Ends are foreseen consequences which arise in the course of
activity and which are employed to give activity added meaning and to direct its future course. (p. 155)

The deliberation of ends-in-view, for Dewey, needs to include values, ethics, and non-functional virtues. While producing mediating instruments, the inquiry would ‘depend on the moral excellence of character, not just intellectual virtue’ (Garrison, 1999, p. 297). In what is noted as the five stages of inquiry, Dewey claimed that we can include both functional and reflective deliberation into mediating instruments. In fact, reflective thoughts are instrumental in designing an artifact that mediates instruments leading to transformation (Wible, 1984). This leads to his concepts of transformation, emergence, and self-referentiality.

Transformation, emergence and self-referentiality

“Situations are an intimate, interconnected functional relation involving the inquirer and the environment”, Dewey (1987) wrote, ‘the resolution of a problematic situation may involve transforming the inquirer, the environment, and often both (p. 10, emphasis mine). Transformation is a concept by which an inquiry aims to ‘turn indeterminate to determinate situation’ (Dalsgård, 2009). On this quest, not only the situation (environment) is changing, but as the emphasis in the quote implies, the designer is also part of the transformation. In addition, when we decide to appropriate a particular technology over another, we are also making the decision to accept the subsequent transformation that will be ‘revealed’ from appropriating that particular technology on oneself or in organizations.

These transformations are based on self-referentiality or as Weick (1977) puts it: ‘implementation clarifies design and vice-versa’. Dewey uses the biological world to underline his notion of self-referentiality (Semetsky, 2008). Organisms use autopoietic systems to constantly self-produce, and this process tends to be autonomous and self-referential. In the same line of reasoning, transformation of indeterminate situation to determinate (reconstructing our experiences) is not imposed on us, but what we innately do to create order from chaos. What is more, organisms have accumulated the experience of adapting to their environment. These experiences are not simply an accumulation of representations of past experiences, but an active history ready to be used as a base for the next change.

Ethics

Dewey’s pragmatism contributes to the overall praxis in the discussion of engineering ethics. Dewey’s approach to the concept of ethics is similar as with his other approaches. He rejects both sides of the aisle; the essentialist (such as Heidegger’s) notion of ‘fixed duties, values, and rights’ and the extreme subjectivist, who sees ethics as more or less ‘arbitrary’ (Hickman, 1998). Hickman (1998) commented that Dewey uses his theories of aesthetics (discussed next) and inquiry to conceptualized ethics. Aesthetically, ethical life is discussed based on ‘felt feelings
and pleasure in harmony with living’ through sensorial experiences. Inquiry helps to resolve indeterminate situations by solving ‘conflicting experiences’ originating from unethical experiences. The later notion relates to the idea of ‘resoluteness’ championed by Heidegger noted as authentic life.

Pappas (1998), in his notes on ‘Dewey’s ethics: Morality as experience’, furthered Dewey’s attempts to formulate the middle ground between essentialist and extreme subjectivist. He noted that Dewey has advocated for moral grounds within ‘the concrete process of lived experience’ that balances both sides of tradition and subjectivity. Dewey uses ethics as a ‘method for scientific inquires’; thus presenting ethical discussions as the main anchor of any scientific endeavor, including technology. His insistence on making ethics a decision that comes from lived experience helped his concept to define moral grounds not only as ‘an ivory tower’, but also arbitrary (Pappas, 1998). Dewey’s ethical theory required accommodating both human advancement in science and existential interpretation of life in social thoughts, where, for him, both can frame lived experience.

Aesthetics and sublimes

Related to experience, Dewey has dedicated a book (2005), Art as experience, to discuss art and human experience. His work has since been applied to discuss aesthetics and the sublime within the context of human computer interaction. The aesthetic experience has traditionally been associated with material beauty and visual attractiveness. Sublimes is the ultimate human felt experience of greatness, ironically making us feel insignificant but at same time leaves us with awe and inspiration.

As noted previously, mediation ability has more to do with the materiality (to become an instrument while in use) than its functionality. In use, mediating artifacts ‘co-shape users’ experience with their world in sensorial level’ (Verbeek, 2005). Aesthetics design aims to anticipate and develop such sensorial experiences, thus it is not limited to special artifact features’ concerns or lifestyle but ‘the staff of everyday lives as lived and felt’ (Wright, Wallace & McCarthy, 2008, p. 18:2). Wright and McCarthy (2004) further commented that aesthetic involves the ‘integration of means and ends with human sensory and emotional experience’ to the point where the mediating instrument creates unity and a feeling of wholeness for the user (p. 58). The input of pragmatist aesthetics to design focuses on the materiality of the artifact in-use (the being of instrument) – that is the ‘sensorial relationship it creates’ between human and the world (Verbeek, 2005).

The concept of sublime, as introduced by Edmund Burke (1757), represents a mix of ‘admiration and terror’ evoking an experience of both awe and wanting to be a part of the bigger whole (Wong, 2007;Burke, 1998). Such a concept of design can be seen in big cathedrals where church-goers feel the greatness of God in the high ceiling and interior aesthetics or in old big coliseum-like structures. Such evoked experience made the experiencer to feel part of the totality, but also inspires him/her
to become a part of that whole by creating a new perception of feelings. Important to note in experiencing the sublime is this: the experience brings a feeling of recognizing oneself in the bigger totality but also evokes the perception of smallness. This can be applied so that the materiality of an object can be designed to evoke a feeling of being a part of a whole while instrumentalised. In addition, the felt experience needs to be desirable for users to continue using it.

For Dewey, experience should not only be about recognizing oneself in the whole (belonginess), but also evoke new perceptions (novelty) of our world. He writes:

*Recognition is perception arrested before it has a chance to develop freely. . . In recognition we fall back, as upon a stereotype, upon some previously formed scheme ... Recognition is too easy to arouse vivid consciousness (Dewey, 2005, p. 52).*

The idea of perception involves continuously finding new meanings within human or nonhuman entities that is familiar to us for long time. Wong (2007) commented that it is from perception we develop a true feeling of care toward familiar things or people in our lives. The feeling of care that we develop from recognition is nostalgia and compliance. ‘There should be an act of reconstructive doing; consciousness becomes fresh and alive’ (Dewey, 2005, p. 53). The design of the sublime aims for such consciousness by using perception as a mediating tool.

This way Dewey’s pragmatic art brings to a close the thread of human existence as care. Aesthetic and sublime ‘design’ unites the material object of technology with what Heidegger’s called human ‘existence as care’. That is, we can create things that can mediate the being-of-human-in-totality.

### 5.2. Toward a praxis analytic framing of the design role

In the previous section, I have developed the praxis tradition and its suitability as a philosophical foundation for our existential facet of belonginess. The relationship between praxis and thinking philosophical tradition resembles that of a supplementary role of equal footing. However, their coming togetherness benefits our being-human if a philosophical tradition that gives focus for belonginess dictates a tradition that suits well with novelty. In addition, it is noted that the current philosophical foundation is strongly informed by the novelty needs, while marginalizing belonginess. Thus, the existing philosophical foundation for the

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5 We can relate this concept to Heidegger’s thought of fear vs. anxiety about our death. The ‘terror’ that came with the sublime shows how insignificant and foolishly small we and our everyday problems are compared to the vast universality. When we have a ‘feeling of smallness in one way, we become big in other ways; egoism and pride become less impressive, thus, we become more tolerant, honest, and wellbeing’ (Life 2016). As such, the thought of the sublime can be used as a corrective lens for our daily life.
design role has created a misalignment between our two-facet existentiality needs and how digital artifacts aims to fulfill those needs.

Equipped with these three bases (phenomenology, pragmatism, and Marx), the praxis tradition can be a full-fledged philosophical foundation for 'the design role' to mediate aligned existentiality. The phenomenological understanding of being-human as care underlines what it constitutes to exist as a human being in the world. Marx’s alienation and democracy discussions helps to critical examine the systematic influence of technological novelty, and the political power relationship between technology and humans. Augmented by critical theory, his notion of democracy demonstrated the need of bringing back our existence as care. Finally, Dewey’s pragmatism and his different concepts signifies the role of technology in these democratization processes and in the quest toward aligned existentiality.

Consequently, the praxis tradition can **overturn** the thinking tradition influence on the design role discussed in beginning of section 5.1. Figure 5.3 illustrates such analytical framing. In this setting, while the praxis tradition feeds what should be taken as an important needs to be fulfilled in digital artifacts (i.e. belonginess), the ‘marginalized’ thinking tradition in a sense ‘programs’ those needs into novel experiences. Their foreground shades illustrates their aligned relationship where the thinking tradition influence on our being-human is now deemphasized.

**Figure 5.3.** Analytical framing of foregrounding the praxis tradition while deemphasizing the influence of thinking tradition

With this framing, first, the design role is no more influenced by the discussion of methods and synthesizing artifacts. Instead it places the mediation of aligned existentiality task first. Other design issues, including methods, are evaluated based on how to improve/re-correct what and how technology mediates its ‘message’. Second, with pattern-production out of picture, the design role no longer aims for mass production, hence consumerism. With that, the design role can start the work of trying to replace belonginess as a core interest. Third, the phenomenology component gives design the role of promoting authenticity values using technology. Finally, with praxis tradition as a base, it is possible to address what Rittel (1972) called wicked problems since logical, predictable or short-term solutions are no
longer a priority. The next two sections present an empirical evidence to induce my argument of the candidacy of praxis tradition concepts as a base for the design role.

5.3. Empirical evidence for praxis philosophical tradition

The main source of empirical evidence to induce the analytical framing comes from the case study presented in chapter three. I have used both interviews and Nilex message system contents to present how the proposed philosophical framing for the design role sits well with the actual use of digital technology. As the case study is detailed in chapter three, this effort will not be repeated here. In addition, Paper IX reports a detailed description of the empirical gathering, analysis, and results.

5.4. Idealizing the philosophy of praxis into empirical evidence

During the analysis of my empirical material, I have found the main concepts of the praxis philosophy, such as care, belongingness, novelty, instrumentality, and the structure of being-human in users’ interaction with technology. Here, I will idealized those findings with the philosophical analytic framing. Further, the idealization of these empirical evidence to the overall holistic philosophical tradition is presented in Paper VI, IX, and X.

When starting to adopt the new technology, phenomenologically speaking, end-users were ‘dwelling’ safely with their own collection of domesticated ‘IS ecology’ and interacting with this collection, as Heidegger put it, in a ready-to-hand mode of engagement. The different IS ‘equipment’ were users’ own way of interacting with the external world, or as one interviewee points out, their own computer packages (“Most teachers have their own computer packages, if you like. They got this word processing programs, number crunching programs, then you have Moodle.” Interview_2_P6). Such ‘personally constructed’ environments made them feel safe and dwelled at home. Some interviewees remembered such feelings from their old technologies (“Firstclass had that feeling. They get used to it and they feel safe inside it. Moodle is not there yet” Interview_2_p3).

When the new technology was implemented it disrupted a sense of identity and many kept asking for comparable affordance in the new technology, as a way to restore normality to their daily practices (“I think people don’t want to change routines; they want to be like WebCT as they feel safe since they know how it work. The question is more about the equivalent options they can get in Moodle” Interview_5_p5). Users were acting based on their belongingness and what had become familiar to them following a long time of use, before they started to try the ‘novel’ ways of the new technology.

As users started to build a new relationship with the adopted technology, they were still following the same routines. Past understanding (phenomenology
concept) and self-referentiality (pragmatism concept) plays a vital role in understanding the new features. Even newly accepted features were used according to the ‘old’ way of doing things (“But I got the feeling that they use the same way as they use WebCT Interview_2_p3”). As stated above, it is not only the functionalities of the technology that they were attached to, but also how they went about things in everyday life, such as routines, which was something users were not ready to give up. When building a new relationship with the technology, they started by rebuilding routines (“People have to find out their own way on how to adapt themselves with the system after some time use ... I think all users will find their way of being comfortable with a system.” Interview_1_p8).

In the users’ world, some of the factors that came into play are within the boundaries of pragmatism. For example, aesthetically, users were not happy about how the system made them feel while adopting it. One user reported that the system lacked the feeling of familiarity (“They kind of afraid the quantity of the features. Plus they want to feel that they ‘know’ it, that feeling can drive them to explore even more. And I think, Moodle doesn’t give that feeling.” Interview_2_p4). Compared to the old system, the additional features did not make Moodle as attractive as the designers had hoped (“WebCT was filling the need right on the spot, but Moodle comes with a lot of features” Interview_2_p2 (…) “we just click a lot of ‘next’s’ without even thinking about their implication like ‘Get to it, Get to it’ spirit and when it says mandatory is when we actually stop to put in. there are a lot of features that aren’t important at all” Interview_2_p4).

The difference between using a system as means to an end tool (artifact) and as a mediator of one’s objectives (instrumental) has been significant (“And this will help them to be organized very well. It puts the pedagogy on the surface, the design makes it obvious for us to work with it. I can see that the possibility to let the students to work together. E.g. Blogs, wikis, videos, we use to have that other locations like Google docs. I could see on teacher’s face that when they see that it can be done here it is really good for them.” Interview_1_10). Others have reported that the system start to make them better teachers (changes on a way of being). (“It is really a good, since it helps them to get automate reaction. I feel like there are things that makes you good teacher, but there are still a lot more to think” Interview_1_p8.) But users have also reported that technology is still in the hands of the ‘powerful’; the users’ ability to impact on how the system operates is out of their hand (“We don’t make so much out of it. I don’t think we really felt that it is open source, the technologists feel that way. We feel like the technology is still in the hands of IT support system, I don’t own it.” Interview_2_10).

As things start to settle down, there are reports of both frustration and a sense of ‘feeling home’ from users (“they get used to it, they are more comfortable with it and it’s not a big deal anymore.” Interview_2_p9…“May be we don’t like our home that much, but we have to live in it. It is like old marriage. We got use to each other, and we don’t have to try to change each other anymore =). Makes me scream sometimes. I think, every use has its own way of getting used to it.” Interview_2_p2”). This dwelled and belonging feeling
gives a way to the next step, which is becoming curious about novelty. In fact, it was almost a year later that users were starting to become interested in what is new in the new system. (One of the things we definitely notice is the type of question we get is very different now. In the beginning questions were on the most basic level ... Instead we are getting question on the more advanced features, so what happen is basically people are comfortable with the features and some of them are looking a little further. Now they know that there are extra things they can do with it. It is like everybody is moved up a scale in using Moodle (Interview_2_p6).

As acceptance of the new technology developed, users found it easy to assemble and arrange features according to their personal preferences (“I have restructured the modules to get the outline of my course to be more logical. And now I’m happy with how the module looks and how to go to parts of the icons.” 3/12/13). At the same time, unnecessary/unfavorable features were being removed. In a sense, it was as if users were cleaning up their home, making improvements for a more personalized environment (“I never use it (Moodle email system), I actually removed it. It is not that it solves the problem, but just removed it from the daily scene. I use outlook or Skype, mostly outlook.” Interview_2_P2). In addition, users became comfortable using Moodle together with existing IS ecology in an assembling manner (“Most teachers have their own computer packages, if you like. They got this word processing programs, number crunching programs, then you have Moodle. It is part of their daily tool.” Interview_2_P6).

At this stage, it was clear that, in a sense, they had caring based relationship with the new system, and were in the process of calling it ‘ours’ (“it will become ours soon” Interview_2_p3). As the relationship matured, users found ways of compensating for feature shortcomings that could led to the stage of ‘coming together’ (Seamon, 1993). Users are now in the homecoming stage, as they start to feel a sense of safety and security in their re-constructed space.

The empirical evidence has shown what is noted in the philosophy of praxis, in that the technology lifeworld experience is holistically intertwined with our two-facet of existentiality. It also confirms that belongingness precedes and guides our need for novelty (identified as curiosity in the empirical material).

5.5. Representing the design role philosophical base as praxis

In this chapter, I have attempted to introduce a philosophical foundation for ‘the design role’, aiming to mediate aligned existentiality. The proposed theoretical framework is aligned with the mundane every day experience with technology. Table 5.2 presents the overall contribution as a theoretical framework after the evaluation of praxis traditions as a base for understanding the technology lifeworld through empirical evidence.

Each praxis bases contribute to overturn the influence of thinking tradition on the design role. Marxism in the framework focuses on formulating a non-alienating
being with democratic values, thus de-emphasis the effect of scientific and capitalist economic system (consumerism) coupling. Phenomenology as a core element of the praxis tradition delineates both technology effect on lifeworld experience and societal effect on technology. Pragmatism demarcates technology as a mediator of being-human by bringing social values into the scripts of digital artifacts.

Table 5.2. Theoretical framework of philosophical foundation for ‘the design role’ to mediate ‘aligned existentiality’

<table>
<thead>
<tr>
<th>Philosophical concerns and contribution</th>
<th>Marxism</th>
<th>Phenomenology</th>
<th>Pragmatism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking tradition influences to be overturned</td>
<td>Rationality and technical way of being, reification, and self-acting commodity as a result of coupling thinking tradition and consumerism</td>
<td>Homeless and inauthentic existence as a result of thinking tradition’s unaligned understanding of being-human</td>
<td>Rejecting thinking tradition distinction between concept and reality, but also Heidegger’s and Marx’s view of essentialism</td>
</tr>
<tr>
<td>Path to holistic tradition</td>
<td>Politicizing technology values and neutralizing social and technological rationalities as a way of democratizing technology</td>
<td>Care as a base to conceptualize our ways of being-in-world, being-alongside with entities (belonginess), and our needs to look ahead-of-ourselves (novelty)</td>
<td>Technology as ‘self-correcting method’ and path to bring back epistemology to practice (practical turn) using both phenomenology and Marxism agenda</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Freedom from social rationalization and restoring a non-alienating being with democratic values</td>
<td>Existential authenticity through dwelling as care and opening-up to novelty</td>
<td>Digital technology as mediators of aligned existentiality</td>
</tr>
</tbody>
</table>

The next chapter continues to explore a theoretical knowledge base for ‘the design role’ aligned with the praxis tradition. The discussion is part of the use of design to direct technology to be used for our well-being as we move a step down from philosophical discussions to a less abstracted level of design knowledge base.
6. THE THEORETICAL DIMENSION OF MEDIATING ALIGNED EXISTENTIALITY

In this chapter, an effort is made to propose a design knowledge background that enables the design role to mediate aligned existentiality. In doing so, both dependent and interdependent conceptualization of technology proponents concern will be addresses. Dependent conceptualization of technology stresses that design knowledge base can be used to script values on digital artifacts which can either benefit or detriment technology users. Sharing the same line of thought, interdependent proponents suggests that both technology and users influence each other in symmetrical fashion (Feenberg, 2002; Borgmann, 2009; Dewey, 1910). The proposed design knowledge framework will address both views by refocusing the design role from its traditional epistemology oriented design knowledge to ontological design knowledge base. That is, the design role is refocused from how-to-design (episteme) to ‘what-to-design’ (ontic) questioning.

Ontic refers to the question of ‘what is’, while ontology refers to “enquiry of what is”. Ontological can be defined as “the condition or behavior of what is” (Willis, 2006 p.80). When ontological design is discussed, this refers to the notion of understanding what design itself constitutes. Mainly based on Heidegger’s phenomenology of care and ‘thinging of things’, ontological design is ‘a way of creating a relationship between being-human and lifeworld experience’ through digital artifacts (Willis, 2006). It is not just about how we can design digital object, but also understand what design objects do to us (Winograd & Flores, 1986). This interrelationship between what we design and the result it has on our lifeworld experience, and in turn how that newly created relationship directs our next design is what it is referred as ontological design theory.

This chapter proceeds as follows: I start with a theoretical discussion of ontological design knowledge base to develop different ontology oriented design knowledge base concepts. Noted that, epistemology oriented knowledge base is discussed while the thinking tradition is elaborated in the previous chapter. To formulate ontological design framework, one has to describe design concepts based on their ontological meaning. After developing ontological design concepts, the second section proposes ontological framing for the design role to mediate aligned existentiality. Subsequent two section induces the ontological design knowledge framing through empirical evidences. The chapter concludes with proposing a theoretical framework based on ontological design as a representation of the knowledge base for ‘the design role’. The knowledge claim strategy and the flow of this chapter is portrayed in figure 6.1. The main research inquiry for this chapter is: How can we formulate a design knowledge that enable the design role to have mediating aligned existentiality as its core interest?
6.1 Theoretical design knowledge ideas for the design role

The term ontological design first appeared in the work of Winograd and Flores (1986) work of “Understanding computers and cognition”, where they describe design as the act of designing a way of life. Winograd and Flores present a language-based model to illustrate the ontological way of thinking about design. The development and use of language on a daily basis as a communication of action, as conceived in speech theory, relates language as a tool to ‘generate commitments’ by listening and speaking. That is, we use language to ‘create and accept or decline commitments’ in a way that will affect our future (Winograd & Flores, 1986, p. 77).

Winograd and Flores (1986) argued that it is this action-oriented part of language that ultimately makes it ‘ontological’, not its ability to represent or transfer information. The epistemology-based computer system focused on the language nature of representation, while neglecting the commitment feature and how we recreate ourselves by using it. In his book “The Theory of communicative action”, Habermas (1984) has also gave a detailed description of how language can commit actions in everyday life and become something of lifeworld reality. Language theory is out of the scope of this thesis, but the implication is that language (1) in its matured form, can communicate action (thus also reveal and conceal commitment) and (2) its
communicated action is ‘mutually oriented’ (i.e. it is hermeneutical). I have further developed the notion of hermeneutics in Paper IX and X.

As such, the nature of language as Heidegger and later Habermas understood it, is the basis of ontological design. Again, as a backdrop, the epistemological notion of representation is the form of language use where its main aim is to exchange information. Such a ‘less action-oriented’ way of communication can resemble, for example, to a ‘superficial’ conversion such as ‘how is the weather’. In this setting, language is used to represent just the meaning of words, and from the ontological point of view seen as ‘meaningless’ or ‘space-holder’, since it does not communicate action. The argument here is that epistemology-based design follows the representation form of communication and communicates with ‘low level’ proficiency, as well as, to some extent, resulting a ‘lifeless’ values in its products.

The aim of ontological design also includes the making of design political by using it to embed values. In Chapter two, I recalled Mumford’s (1967) association to the premodern era of design with the language rules of (1) being action-oriented (value-laden ‘life-centered characteristics’) and (2) able to continuously reflected upon and grow (mutual constitution and hermeneutical). In the process of use, both the users and technology benefits from the interaction, just like language communicates action, the action also extends to the progress of language. In Paper II, I used Maturana’s and Varela’s (1980) biological discussion of ‘mutual constitutiveness’ in the animal world to illustrate a mutually beneficial human-technology relationship.

**Dwelling as care**

The ontological design base of language as a communicative action discussion and its hermeneutical effect on the actors (i.e. human and technology) becomes more relevant to the present research if we add the analysis of Dasein’s being as care and its homing notion of dwelling. As previously noted, Dasein dwells alongside its equipmental world, where it finds them to be ‘skillfully’ engaged (ready-to-hand mode of engagement). As a result of such a dwelling emotion, Dasein found them to be an important part of its lifeworld experience (see Paper IX for a further discussion of the hermeneutical relationship between technology and human). In his early work “Being and Time”, Heidegger presented dwelling as something authentic Dasein would do by choosing the right thing to do.

In his later work, Heidegger (2001) reoriented the idea of dwelling. In his two works, ‘The Things’ and ‘Building Dwelling Thinking’, he extends or rather divides dwelling into two type: essential and ordinary dwelling. Young (2000) remarked that

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6 Heidegger, though later diverged, has developed his notion of language using the Greek philosopher Heraclitus (535 – 475 BCE), who uses the concept of logos cited in John 1: 1-18, where Jesus was called the ‘word’ (logos in Greek). In the story, the word (Jesus) becomes flesh; hence the transformation of word into actual body.
ordinary dwelling represents what is discussed in the Being and Time where Dasein develops care for its ‘equipment’. Essential dwelling (i.e. the new dwelling concept), however, does not have to involve any feeling of care. In fact, the being can feel alienated or have no feelings for its place in the world, but still be considered as dwelled. Heidegger’s re-orientation helped him to discuss the effect of technology, which he later developed in his notion of ‘enframing’. While both dwellings are ontological, the essential dwelling represents ‘ontological insecurity’, while the ordinary dwelling connotes ontological security.

Why the change? Heidegger’s early orientation of dwelling becomes ‘vulnerable to technological attack’ in that not all who adopted technology will end up in the ordinary dwelling, but many will be used by technology as a ‘standing reservoir’ (i.e. enframed to be used); hence categorized as essential dwellers (Young, 2000). Another characteristic of essential dwellers is ignorance of their inauthentic beingness (i.e. inauthentic living) or as he puts it, “homelessness”. For Heidegger, the main reason for ‘contemporary man’s ignorance’ is the essence of modern technology. Technology reveals everyone under it as a ‘resource’ to be used for its own needs, which Feenberg identifies as ‘needs to become more and more efficient’ (Feenberg, 2006). In a sense, essential dwellers of technology users become subjects of trials where new technology is tested and becomes more effective.

The reason this is brought up for discussion is to develop the hermeneutic nature of technology use to our existential being, identified in the preceding chapter as care. One dwells as an ordinary dweller (as Heidegger calls it, poetically), only if s/he can live with the existential sense of care. But as the hermeneutic rule specifies, one can also live with essential dwelling as a result of its relations with the world, including technology. What and how we design technology translates into what kind of dwelling we experience to the same degree as how our way of dwelling (ordinary or essential) influences what kind of technology we design. The rule of ontological transfer works as long as there is involvement.

As it is discussed in the care structure of being-in-the-world, we are thrown into involvement, hence the only available option is to find ways to mediate ordinary dwelling through design as the other option would be ‘enframed’ by technology to be a ‘resource’, hence become essential dwellers. (Fry, 2013). This is what the pragmatic part of the praxis tradition in Chapter five advocates; to use technology to solve technology enframing, even though this ‘cannot be achieved purely with technical means’ (Malpas, 2000). Thus, we can extrapolate that the ontological knowledge base for the design role aims at ‘dwelling as care’; synonymous with aligned existentiality. The assumption is that the design concepts will have a

7 Note that I approach the concept of ‘dwelling as care’ from the perspective of technological design. This does not mean that technological design is the basis of dwelling as care. In fact, we need more than technology in our lives to experience dwelling as care including, those discussed in the concept of care in the preceding chapter.
hermeneutical relationship with our dwelling as care; whether we are essential or ordinary dwellers. In the essential dweller sense, our beingness is saddled with inauthenticity making us vulnerable to technology’s essence of revealing us as a ‘standing reservoir’.

The ontological framework for design suggested here argues that the essence of technology can be changed through design to reveal dwelling as care. As a result, we can transform our insecure being, ontologically speaking with secure one, and start living as ordinary dwellers (noted in chapter five Dewey’s concept of ‘transformation, emergence and self-referentiality’). Young (2000) commented:

> It follows from this that the overcoming of homelessness—the achievement of dwelling in the ordinary sense—must consist in the overcoming of ignorance, of ‘oblivion of being’ (emphasis added p. 211).

Such transformation, also discussed in Heidegger’s notion as ‘clearing’, is always at work, whether the situation results in essential or ordinary dwelling. On one hand, a design theory based on the representational performance of language will result in transforming humans to standing resources. The mass production and commodity based novelty is aligned with such transformation. The representation based design focuses on an epistemological question of ‘how-to-develop’ efficient, patterned, short-term but effective artifacts. On the other hand, action-oriented language based ontological design focuses on the content of technology and its ability to sustain users’ dwelling as care. In addition, it can be used to transform essential dwellers into ordinary dwellers using the inevitable mechanism of hermeneutics; “we design…and in turn we are designed by our designing and by that which we have designed” (Willis, 2006, p. 2).

**Toward ontological design knowledge concepts**

As briefly discussed in the method section (and in detail in Paper VIII), theorizing in social sciences and humanities involves the identification of concepts (similar to coefficients in the field of science) and creating a ‘sensible’ relationship between the concepts based on their nature. That is, once identified, we explore the concepts to their core nature of ‘Whatness’ to have a fully validated understanding of the concept. Thus, the first task toward ontological design framework is to identify

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8 At this point of his life, Heidegger changes many terms and his language was somewhat become more straightforward. For instance, Dasein was drawing closer to the discussion of a natural human (beings or mortals). He introduced a fourfold structure, the ‘sky, earth, mortals, and divinity’, where the being of human poetically dwells and shines. Even though he has added different existential lists/altered the old, most of them continued to be intact or simply re-oriented. Care, being-in-the-world, space, and time are continued their existence, but their meaning was extended as a result of the reorientation of dwelling and nothingness. For further discussion on the early and later Heidegger, please refer to Julian Young (2000).
concepts related to the act of designing. To take on this task, different approaches can be applied.

One approach is an extensive literature review of the design knowledge base. In paper VIII, I have used the term ‘knowledge containers’ to identify where these design issues reside (i.e. artifacts, experience, design environment, design actors, etc.) and consequently identified design issues themselves. A more detailed classification in the form of a meta-theoretical abstraction that includes a detail literature review is presented in Paper VIII. For the sake of our discussion, we call this approach bottom-up, as it develops concepts and their nature by extrapolating from the ‘knowledge containers’ they reside in.

Tony Fry’s (2013) work of “Becoming Human by Design” and various research work by Anne Willis (Willis, 2006; Willis, 2012), however, follow what can be termed as a top-down approach where they start questioning our being-in-the-world on the ontological level. Heidegger’s phenomenological work of Dasein as it is discussed in Chapter five, for example, was used as the basis for identifying design concepts. Furthermore, the later Heidegger’s works on thinghood and dwelling complement top-down approaches. Using such an approach Willis (2006) was able to identify a meta-level category of design concepts as ‘design objects, design processes, and the design agency (i.e. designer, design inscription, etc.). Both approaches reflect a holistic understanding of design. As a result, we can see similarities with the design concepts that were derived to formulate a relationship between these concepts, and ultimately a theoretical framework of ontological design. In what follows, I will identified four main design concepts, namely things, design process, appropriation, and design agency based on both bottom-up and top-down approaches. I begin with a brief discussion of the process of identifying these four design concepts.

**Design concepts for ontology based theoretical framework**

Using the top-down approach, Willis (2006) identified the ‘design object’ with its material and immaterial content as one of the design concept. Using Heidegger notion of things, she remarked that the focus of the design object tends ‘more toward politics, social and cultural’ materiality. Heidegger (2001) theorized the different between objects and things, defining thingness as “what makes the thing a thing...what conditions the thing”, while objects has a comparable definition with IT artifacts that aims to become efficiently useful. Using the bottom-up approach, we can find a similar notion relating to design objects. The epistemology focus of design theories has a comparable but contently different design component focus, usually termed IT artifact. In the bottom-up approach, products for Cross (2001), artifacts for Yoo (2010), and object for Love (2002) are served as design containers for the design concept of IT artifact/things/design object.

Following these notes, I have identified things as the first ontological design concept as having a hermeneutical relation with dwelling as care. Things is a
philosophical concept in Heidegger’s theorization of being-in-the-world and my understanding of things is aligned with his description of the term. I will return to this point during the discussion of each design concepts.

Closely associated with things, methods and activities are the main focus of designing. Though a high-level focus on methods and design activities were driven by the modern need for pattern and mass production, design methods play a crucial role in demarcating the design space to the process of developing technology functions and properties. Cross (2001) identifies design processes as one of the design knowledge ‘containers’ where design issues such as methods and activities reside. Willis (2006) pointed out that the design process concerns not only ‘conducts and activities of designing’ but also organizations and design settings. Schön’s Reflection in action is an example of an ontologically-oriented design process exploration where he finds design activities across organization professions (Schon, 1984).

Aligned with this, I have identified design processes as the second ontological design concept. As outlined in the research method chapter, design activities and processes were my main focus during the first two years of my PhD study in which design methods were re-evaluated to attend to system’s usefulness and efficiency, as well as fitness and adaptability. Extending this focus, the design process now includes design domain (equipmental-nexus), design activities, and design methodologies. Design processes is similar to what design science research and the overall Simon’s (1969) problem-solving paradigm takes as a main design concept (Hevner et al., 2004). But with aiming to contribute toward dwelling as care, the design process is defined here from ontological perspective.

Thirdly, we find the notion of appropriation. Appropriation, in the context of the technology lifeworld, simply means users’ progress in adopting the designed artifact into their lifeworld. Not all design artifacts reach the full appropriation phase where technology can be used with a know-how level of the understanding mode (ready-to-hand mode), nor do they have the same consequences on users (alienation vs. dwelling). Technology appropriation is the central interest of the Social Constructivist School (SCS), later developed by Poole and DeSanctis (1994) work on Adaptive Structuration Theory (AST). Other related work includes Orlikowski’s (1992) Structuration Model of Technology that regards technology as having a dual nature: ‘product of human action and a consequence of human interaction’ – thus recursive (Delaney et al., 2008, p. 15).

Heidegger’s thought of appropriation involving technology’s ontological leap from technology-as-designed into technology-in-use is my base to interpret appropriation ontologically. In a sense, the nature of technology transformed from a knowledge base artifact interact with present-at-hand mode into equipment; set to interact with ready-to-hand mode, thus doing an ontological leap. In addition, Marx’s concept of appropriation introduced in chapter five will assist to develop the design concept of appropriation from ontological perspective and will be noted below.
The forth design concept I have included in the design concept is **design agency**. Willis (2006) emphasizes that design agency includes both designers and how the designed *things* act in the world. The latter concept relates to how technological artifacts act as agency of transformation – as a mediator, a tool, a boundary object, causal power, affordance, etc. Cross (2001) included end-users (people) as design knowledge containers, indicating that users can be ‘designer agency’ in their own right, especially during the process of appropriation (secondary designing).

These four concepts – things, design processes, appropriation, and design agency – make-up a theoretical framework for ontological design. In order to create a sensible relationship between these concepts, there ‘needs to be something fundamental to all’ of them (Willis, 2006, p. 11). As noted earlier, they are hermeneutically related to our way of dwelling in the world (either as *ordinary* or *essential*). The hermeneutic claim also applies to the relationship between each of the concepts. As noted before, ontological design claims that with what we design, we will continue to be designed. We should consider each concept as a form of designing. That is, on each level, when we deploy certain design acts, we are literally designing that specific concept of design, which in turn will continue to design the next design act. On another level, each design concept affects other design concepts in the same circular (hermeneutics) form (Willis, 2006). In such a setting, the thinking tradition of causality, at least in its Descartes form, is rendered meaningless. There is no primacy between these concepts, unless one wants to pay any one of them specific attention. The next section will present each design concept in brief based on their ontological definition, aiming to politicize them toward dwelling as care.

**Things**

Questioning ‘what things do’, how we feel them, and why they act the way they do in our daily lives (their agencyness) has a long tradition going back to the pre-Socratic philosopher era (Atzmon & Boradkar, 2014; Verbeek, 2005). In Heidegger’s work in general, and in his later work in particular, the term *things* is presented as ‘counterpoised to objects where things is understood as a positive term’ (Harman, 2010). In a very simplified manner, objects can be seen as (IT) artifacts that are built based on the basis of the language representation setting noted above. Things have ‘contents’ that have an *acting* effect on the individual users. That is, they are not *irreducible* to their material use. My purpose here is to politicize this content toward dwelling as care through different well-being attributes. But first I will attempt to briefly develop the *things* concept.

In his book “*What is a Thing*”, Heidegger (1967) uses the old original German word *ding* (which means *gathers*) to define what things connotes; *something that gathers*. He developed his thoughts using different examples such as jugs and bridges. In his bridge example, he explained that bridges can be seen as an object or a thing. In the sense of an object, a bridge can be seen as a piece of concrete that
connects two independent banks. But such understanding is just representational in the sense that it only magnifies the materiality of a bridge. As a thing, though, the bridge gathers the scenery of the place including the banks, streams, two different locations/sides, and so on. As such, the meaning of the bridge comes from its gathering ability, not from the object’s entities – hence become an ontological meaning. The object materiality of it defines how the bridge is made (concert object), while it ontological meaning of a thing connotes what it does to the overall setting.

Epistemology based designed technology is a way of peeling off such meanings from the world and enframing things as a merely objects. The argument is that by focusing on the objectiveness of things as the main characteristic of things, we fail to appreciate the main (ontological) meaning of things. Once objects (IT artifacts in the IS research) is an acceptable definition of things, the focus of designing things becomes about the functional materiality of the thing. The thinging of things (its thingness) that exist and constantly affect our reality, is left unattended. In a sense, we are thrown into thingness without enough reflection of their influence, hence can potentially lead us to be essential dwellers or enframed to be resources.

Consequently technology’s default mode of enframing (its original thingness) affects our dwelling. In the dwelling as care mode, thingness have a chance to give Dasein a bigger picture of the world and continually opens up our space, while still keeping our ‘place’ in the world. The thought of the world as things is what Heidegger calls ‘nearness’ to our aligned existentiality. Technology enframing precisely ‘obliterates this nearness’, and transforms our bigger picture into objective reality and makes us ‘homeless’ (Malpas, 2000). Put in another way, modern technology changes our relationship with the ‘bigger picture of the world’ into a means-to-end sort of relationship and limits our effort to extend our dwelling place.

It should be noted that strictly speaking there is no entity that can be called ‘things’, as there is no entity called equipment. Both equipment and things are the result of practical activities. My focus here is to develop a mechanism that alters the role of technology from enframing homelessness to a role that facilitates dwelling as care. That is, as the bridge discloses its thingness as not just as a connecter of two banks but a transformer of the overall scenery of the thing (the world), technology, in a sense, can be designed as a discloser of scenery or to support the discloses of scenery or landscape. This, will in turn, force us to take the thingness of things into consideration while designing technology, as oppose to the epistemology oriented design where the focus would have been ‘efficiently connecting the two banks’.

The proposed concept of things suggests the design role to be ‘finding ways to ‘clear’ technology from its enframing’. Malpas (2000) remarked that ‘the recovering of proper space for human dwelling in the face of technology enframing should be worked out in relationship to technology itself’ (p. 228). Thus, recovering our

12 The subject of activity is further developed in chapter 7.
‘general picture of thingness’ means change the essences of technology from enframing to mode of disclosing our dwelling.

I will conclude the discussion of things by suggesting how such ‘recovery’ can be accomplished through the role of design. Chapter two and five have touched upon how the thinking tradition supported by the capitalist system enframed the essence technology by ‘politicizing’ it during the design stage toward their goal. In defining the essence of technology, the things concept directs the focus to embody and replace technology values with well-beingness values. Keep in mind that these values are subjected to philosophical interpretation of what constitutes well-being, and in that they aim to open-up a space for humans to explore their world, while keeping their dwelling feelings.

Some of these values were introduced in Dewey’s pragmatic tradition, including ethics and morality as candidates of technology deframing. Dewey’s work also provided a means to script these values on technology through his concept of transformation. Van de Poel (2012) remarked that value sensitive design such as ‘the feeling of autonomy, liberty, sense of responsibility, deep personal relationship, fairness to nature, and contributing to the society’ can be used to direct technology design. Desmet and Pohlmeyer (2013) introduced three subjective technology values – pleasure, personal significance, and virtue and have demonstrate their embodiment in technology through design. These and other belongingness features can be designed as thingness of things to redirect technology’s effect from its epistemology oriented enframing consequences.

Design agency

Closely related to, and at times even overlapping, with the concept of things is the notion of design agency. By design agency I want to draw attention to human designers, nonhuman things’ mode of expression through inscribed instructions, and the manifestation of these expressions in activity (i.e. as boundary objects, mediator or disclosure).

The first design agency that naturally comes to mind is designers and their skills or expertise. Despite this assumption, however, the focus on designers’ ‘life philosophy’, their behavior in design processes, how the act of designing changes them (hermeneutically) in their future design acts has attracted fewer research work, especially in IS research (see Paper VIII). Recently, users’ designing activities while in use has started to attract traction in concepts such as ‘secondary designing’ (Germonprez et al, 2011). In the field of interaction design and HCI, we find more investment in the research work on designers’ behaviors, challenges, and interpersonal dimensions (i.e. personalities). Lawson (Lawson, 2006) provided one of the most extensive works on designers’ challenges, such as adapting to the ever changing role of designers, new design conceptualizations (i.e. types and style thinking), design expectations, and the advance of technological means for
designing itself. Cross (2011) has looked at designers’ team collaboration and its
effect on the design processes. Tracy and Hutchinson (2013) relates designers’
identity and personal growth to designers’ products and how design work develops
reflective personalities. Finally, we find research works such as Foz’s and
Lindemann’s, where human behavior is taken into consideration in the design
practice (Lindemann, 2003; Foz, 1972). The discussion of users’ designing behavior
is included in the concept of appropriation below.

Non-human entities such as technical objects also act as design agency. Perhaps
Latour’s ‘Action-Network Theory (ANT) can be seen as the most developed body of
research in detailing the material agencyiness that emerged during the actual use
(Latour, 2005). Latour has highlighted that the way actants (as he calls them) emerge
into existence matters more than what role they play in the overall results, since
emergence of actants in itself changes the overall network. But opposing both
Heidegger’s and Sartre’s interest in giving primacy to humans, Latour saw human
and non-human agency as having the same level of influence (terming it ‘symmetrically’) in the network of action. Technology agencyiness is closely related to
my discussion of things of thingness in at least two ways. The first is the need to
understand the modes of expression a nonhuman design agency uses to identify
itself within the worlds of things. The second is, how the different expressions
defines the role of agency for dwelling as care

Different technology objects’ modes are explored in the literature. The design
science research paradigm, based on the thinking tradition, perceive technological
objects as IT artifact tools. In this mode, artifacts are merely means-to-an-end entities.
Artifacts can also be conceptualized as boundary objects, where the CSCW researchers
find it convenient to show the coordination and negotiation between the boundary
objects themselves (Star & Griesemer, 1989). It is possible to describe the mode of
technological objects expression as affordances where designing is seen as a
determining factor for users’ perception. For instance, ‘thin vertical door handles
afford pulling while flat horizontal plates afford pushing’ (Gaver, 1991).

Finally we find mediation to be a nonhuman design agency mode of expression. I
identify the mode of mediation as the most compatible mode when it comes to
communicating dwelling as care using technological objects. Mediation highlights
technological objects as mediators between humans and their world through which
humans understand other humans, the world, and their own place in the world. Like
wearing a contact lens, mediation aims to achieve transparency without being irreducible to
merely a means-to-end tool. That is, they do not simply make it easier for us to
understand our world (i.e. means-to-end use), but shapes and at times transform our
views. In doing so, they are also irreducible in the sense that the message (political
values or thingness) attached to their functionality remains intact.

Latour (1994) provided an extensive discussion of mediation in his book On
technical mediation, which is summarized here as follows. The first meaning of
mediation is presented as ‘translation’. It is a mechanism by which new actants
emerge as a result of the interaction between technology and human. A person and a gun become a ‘person-with-the-gun-in-his-hand’; both transformed into different actants. Both the gun and the person are responsible for the gun shot. The second type is ‘composition’. It is comparable to Heidegger’s equipment nexus. A hammer and a carpenter are what they are, not only because of their identities as hammer or carpenter, but also because of the idea of carpentry, trees, woods, etc. Reversible black-boxing is the third type of mediation. Once again, Heidegger’s notion of equipment relates to this type. Driving my car may seem to involve no more than the car and myself, but the process of driving becomes possible as a result of all the labor put into making the car and learning how to drive. In a sense, this labor is ‘black-boxed’, but important to make mediation between me and the car possible. Finally, we have delegation. As a speed bumper, an absent actor can still influence the present actor (i.e. the driver) and make him/her act one way or another (i.e. slowing down speed).

The mediation mode of expression also has an important role in ontological design framework, if one aims to mediate dwelling as care through technology. This brings us to the second focus; how the mediation mode of expression defines the role of agency for dwelling as care. As noted before, mediation aims to achieve not only transparency but also irreducibility for the thingness it mediates. That is, it unfolds (Heidegger’s term) transformation through its inscription. The concept of irreducibility connotes mediating objects’ feature to ‘direct attention to themselves’ rather than being mere materials with functionalities (Verbeek & Kockelkoren, 1998). They disclose the values they possess inside, in addition to serving their inscribed functionalities. A phone can be designed not to be reduced to its functionality as a phone, but to attract attention to itself by the value it propagates – longevity or being environmentally friendly.

The argument is that an irreducible mediator of a technological object discloses a bigger reality about our world. In the most obvious sense, a bigger camera lens discloses a larger landscape, in addition to taking detailed pictures. With the larger lens, we are able to get nearer to the overall thingness of the landscape, as the lens discloses the general overview – Heidegger’s concept of disclosure. As technology is designed to mediate such disclosure, understood as ‘brining to appearance what is hidden’, we get ‘nearer’ to our dwelling (Malpas, 2000, p. 219).

Heidegger did not take a closer look at technologies’ ability to mediate his notion of ‘nearthness’, hence the possibility of dwelling as care through technology. He saw ‘nearthness’ afforded by technology as merely a random connection, not real relationships. As noted in the preceding chapter, it is true that the quest for belongingness through the novel experiences of technology can lead to such a random connection. But a refocused design agency as it is set out in its ontological sense can re-conceptualize technology as a mediator of nearness through its ability of irreducibility.
6.4.3. Appropriation

The concept of appropriation as part of the ontological design framework focuses on the actual use of technological objects in the design domain. The notion of appropriation originates from Marx’s thoughts where he uses the concept to show how ‘human incorporate the nature when they come in contact with it’ (Delaney et al., 2008). Marx’s main interest, labor, was supposed to help human to ‘reproduce themselves’ in a creative way. The activity of work, in turn, needs ‘the appropriation of knowledge or know-how’ to participate in the creative operation of work (Graumann, 1976, p. 121). Aligned with Heidegger’s existential concept of understanding, appropriation resembles a know-how familiarity with things around us during the activity of creation.

The result of appropriation depends on the object to be appropriated and the process of appropriation itself (i.e. the building process noted above). First, the appropriation process is largely about acting, modifying, and transforming one’s beingness, and less about accumulating knowledge through theoretical learning (Korosec-Serfaty, 1985). Second, what is already appropriated also affects the result of the process. In Marx’s concept of appropriation, the creative labor itself becomes ‘objectified’, and appropriating this objective labor that is supposed to work as a mediator between humans and the fruits of their creative labor will end up making humans alienated from themselves. For Marx, the object we appropriate (i.e. alienating labor) in the capitalist system results in the alienation of the self from its natural being-species.

In this section I will look at the appropriation process with a more positive light toward which we ‘bring the unknown to our everyday use’ for our own benefits (Carton, De Vaujany, Perez & Romeyer, 2005). In this role, the appropriation process involves an ontological change in both human and technology entities. Appropriation is ontological in a sense that it is our existential way of responding to any newness we encounter in our life (Paper VI develops users’ secondary design behavior as existential behavior). In addition, the result of the process is both individual, as it relates to the human participants, and communal, since its change can have an effect on the overall social identity. The individual level of appropriation, including ontological changes occurring in both technology and human, has been my focus in technology appropriation and I have used Heidegger’s notions of equipment and building/dwelling to explore the practice (see Paper IX).

In building a relationship with technology, human agency goes through a different mode of interacting with technology, identified as building a relationship

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10 Historically, the Anglophone world stresses Marx’s appropriation outlook and evaluates its result from its adverse role. The French literature reflects on appropriation from its potential contribution of positive human experience as a result of human to things relationship creation (Carton, et al. 2005).
with what seemed new or mending a broken one. In this format, the interaction mode resembles what Heidegger noted as present-at-hand where things are up for reflective gaze. The process of building also involves dwelling, since we are always in an existing context (i.e. dwelling context) where we draw on local logics and know-how understanding to build the relationship. The construction of this relationship is portrayed as a relationship developed between two mutually benefited organisms (see Paper II). Their interaction can be described as a practice of construction that continuously change their own structure to adapt their landscape.

The change we see in both technology and human during appropriation is also ontological in the sense that it alters their whatness. Technology changes from a mere object to ‘equipment’ that can be interacted skillfully. It becomes more beneficial, as long as it is not an alienating object enframed by thinking tradition values. Human beingness extends its secured dwelling place, which in turn changes (for better/worth) our identities, our way of interacting with human and non-human agencies, and how we present ourselves to the world. As we reach the level of skillful interaction with our technological objects, we start to care deeply about the bond we have achieved with the supposedly non-alienating objects. Heidegger (2001) presents this stage of dwelling mode as a form of dwelling with care which also refers to a fragile and precious achievement of bonding. Schillmeier (2007) has portrayed such bonding as being highly specific, individual, emotional and complex. We care about both our uniquely assembled regular routines and ‘familiar things and in essence love and favor them’ (Nelms, 1996, p. 373).

With the ontological understanding of appropriation, one can see that the process is not a smooth fitness transition nor a matter of information process or exchanging representations of contextual details, as portrayed by epistemology oriented design knowledge base. It is an act of practice that involves short and long term trials and struggles, charged emotions, workarounds, deep awareness and acceptance of oneself and our technological objects, continuous practical exposure, failures and small but incremental success that can stir social identities.

Designers and users alike continuously redesign objects to fit their lifeworld. This redesigning includes changing everyday routines, old habits, new bricolage, and even modifying technology features (identified in my research as secondary designing – see Paper VI). To facilitate a smooth appropriation of non-alienating objects means to consider ontological conceptualization of appropriation in design stage. In particular, the notion of users’ way of redesigning both their everyday lives and technology features is crucial to influence their status of dwelling (i.e. ordinary or essential). As such, the understanding of appropriation as ontological offers an important input to the ontological design framework.
Design processes

Out of the four ontological design theory concepts, the concept of design processes is perhaps one of the most extensively covered topics in IS research because of its importance for the thinking tradition. In fact, the thinking tradition creates a sort of synonymous meaning between IS design and design processes. In this section, I will briefly discuss how we can reconceptualize design processes from an ontological perspective.

The general understanding of design processes from the epistemological perspective is that it should focus on developing ‘problem-solving’ objects. The beginning of Chapter five, outlined some of the pitfalls of such a focus, including being ill-prepared for ‘wicked problems’, merely focusing on method inquiries, pattern creations (adaptable to consumerism), and quest for continuous novelty. To avoid these shortcomings, ontological design processes guided by the general principle of what Schön (1999) has called ‘knowing-in-action’ – ‘treating design process as an intuitive reflection of activities based on situated experiences’. That is, the design process is not a linear sequence of action with a start and end point, but an inquiry that aims to bring out tacit practices which enable the practitioner to re-evaluate (i.e. reflect in action) its design work. But to avoid Schön’s framework weakness of being ‘solely instrumental’ method of inquiry, ontological design perceives its activity as having a hermeneutical relationship with the remaining three design concepts (appropriation, things, and design agency) (Willis, 2006).

In particular, Dewey’s praxis pillar introduced in Chapter 5 guides the reconceptualization of design process into ontological understanding. Dewey’s concept of situational inquiry points out that the knowledge we use for design processes is not ‘out-there’ waiting to be discovered, but constructed during reflective interaction with the design domain. The ‘continuing appearance of reality’ as the result of designers interaction (he calls it transaction) with the design space in turn makes the design environment more meaningful (Osberg, Biesta & Cilliers, 2008, p. 224). I have outlined Dewey’s five stages as a proposal of how we can apply it in the form of reflective-in-action inquiries in Chapter five: developing a ‘felt like’ sense of the problem, defining the problem in a qualitative manner, further examination and analysis by relating the problem to the background of experience, tentative hypothesis, and experimentation of the plan of action. These stages are not a hard and fast rule nor should their sequence be adherently followed. They are principles/guidelines to formulate ontological reflective inquires.

Being reflective should not be confused with the analysts’ effort to articulate the transaction from a neutral position. Schön claims that the designer’s interpretation of knowledge could be a conflict of interest as a result of the designers’ prejudice, and asserted that such pre-understanding can be examined and removed. In Paper X, I disagree with this claim based on the hermeneutic phenomenology discussion, and showed that it is impossible to bracket out such biases, as Husserl’s phenomenology
suggested, ‘precisely because the interpreter is his/her understanding’ (Willis, 2006). In fact, an attempt to reflect and articulate on transaction to sift analysts’ pre-understanding creates the very problem ontological design is fighting against – the reproduction of knowledge based on cognitive rationality.\footnote{Using Heidegger’s ‘blindness’, Winograd and Flores examine the effect of reflective bracketing on design processes. Their argument, with which I agree, shows that such reflection resembles to a present-at-hand sort of analysis that we should avoid if we need design processes to be free of the thinking tradition. For further details, refer to their book \textit{Understanding computer and cognition} (1986), pages 97–100}

As such, designers’ experience of transaction within the design domain would be seen as an intelligible knowledge on its own without sifting out their background. This assumption gives the designer a ready-to-hand mode of interaction with the design space. Tacit knowledge of ordinary everydayness could make more sense when transaction experiences are taken at face value as ordinary everydayness. With this in mind, Paper VII has presented four main design activities that a designer is usually expected to fulfill in the thinking tradition, and reflect upon them from the ontological design framing perspective – defining problem domain, formal representation of user requirement, abstractions to computer representation, and development of objects and properties. That effort will not repeated here. In addition, I will revisit these design process ‘phases’ based on Dewey’s five stage of situational inquiry while presenting heuristic design deliberations in Chapter eight.

\section*{6.2. Toward an ontological analytic framing of the design role}

In the preceding section, I have outlined concepts of ontology based theoretical frameworks in line with the philosophical tradition of praxis and formulate their contribution toward \textit{dwelling as care}. Ontological design aims to redirect technology toward experiencing dwelling as care – a principal nature of aligned existentiality.

Using the ontological definition of \textit{things}, a refocused IT artifact is conceptualized that aims to script well-beingness values in digital technologies while in use. The discussion of \textit{design agency} details how to formulate and understand the nature of technology in the ‘network of action’ and that its nature, especially mediation nature, can be conceived toward dwelling as care. \textit{ Appropriation} highlights the need to revise the concept of human-technology relationship development as a process of continuous co-construction rather than target-based fitting. Finally, the \textit{design processes} section discusses how the epistemological design theory understanding of the design role as a ‘problem-solving’ exercise limits the design role to be only instrumental. Instead, suggestions were given to extend the design activities from instrumental to value-laden activities that supports the overall design role purpose of politicizing technology to dwelling as care.
Consequently, the ontological design knowledge can *overturn* the influence of epistemological oriented design in order for the design role to facilitate dwelling as care. Figure 6.2 illustrates such framing. In this setting, the ontological design knowledge components informs digital technology features’ values. The epistemology focused design knowledge equally contributes to the overall design practices, particularly to the action oriented concepts such as design activities. With ontological base, design provides a means not only to embed technical attributes but also well-beingness attributes into lifeworld experience. Their foreground shades illustrates their aligned relationship where design concepts’ interpretation of epistemology *supplements* the main ontological interpretation.

Well-being values embed as *thingness of things* where technological objects enable humans to dwell in their *places* (belonginess) and provide an opportunity to expand our *space* (novel experiences). Things embedded with rich *thingness* will have *agencyness* in that they will “touch” us while we live ‘alongside with them’ (Malpas, 2000, p. 227). In a sense, we co-construct (i.e. *appropriation*) our dwelling with technological agencies and continue to extend our aligned existentiality. In the next two section, ontological framing of design knowledge will future be elaborated using empirical evidence.

![Figure 6.2. Ontological design as a core design knowledge while deemphasizing the epistemology based design knowledge influence](image)

**6.3. Empirical evidence to evaluate ontological design concepts**

When carrying out the empirical analysis, I was able to observe ontological interpretations of design concepts in both the adoption and post-adoption period of the Moodle system. In addition, my examination of 301 system analysis briefings by both IS and non-IS professionals and a closer analysis of 84 briefings have demonstrated the viability of users’ participation in the demarcation process of the design domain. Thus, both case study and the work system briefings were used to induce the ontological design knowledge base framing. The case study is discussed in chapter three, while Paper IX reports a detailed description of the empirical gathering, analysis, and results. Paper I reports the work system briefings and the
analysis results. When citing quotes from participants, I have used P to denote participants and the letter that follows represents the initial letter of the participant’s first or last name.

6.4. Idealizing ontological design knowledge base into empirical evidence

As noted in the preceding chapter, users were ‘comfortably dwelled’ with their existing ‘things’ which includes WebCT learning management system, workarounds, ‘local logics’ of how to assemble different software in their daily practices, communication methods with colleagues and students, and a personally developed relationship with technology over a period of time (“I think I have workarounds using other software and standardized that myself. And now I know how to integrate that with Moodle. But, you know some use their own system (website), they have their own standardized way of doing things. And there are things in the background, which we don’t care about. A connection between Moodle and ladok. As I know, that is done manually. I do also create my own things as well; but it is individual” Interview_2_p5). Users’ relationship was reflective of dwelling as care where there were ontologically secured (“I (still use) workaround to grade in excel file or importing to excel file. This is because I feel like more at home. I used to do that before in WebCT as well, so it is continued process. May be it is also feels good that you have the grades in your file inside your computer, so that you can manipulate the work as you want. That is like, it is excel and I know it very well using it for other purposes thus, I know how to work around with it. There is some kind of the same features in Moodle, I start using it there but then at some point I will export it to excel and continue to work from there. Probably I will try to use Moodle in the future, but I don’t think I will do that” Interview_1_p1).

The transition to WebCT was slow, even after 20 month the sense of ‘home’ was lacking. At this point, the users were considered dwelled, but for some their status of dwelling mode was that of essential dwellers. (“May be we don’t like our home that much, but we have to live in it. . . I think, every use has its own way of getting used to it. Still hard to work with it, but I have to work with it. I curse a lot =) and I can’t divorce it”Interview_2_p2). The ordinary dwelling mode is related to feeling at home or an ontological security where users find their way back to their everydayness practice. It is no surprise that the first thing they looked for in Moodle was technical features that would allow them the same practice as when using WebCT. (“A question of management in Moodle... If I have a task that will be open only to a certain student ... what do I do? In WebCT, I could set the publication terms and where to choose which students would have access to the task’’ 4/23/2013_cell 303_Nilex msg . . . “In WebCT, it was possible to use a function so that you, as a teacher received an email when students submitted data. Is it possible to do the same in Moodle?” 6/27/2013_cell 273_Nilex msg).

I have also observed a failed politicization of technological object (thingness) during the Moodle implementation. The Moodle software comes with an email system that is comparable to the email system in WebCT. The ‘catch’ is that the email correspondence is open to the public, as it is also intended to be used as a forum discussion. That way, Moodle assumes, teachers will not have to answer same
questions repeatedly, and students can also learn from other students’ correspondence with the teacher. This politicization was a complete failure and even after they rearranged the email system so that it was similar to that found in WebCT, users were not keen to pick it up. They had already started to use private email addresses. (“The message system is the biggest weakness I would say. It is not natural the way it works . . . I use my email to get around. I tend to use my email on one on one message. Interview_2_p7)."

There were some success stories of transformation achieved through technology. Some felt that the system helps them to be a better teacher as, in a way, it pushes them to be organized. (“It is more flexible, you can find yourself creating a good user interface, with the entire margin and especially for us it is nice to have this” Interview_1_p5) Others have placed the responsibility of politicizing the system on department heads and Moodle developers. (“When we select the platform, the university first prepares which pedagogical methods and resources we should have before selecting the platform itself and we go from there. So, I think we had this approach of going from our thought to the platform than the other way round. But then again, the platform is designed by people who believe in social constructivism, hence it particularly push you that way, that is why they give more emphasis on features such as forums and staff like that. I mean the software can be used from early age like even 8, so I mean you can use it for different people for different purposes, but still it has the notion of this social construction.” Interview_2_p6)

It was clear from the beginning that users were ‘design agencies’ on their turf, whether it comes to individual practices (assembling of different systems) or modification of technology features. One experienced user commented his ‘secondary design’ as follows. (“Sometime it is not really clear what the designer wants in the system and how it should be used. Yeah, I know one thing I have done in which it is not definitely the interaction of the system. That is, in the discussion forum. There is one type, which is called news. And I don’t like that. And this news discussion is mandatory, so I have taken it away, even though that is at least the one thing the designers want you to have. I hide it, and create a new standard forum, which I called “information for teacher”. It feels like I don’t have any control over these news features, so I hid it and create my own. The designer steps are also not only one. There are designers at the beginning, and then the implementers and then us. So, at the end the users may find it important to change some things that are designed by different stages” Interview_2_p5). Others had stories about their ‘secondary design experiences. (“Some write down math formulas and staff like that and take a picture of that particular paper and uploaded it as pdf or picture” Interview_2_p4).

I was able to observe Moodle’s ability to mediate thingness without being reduced to just a means-to-end tool. Some considered WebCT just an instrument, while Moodle plays a role in changing everyday practices (“When I use WebCT, I mainly use to send message to students, upload and stuff . . . but in Moodle, I create examination in a better way, do things online for students, and so I think I become a good teacher. For example, online test is very good for me now I start to use it” Interview_2_p4 . . . Moodle puts the pedagogy on the surface, the design makes it obvious for us to work with it. I can see that the possibility to let the students to work together. E.g. Blogs, wikis, videos, we use to have that other locations like Google docs. I could see on teacher’s face that when they see that it can be done here it is really good for them Interview_2_4). Interestingly, the transparent ability of Moodle to mediate its ‘politics’ has also been criticized; an effect of creating sameness among teachers (“I think when I work in Moodle I have to have a map, so put some more effort to structure the course well. In a way, it is good. But on
The other side, it makes you work the same way as all teachers, so it keeps you standardized. (Interview_1_p10).

The first three papers developed the notion of ontological appropriation based on empirical analysis, hence the effort will not be repeated here. There was evidence showing that users building a relationship with technology consists of long-term adaptation, trials and modest victories, and at times failure and frustration, feature re-designing, and a steady relationship growth between them and the technology that reflects a co-construction of everyday practice. Some of this evidence is presented here.

In appropriating the new technology both users and technology have gone through ontological changes. Technology has transformed from a mere object of analysis (“Hi, I find it hard to get started with the new learning management system, cannot upload documents 8/30/12_cell 514_Nilex msg”) to a piece of equipment used intuitively, where users have come so far as starting to give LRC recommendations on what to do (“I think it is inappropriate to former students be given continued access to everything and ‘go subscription’ function can be used to deleted dropped student 4/30/13_cell 300_Nilex msg”). Users also changed their mode of engagement during the long-term use of technology from ‘building’ (“we need more time to learn things the new way. We are concentrated on just get up and running.” Interview_1_P8) to ‘dwelling’ (“But we get use (d) to it. In a way, you start to forget about the problems, once you accept it as it is or find your own way. When you do work around, in a way you forget about the problem” Interview_2_P5). The transformation of relationship continuously emerged based on self-referentiality where users used their existing dwelling mode as a reference to develop a new dwelling structure.

For some, the new Moodle system implementation was considered an opportunity to force yourself out of the essential to ordinary dwelling (“I guess for some teacher, it is helpful to take a new step, I would say may be for this and that teacher it is probably good. Interview_1_p4…” “Some feel like they like the new and take the opportunity to even change the course and do some major update about the course, so if you look it that way, they actually make changes as an opportunity to the course and the way they teach. So in a sense, it become a tool for them” Interview_1_p5…” “It’s an opportunity and we have to take it” Interview_1_p7). Just like other lifeworld experiences, Moodle had the potential to change users’ way of dwelling and their social identity as teacher.

Finally, I have seen evidence supporting the notion of the ontological design processes in Moodle adoption practices. Some users’ accounts shows that the requirement analysis was out of sync as a result of the assumptions that the system analyst has a better knowledge of how the system should work. While system developers felt that there was enough requirement analysis done and they were confident the needs were met (“I think it fits, I don’t see any problem in the production of the software themselves, but I think there is a need to make some changes to in the organization. But I think there was enough requirement analysis, I feel that”)
In general, the Moodle development and implementation within the organization lacked a proper feedback line between users’ and implementation teams. One developer explained that (“Process from the university is not usually specific. For example, they go like Facebook works better, but they don’t say what is they need that is similar to Facebook that needs to be there. The request is not correct and the way it comes is not standardized as well. Sometimes it comes to me and other times it goes to the LRC. . . . I have been getting request from my boss … So requests are coming constantly, but the process is not clear in all cases.” Interview_1_p2). Even though there is a great interest from the developers as well as all LRC teams to continuously ‘reflect-in-action’, the implementation was shaped by a lack of clear directives on how to go about it.

My assessment was that it was mainly a result of the complete absence of users’ participation in the decision-making process of the system changes, in addition to requirement limitation, and one of the implementers agreed (“I know that there was some kind of investigation before where they compare different learning management system. They actually set up some requirements. I don’t think anyone from the development group nor did users’ involved. . . . Interview_2_p1 “There is inconsistency with local and normally provided user requirement analysis “Interview 1_p2). Such assumptions can be referred directly to the core of thinking tradition, where designers, IT developers, and decision-makers are on one side and users and implementers on the other, hoping that both sides will fit during the technology appropriation.

By comparing 84 different non-IT professionals’ system analysis reports with IT professionals, I found that non-IT professionals’ ability to (1) effectively use the system analyst template (work system template), and (2) qualify their work practices and present it as analysis reports were competent enough to be used for IS design. In fact, when it comes to describing ‘unplanned work practices, adaptations, experimentations, workarounds, and tinkering’ the non-IT professionals’ reports were more interesting, while the IT professionals’ reports revolved around how to represent daily problems using IT tools and jargon (see Paper I). This observation is in line with the appropriation ontological design concept, where end-users were seen competent enough to both assess their design environment and develop a viable requirement elicitations.
6.5. Representing the design role theoretical base as ontological

In this chapter, I have attempted to respond to the second sub research question, how can we formulate a design knowledge that enable the design role to have mediating of aligned existentiality as its core interest, by 1) identifying design concepts and 2) by conceptualizing them from the perspective of ontology to align their meaning with aligned existentiality. Four ontological design concepts with a focus on dwelling as care were also assessed through the empirical evidence. Figure 6.3 presents a pictorial exhibit of ontological design framework with my conceptualization of dwelling as care placed as a central goal of the theoretical framework design concepts.

Each of these design concepts are closely interconnected, sometimes overlapping, and exhibiting hermeneutic relationships. More importantly, these concepts are being theorized based on their whatness (ontologically). By simply changing the focus from dwelling as care to other values such as consumerism, one can alters the four design concepts into an epistemology-oriented version of design theory. Dwelling as care as a central goal enables to keep the focus of each design concepts on their ontological interpretations.

Figure 6.3. Ontology based theoretical framework for the design role to mediating aligned existentiality
7. THE PRACTICE DIMENSION OF MEDIATING ALIGNED EXISTENTIALITY

The last two chapters have laid a groundwork of philosophical and theoretical dimensions for the design role to focus on mediating aligned existentiality. In this chapter, I will continue the discussion on the design practice dimension in which I will examine the foundation of the design role during the actual design practice of digital artifact. The aim is to refocus the design role from a means-to-end novel digital artifact development to mediating aligned existentiality.

The traditional design role that focuses on developing effective means-to-end digital technology is mainly founded on the assumption that lifeworld experience is a result of human ‘cognitive plan of action’; thus can laid out through contemplative mental exercise with set of constructs, effective control mechanism, logical practices, and generally with ‘aura of rational’ procedures (Howcroft & Trauth, 2004). For example, the popular task-technology fit (TTF) logic proposes that the design environment can be mapped into sequences of tasks where analysts could logically contemplate on how to find a technical solution fitting in the form of artifacts. (Goodhue & Thompson, 1995).

In this chapter, I will argue that users’ everyday life is not a product of cognitive contemplation but of an activity. Systems that are designed based on contemplation logic not only misses our way of being, but also give emphasis for novelty based design practices. Marx (1845) considers the contemplative way of understanding our everyday existence as the main reason for the human reification status discussed in chapter five:

“The chief defect of all hitherto existing materialism is that the thing, reality, sensuousness, is conceived only in the form of the object or of contemplation, but not as sensuous human activity, practice, not subjectively (p.14).

According to Marx, the framework of contemplation pushes us further to reification (materialism, nihilism, and self-commodity), while activity/practice-based framing can be used as an antidote for reification. By deemphasizing the contemplative framing, this chapter proposes an activity focused framework as a foundation for the design role during the actual development of digital artifacts. In doing so, I will addresses the interdependent conceptualization of technology concerns that presents technology lifeworld as a ‘composite structure’ of human-technology relationship that can only be understood and ‘redesigned’ based on activity focus exploration. (Latour, 2005; Ihde, 2012; Dewey, 1910)

The chapter precedes as follows: I will start with a theoretical discussion on contemplative vs. activity based design practices. Next, activity based analytic framing is proposed as a foundation for the design role in the practice dimension. Thirdly, two subsequent sections will induce activity based framing through
empirical evidence. I will conclude the chapter with proposing activity based theoretical framework as a foundation for the design role in the practice dimension. The knowledge claim strategy and the flow of this chapter is portrayed in figure 7.1. The main research inquiry for this chapter is: How can we articulate the basis of design role to focus on mediating aligned existentiality during the actual development of digital artifacts?

![Figure 7.1. The practice dimension of the design role](image)

### 7.1. Design practice ideas for the design role

Quoting Arendt’s (2013) book of *The human condition*, Yar (2000) suggested that the ‘prime culprit for devaluing human activity (vita activa) to contemplation (vita contemplativa)’ goes to Plato, who suggests a ‘metaphysical hierarchy where theôria is placed above praxis and epistêmê over doxa’ (p. 8). Plato’s suggestion of the metaphysical hierarchy of ideas over practice is discussed in Chapter five. The IS design practice has inherited contemplative thinking through the thinking tradition, and is best illustrated by how the field perceived the end-user environment and their lifeworld experience.
Suchman (1987), in what later came to be called the *impossibility theorem*, noted that ‘there can be no prior or algorithmic connection between any particular plan and any specific action’ (Berg, 1998, p. 15; Robinson, 1991), which highlights that the system engineering assumption of human’s everyday lifeworld as a result of contemplating mental *plans of action* refutes the very existence of being-human in the world. For Suchman, cognitive contemplation is an integral part of our daily lives, but just a part of the larger practical activity.

Most computer systems ‘disregard this impossibility theorem’ and develop systems aiming to map executable human mental plans (Berg, 1998, p. 461). Using Heidegger’s understanding of *being-human*, Winograd and Flores (1986) have commented that (1) conceptualizing cognition as series of mental plans of action, and (2) relating system development to these plans of action are incompatible with being-human in everyday life. They underscored that engineers misunderstood how humans function in everyday life, and that they continue to artifactualize that misunderstanding in their products. In fact, as series of contemplative steps increases, we would increase our change of missing ‘average everydayness’; hence end up achieving the opposite effect of what dualism itself aims for, which is mapping everydayness in precision. (Dreyfus, 2000).

![Figure 7.2. The traditional engineering contemplative based ‘design practices’ – fitting mental process with artifacts](image)

In addition, the contemplation-focused design framing perceives that it is just part of users’ lifeworld that is *intelligible* enough for design elicitation, and such parts are extractable, representable, and formattable into a problem constraints (see Figure 7.2). Paper VII emphasizes how the thinking tradition attempted to achieve such elicitation using epistemological concepts of *determinacy* and *externality*. The activity focused framing sees such epistemological claims close to impossible, and if pursued produce a misinformed understanding of what constitutes intelligible users’ lifeworld. For activity-focused framing, mundane everydayness lifeworld is as good as it gets to being-human, and this everydayness is intelligible enough to be a design candidate.
Figure 7.3 and 7.4 illustrate how both contemplative and activity-based framing define the design space. Figure 7.3 illustrates how the four different symbols with space enclosed around are got their meaning not only from the space inside the symbols’ board lines, but also from the space they share with the surrounding box – hereafter called equipmental-nexus (a holistic user’s lifeworld experience). For the activity-framed design tradition, the equipmental-nexus is an intelligible space that has design possibilities without being broken down into manageable parts. Figure 7.4 illustrates how contemplative framing breaks parts of the whole into pieces to deduce knowledge about that particular pieces. What is imperative in this scenario is that cognitive mapping presents these pieces as the only parts where an intelligible (meaningful) design possibly exists.

Even more puzzling is when such ‘partial’ truth of knowledge is expected to fit smoothly into the complete equipmental-nexus, once it has been polished, programmed, and artifactualized. The misalignment forced users to either adjust to the ‘new developed reality’ or reject the artifact (i.e. partly reject, redesign it to their needs, adopting it for short period of time, or outright rejecting it).

Conceptualizing equipmental-nexus as an intelligible design domain – rather than packs of compartmental problems – is important to set the stage to refute the framing of design practice based on a cognitive plan of action. Chapter five discussed the concept of situational analysis based on Dewey’s work, who stated that any phenomena can be understood only in connection with a contextual whole (equipmental-nexus). Designing is not about demarcating and controlling users’ environment from the get-go as the thinking tradition suggests. The right mindset starts by perceiving the design domain as a place of design possibilities, and that design is an open-ended self-referential act that exists in the equipmental-nexus.
itself. In the design space, we find directions to these possible solution in different forms. Using Heidegger’s equipment understanding noted in Chapter five, the main place to find design solutions is in users’ everyday practice/activity. As one of human’s primordial existentials characteristics, activity is where life comes into existence. The next section will narrow its focus to how digital technologies can be designed based on activities rather than cognitive plans of action.

**Activity as a focus for design practice**

As noted in Chapter five in the phenomenological discussion, when digital technologies are introduced into users’ environment, it is the users who through their daily activity ‘mobilize’ these artifacts to become ‘ready-to-hand’ equipment. The interaction design field identified this transformation as ‘instrument genesis’ (Rabardel & Beguin, 2005). That is, users initiate the genesis of the artifact to become an instrument/piece of equipment through the appropriation activity. As a result of this activity, the instrument is seen as a ‘composite entity made up of the artifact and the subjects’ social structure’ that further extends the equipmental-nexus (Béguin, 2003, p. 710). In activity focused design framing, the activity of transforming digital artifacts into instruments is the main focus of the design practice. Such a perspective has different implications to the actual design practice, and I will briefly discuss some of them as follows. Dewey’s *experience* notion discussed in Chapter five informs this discussion.

First, the design environment is no longer seen as a collection of problems waiting to be defined. It is an equipmental-nexus filled with other artifacts, instruments, local logics, non-IT artifacts, articulations, personal/organizational culture, and other factors that are woven into everyday practices. Such a structure certainly benefits from a holistic worldview to understand the mechanisms at play.

Second, it should be noted that different users instrumentalised the same artifact in different ways, resulting in different instruments. Thus, why users instrumentalise the way they do requires closer examination. Users do not jumpstart instrumentalizing artifacts with a clean slate. They are already *being-in-the-world* with their own different instrumentalised practices and *cared* artifacts. Star and Ruhleder describe the situation as a person dwelling with his/her own ‘IT ecology’ which contains a collection of different instruments (Star & Ruhleder, 1996). This research has identified (Chapter five) one common trend as to why users practice the way they do. Our existential needs for *care* drives our daily practices in which we instrumentalise artifacts in ways that help us to dwell in ‘ontological security’. The other common thread identified is that our activities are created by our needs to be who we want to be – teachers, parents, farmers, carpenters, etc. That is to say, humans’ instrumentalization practice relates to social identities. Heidegger (1996) noted that ‘a carpenter practices with a hammer (artifact) by changing it (instrumentalised) to be a hammering entity for-the-sake-of being a carpenter’. 
Third, the instrumentalization ride is not always smooth, hence designers’ should give space for users’ ‘secondary designing’ with important boundary object features (Germonprez, Hovorka & Gal, 2009). Instrumentalization operates best when users feel less bounded with technology functionalities but with reasonable familiarities (see Paper VI for a detailed discussion on secondary designing). Different methods to accomplish this are proposed in the literature. One such method is ‘evocative object’ designing, where designers strive to keep the balance between familiarity and openness (Turkle, 2007). Dix (2007) also proposes the notion of ‘design for appropriation’ with guidelines such as mutability, modifiability, plug-ability, and other features encouraging users’ instrumentalization.

On this regard, the sociomateriality research in IS has proposed the notion of understanding technology structure at feature level, where features are portrayed as either function or symbolic oriented. For example, DeSanctis and Poole (1994) classify technology features as ‘functional’ and ‘spirit’ features. Functional features are described as an IT artifact’s properties and objects that are connected to the material functionality of a system. They define spirit as ‘the general intent with regard to values and goals underlying a given structural features’ (DeSanctis & Poole, 1994). They suggested that, using the spirit feature it is possible to learn ‘what kinds of goals are being promoted’ using the technology. Others (see Table 7.1) have develop similar concepts to underscore different structure of technology features.

Table 7.1. Technology features of design processes

<table>
<thead>
<tr>
<th>Technology features</th>
<th>Definitions</th>
<th>Similar concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable</td>
<td>Properties and functions of an object (e.g. IT artifact)</td>
<td>Content (DeSanctis &amp; Poole, 1994) Technological functions (Markus &amp; Silver, 2008) Functions (Verbeek, 2005) Core and concrete features (Griffith, 1999)</td>
</tr>
</tbody>
</table>

These two broad classifications portrayed technology features as having: (1) technical objects as a basic content and (2) the ability of being socially constructed during use (identified in table 7.1. as ‘symbolic’, ‘symbolic expression’, ‘functional
affordances’, and ‘abstract features’). In line with this understanding, it is possible to classify technology features based on their principal purpose/purpose of use. The two broad classifications portrayed technology features as having: (1) suitable features – technical objects as a basic concept (identified as ‘technological functions’), and (2) appropriate features – the ability of being socially constructed during use (identified above as ‘symbolic’, ‘spirit’). Suitable features enable a technology to be a right system for a given task. These features mainly include technological functions and properties. Appropriate features aim to facilitate the socio-material construction of a relationship between users and technology based on users’ pre-understanding knowledge, existing practices, and desired political values.

Suitable features enable a technology to be an object with the right properties and functions for a given task. Suitable features enable any technological object to be used for a specific task. Hence, these features offer the basis of adopting new/extended technology. When users start to create a structure of understanding with new technology, suitable features are, logically, the first to be examined (Riemer & Johnston, 2012). The meaning that we give to technology may start with the suitability of the artifact for the task, which includes its usefulness, efficiency, and efficacy. Even if these meanings are important, they do not fully capture how we relate with technological objects.

Appropriate features can be built to induce a relationship between suitable features and users. They create a bridge between existing pre-understandings and new IT objects, hence ‘evokes a sense of oneness and holistic composition’ (Nelson & Stolterman, 2003). Such appropriate feature may represent values, feelings of ownership, ethics, simplicity, elegance, hedonism, size and shape, visibility, and/or aesthetic factors which constitute a reason for creating a relationship with the technology. Appropriation features are but one example of how technology feature can be used to facilitate instrumentalization.

Fourth, activity focus design practice requires users’ participation during the primary (traditional) design stage. Users are in the best position to know their everyday activities in the form of ‘whatness’. If we take a teaching practice design domain, for example, what an everyday teaching practice is looks like cannot be answered by IT analysts’ contemplative methods. Paper I demonstrated how non-IT professionals can develop a fully capable holistic exposé of their work practices. Finally the design practice is a learning process for both users and designated designers. Here, I would like to argue that, technology can be designed to facilitate learning how we expresses beingness in the world (Béguin, 2003). Paper IV further develops the notion of using technology as ‘knowledge generative tools’ to sustain its worth and the lifespan of use. A new value embedded in technology (for example a new ethics) can oblige appending or replacing existing functional materiality in technology.
7.2. Toward activity based analytic framing of the design role

The previous section summarizes the role of activity in directing the process of transforming artifacts to equipment. In addition, I have proposed users’ environment as a ‘solution domain’ for design, thus replacing the cognitive mapping of the problem definition with equipmental-nexus. Using activity focus framing as a background, the design role can be provided with a more robust potential to mediate aligned existentiality for the reasons listed below.

First, as an integral part of our existential characteristics, activity/practice shapes other existentials including our way of ontological dwelling; ordinary (secured) or essential (unsecured). Digital technologies designed based on activity focus framing will have more impact on mediating our existential being.

Second, since one cannot ‘reduces instruments to material artifacts’, activity based design guarantees the irreducibility of thingness of things while in use (Rabardel & Beguin, 2005). Keeping the irreducibility notion in mind, technological objects can mediate values and politics that one can choose to identify with. That is, far from their functional use like contemplative framing suggests, design can embed technological objects with human values such as morality, sustainability, ethics, etc. As noted in language theoretical discussion, technology can ‘voice’ its values in the form of commanding commitment by acting in one way or another.

Third, instruments have a better access to direct the everyday activity itself. By dictating the process of how users instrumentalise artifacts, technology can direct users in a particular way of practicing everyday life. In this capacity, design aims to facilitate, extend, and to some degree influence users’ way of beingness through users’ expected process of instrumental genesis. Ultimately it is the end-user who creates (instrumentalised) subjective transformations during practice, but the objects we design bounds the horizon available to users.

In addition, activity-based framing enables the design role to focus on the four ontological design knowledge bases noted in Chapter six. In fact, the ontological design knowledge base can be used to dictate the transformation of artifact into instrument, directing everyday practice toward aligned existentiality. Things knowledge dimensions enable design to inset well-being attributes into the technological objects. While transformed to instruments, the digital artifact also serves to ‘redirect practices’ toward the well-beingness of both human, nature, and their harmonious relationships (Fry, 2007). Through appropriation, users find opportunities to expand their lifeworld, and ‘clearing’ their dwellings through the thingness of things. A design process that aims to develop artifacts for instrumentalization purpose can be used as a learning platform for users to further extend their understanding of lifeworld. The design agency concept provide a knowledge base for artifacts’ materiality of mediation and irreducibility.
Consequently, activity based framing of design practice is in line with both praxis tradition and ontology based design knowledge theoretical frameworks. In addition, it is a fully-fledge design practice foundation that can be used to overturn the influence of contemplative design practice foundation on the design role. Figure 7.5 illustrate such framing. The contemplative focused design practices will continues to inform how the activity based framing design agendas can actually be operationalized into digital artifacts. In the next two section, ontological framing of design knowledge will future be elaborated using empirical evidence.

![Diagram](image)

**Figure 7.5. Activity focus framing for design practices**

### 7.3. **Empirical evidence to evaluate activity based design practices**

The main empirical evidence for inducing the activity based framing comes from the case study noted in Chapter three. During the empirical analysis, I was able to observe the activity focus design concepts in technology use. As the ontological design knowledge base is constituted deep within activity focus design practice framing, the empirical evidence at time overlaps with the empirical material presented in chapter six. In addition, Paper IX develops in detail how users have instrumentalised artifacts into instruments, presented in the paper as artifact to equipment. Hence this effort will not be repeated here.

### 7.4. **Idealizing activity based design practice into empirical evidence**

One of the main focuses of the activity-based framing is how we see users’ environment. As mentioned, users dwell among their ‘IT ecologies’, and any design practice should take that into consideration. This was also the case while assessing the adoption process (“I mean, they use different functionalities from different software,
uploading files using Moodle, using PowerPoint to work on their slides, communicate with students using outlook” Interview_2_p4). In such an environment, a large number of novel properties and functionalities are not easily assimilated into an existing instrument’s system (“It is a lot of functions out there. Perhaps, it should be a bit limited so that you won’t find it quite annoying” Interview_1_p5). In fact, this situation results in a feeling of powerlessness (“we feel like the technology is still in the hands of IT support system, I don’t own it.” Interview_1_p10”).

The notion that the technology lifeworld is constituted into social identities was also obvious during observation (“There is also a slight differences, I think, people who give us feedback tend not to use windows explorer or OS. People who comes with basic question tend to use windows explore.” Interview_1_p6 . . . Some are developers and some are only users. Others want to go further and see if they can do this or that. It is not age thing at all, I think is about personal interest. They are open and want to see other possibilities and want to contribute to the design itself.” Interview_2_p3). Such experiences shows that one-fits-all technology adoption and the expectation that evaluation criteria will fit all users’ technology lifeworld experience is contrary to what an equipment-nexus looks like in reality.

In formulating thingness of things to be irreducible, Moodle was successful in some cases by using a boundary mechanism (“Moodle demands you to plan your course efficiently. I think when I work in Moodle I have to have a map, so put some more effort to structure the course well. In that way, it is good” Interview_1_p10”). At the same time, as one of the characteristics of thingness of things, the Moodle system itself is seen as a system that enables opportunities for further growth (“WebCT was a bit bounded, but now it seems better. You have a lot option to create a course” Interview_1_p4).

When instrumentalizing the technology, a number of different issues came to light. The most obvious issues were how users were uncomfortable changing their daily practices in the pace that was expected of them (“It is also connected to teaching, b/c then you need to change the way you teach. That is scary, just because the system asks you to change the way you teach.” Interview_2_p5) . . . “I think, every user has its own way of getting used to it. Interview_2_p2). In particular, there was evidence showing that users tended to change old habits and existing local logics to suit the new system, instead of changing their way of practice (“I have old way of doing things as well, which I created before long time ago, from WebCT limitation, but I continue using it, in fact I adopted my old solution the new system. Workaround stick long-time may be even though you don’t need them anymore. Sometimes the artifacts create application that is useful, but you don’t need that kind of application anymore, but we continue to do that. May be it is possible to solve that problem with the new system, but I don’t even try to see if it works now, but I still use the old workaround and copy and paste in the new system. I upgrade to the new system, by changing some columns so that it can fit the new system” Interview_1_p8). This is also evidence of the instrumentalization process, in which users were involved in secondary designing to make the artifact fit into their everyday life.
Many considered Moodle a flexible system, hence providing a space for instrumentalization (“It is more flexible, you can create a personalized user interface, and especially for us it is nice to have this.” Interview_1_p5). In particular, the system uses the concept of personalized template where users are able to add/remove features from their active interfaces as they like (“I never use it (Moodle email systems), I actually removed it. It is not that they solve the problem, but just removed it from the daily use” Interview_2_p2 . . . “Databases are I think it is good way of putting data in the Moodle system, so that many can have access to them. What I would like to do is that if you click automatic link, you can directly go to the file, but at least what I did is that you can go to the repository, so I have check the links.” Interview_2_p8). As the system allows to personalize the interface, it has added more flexibility for users to adapt the new system to their needs. By contrast, some have complained about the use of an Anglo-Saxon learning management thinking rather than a European in Moodle, they find it difficult to instrumentalised the system as a result (“Moodle looks very stage as it is not really Nordic product, but kind of American. It is quite simple for US teachers, but not like of the EU. The system is more Anglo-Saxon system, so it is not really adaptive to our system, pass or fail for example as grading. There are things that are strange. It should be more work to localize it to Sweden. Interview_2_p5).

The Moodle adoption has also demonstrated that digital technology can be used to further one’s capabilities and personal skills. During the interviews, some mentioned using the system not only for daily functions but to learn how to be a better teacher. (“Yes, when I use WebCT, I mainly use to send message to students, upload and staff…but in Moodle, I create examination in a better way, do things online for students, and so I think I become a good one. For example, online test is very good for me now I start to use it.” Interview_1_p5). Others reported that they have learned which adaptive features in Moodle can be used to fulfill their teaching duties. (“We exchange each other information and new features, so we learn from colleagues” . . . “They are open and want to see other possibilities and want to contribute to the design itself. Nothing is too hard to try of course.” (interview_2_p3). One of the complaints observed in the adoption is related to the appropriation design concept where the line of communication between users and primary designer was not properly established. This, in particular, has been an important obstacle for system developers. (“The request is not correct and the way it comes is not standardized as well. Sometimes it comes to me and other times it goes to the LRC. And it is not defined really which one we should go trying in the system or which one we should be able to process through LRC or live production system.” Interview_2_p2).

7.5. Representing the design role practical base as activity

This chapter started with an aim of refocusing the design practice foundation, in which activity based practice repositioned to the core with the argument that the design role ability to mediate aligned existentiality can best be served with such
setting. Figure 7.4 presents activity focus design practice theoretical framework for the design role in holistic tradition. In this framework, the main purpose is to give the design role both focus and access to the instrumentalization process. First, the framework identifies the ‘instrumental genesis’ as a place where artifacts come to life, and any mediating propositions through digital artifacts should ‘target’ the instrument genesis. In particular, ontological oriented appropriation and design process concepts contributes to identify instrumental genesis as a design target.

Figure 7.4. Activity based design practice framework for the design role to mediate aligned existentiality

Second, the understanding of design domain as an equipmental nexus keep taps on the activity-oriented nature of users’ environment. Design domain is demarcated based on the overall understanding of users’ everyday lifeworld experiences than
fragments of manageable IT problems suited for contemplation. Activity-oriented ‘demarcation’ of design domain underscores the need to focus on particular target domain instrumentalization settings as oppose to trailing a general end-users’ pattern studies readily found in the literature. Such localized knowledge of instrumentalization can provide more possibilities to influence the instrumentalization process itself.

Third, using the ontological design knowledge base, the framework aims to influence the instrumental genesis in such a way that both instrumentalization and its product (equipment/instrument) reflects the interest of aligned existentiality. During instrumentalization, the notion of dwelling as care introduced in Chapter six will guide users to instrumentalised artifacts in ways that is compatible with existential needs such as care. Once instrumentalised, it can continue to reflect its thingness of things during activity as it possesses an irreducible nature while in use.

Each design concepts in the framework are presented with sample activity focused design deliberations that aims toward dwelling as care. They represent practical design specifications and/or area of focus based on ontological interpretation of the four design concepts. For example, lists of deliberations in the design concept of things (i.e. wellbeing, social identities, and so on) exemplifies what type of thingness one can embed into instrumentalization process if dwelling as care is the goal of digital technology use. I will further describe these and other deliberations in the next chapter using heuristic methods.
In the previous three chapters, I have examined how the worldviews of dualism and holism informs the focus of the design role in their three dimensions; philosophy, theory, and practice. This chapter bring together these three dimensions to propose an overall foundation for the design role to mediate aligned existentiality. The chapter is organized as follows: First, I will briefly summarize how dualism and holism interpretations of being-human informs the design role. Second, a holistic framing of design foundation is formulated for the design role to mediate aligned existentiality. In order to (1) assess the overall visibility of holistic framing of the design role and (2) illustrate the design role that bases all the three holistic dimensions, heuristic method is applied. In doing so, the three proposed holistic theoretical frameworks– praxis philosophical base, ontological design knowledge base, and activity-focused design practice – are used to inform the heuristic questions presented in section 8.2.

Figure 8.1. The holistic approach for the design role
Using the heuristic deliberations, the subsequent two sections will induce the holistic framing of the design role through empirical evidence. I will conclude with proposing holistic understanding of being-human as a foundation for the design role to mediate aligned existentiality. Figure 8.1 depicts the planning of the chapter in a retroductive context. The main research question guides this chapter is: How and why can design enable digital technologies to mediate aligned existentiality?

8.1. Being-human ideas and the design role

As noted in Chapter two, there exist two main ways of conceptualizing our being-human; dualism and holism. Dualism is a worldview that perceived reality as a matter of cognitive exercise in which one can reach into the meaning of our existence through rational thoughts. Ren Descartes (1985) defined human existence based on our being capable of thinking, declaring “I think, therefore, I am”. We are, first and foremost, a thinking entity – which provides a base of certainty upon which other knowledge claims can be built on. For example, I can’t claim that I exist because I am writing on my keyboard. For all I know, I might be dreaming that I have a hand. We don’t have to involve or engage with something to know about their reality; we can produce that knowledge through thoughts at arms distance. In fact, such distance is necessary to have an ‘unbiased’ and rational understanding.

Holism, on the other hand, is a worldview that conceptualizes being-human as an activity oriented existence. There is no way we can detach ourselves from the activities we are involved in as it is proposed by dualism. What we are is what we choose to be engaged/involved in. From a holistic perspective, it makes no sense to take a break for a year or two to travel the world in search of meaning. For holism, each activity, including the decision we make to travel, is what makes us who we are. What resonates to us as a true meaning of existence influences both the way we design digital objects/technologies and what purpose we ascribe to them in our lives.

As noted in chapter two, two main facet of our existentiality – belonginess and novelty – in particular were associated with our being-human. The dualistic understanding of being-human not only give much emphasis on our novelty needs, it has also provided the design role with means to fulfill novelty needs in three dimensions.

First, the philosophical dimension of dualism – the thinking tradition – has implied the importance of finding the ‘right’ methods. The matter of human experience inquires has “become synonymous with the matter of method inquires” (Jardine, 1990, p. 219). Consequently, the philosophical base of the design role in dualism has influenced to focus on finding optimal methods to develop efficient means-to-end digital artifacts.

Second, the theoretical dimension of dualism – epistemological oriented design knowledge base – focuses on ‘the how’ knowledge inquires. The epistemological how questions are dedicated to mapping out how given dichotomies cause the reality of
one another. As such, the design role knowledge base focuses on engineering design issues such as finding competent constructs and instantiations to produce effective digital artifacts.

Finally, it is noted that the practice dimension of dualism – contemplative based design – influences the design role to focus on finding more optimal ways to map out subjectively rich everyday lifeworld experiences into a manageable IT problems. Popular evaluation criteria for successful technology adoption models such as reason action model (i.e. TAM), for example, follow contemplative way of understanding everyday practice and suggests cognitive reasons, intentions, and “mental processes of knowing like perception, reasoning and judgment” as a framework to understand users’ adoption/rejection of digital technologies (Kim, Chan & Chan, 2007, p. 511).

Basing empirical and theoretical discussions, I have argued that dualism philosophical, theoretical, and practical dimensions’ influence on the design role results in a misalignment between contemporary digital technologies and our way of being-human. As a corrective measure, a holistic rethinking of the design role setting was explored in all three dimensions. To guide the refocusing exercise, the field of philosophy of technology was used.

8.2. Toward a holistic framing of the design role

The first challenge of the design role relates to what the ‘independent’ proponents of philosophy of technology raised as a concern; which is technology’s own natural makeup that is the result of the philosophical setting of the thinking tradition. That is, since we design technology based on the scientific method that requires exactness and correctness, technology inherits these rationalities and propagates them into social and human relationships. Marx described such situation as ‘social rationalization’, while Ellul and Heidegger professed that there is no escape from such rationalization as long as one decides to use modern technology.

I have challenged this assumption in Chapter five and argued that a different philosophical foundation for ‘the design role’ can maximize the likelihood of taming technologies’ deterministic influence, if not neutralize it. The proposed praxis tradition is developed based on Heidegger’s understanding of being-human as care, Marx’s notion of democratizing social rationality and technology, and Dewey’s pragmatic contribution of technology design toward human well-being. The praxis philosophical foundation is anticipated to replace the thinking tradition, from which independent proponents argued technology inherits its deterministic nature.

Using the praxis tradition of philosophy, the design role has a platform for a different focus other than the thinking tradition’s goal of producing efficient and useful artifacts. The praxis tradition inherently advocates and supports the design of subjective and life-oriented technology. Consequently, with the proposed tradition, it is possible for the design role to focus on belongingness-based aligned
existentiality. My argument is that such a possibility offers a path to counteract the deterministic nature of technology.

Closely related to the praxis tradition, the second task was to further develop on the ‘dependent’ proponent’s conceptualization of technology that advocates non-technological action such as ‘politicized’ technology toward human well-being. In this setting, the design role aims (a) to clear out the ‘damage’ of nihilism-oriented novelty, and (b) to insert human well-being into technology. Among other related concepts, Marx’s concept of democratization and Heidegger’s notion of thinghood as well as his notion of technology enframing were used to discuss the ‘redirective practice’ of the design role toward aligned existentiality (Feenberg, 2010; Fry, 2007). In addition, based on modern thinkers such as Feenberg and Fromm, Chapter five has developed Marx’s idea of democratization from social as well as technical rationality. This, in turn, lays the groundwork for the disentanglement of the interwoven relationship between consumerism values and the design role.

Using ontological concepts, Chapter six proposes a design knowledge setting for the design role to mediate aligned existentiality through technology. For example, with dwelling as care as a core interest, the design role focuses on technology features such as irreducibility, providing users with a feeling of belongingness and ‘ontological security’ (i.e. described as ordinary dwelling). In addition, Dewey’s notion of transformation, similar to Heidegger’s clearing notion, provides the design role with a setting to use technology to transform users’ alienated dwelling (i.e. essential dwelling) to ordinary dwelling.

The third task was to conceptualize the design role from the perspective of ‘interdependent’ understanding of philosophy of technology, where the design role should aim to facilitate the human-technology relationship as interdependent. The praxis tradition itself defines our existence as something that is continuously constructed through our engagement with the world, in which the world will also influences our state of existence. Chapter six also showed such interdependent interaction as ‘ontological’ in the sense that human-technology interaction transforms both actors on the level of social and instrumental identity. Based on this, Chapter seven illustrated how such an interdependent relationship develops using the notion of instrumentalization. It is also advocated that the design role can be used to influence the process of instrumentalization in order to expose desired goals during technology use.

Consequently, I propose the praxis philosophical tradition, ontological design knowledge base, and activity-focused design practices as alternative setting for the design role to mediate aligned existentiality. Figure 8.2 contrasts the two settings of the design role. The present research proposed the alternative setting depicted in A.
Heuristics method to evaluate holistic basis for the design role

The word heuristics comes from the Greek word *heuriskein*, which can be translated as ‘to find or discover’. Merriam-Webster dictionary (2011) defines heuristics as ‘using experience to learn and improve’. Heuristics is used as a method to optimizable propositions when an exact solution to a given phenomenon is continuously emerging or unknown (Saludo, 2015). As the intention here is to evaluate and ultimately improve both the design role in holistic setting and the visibility of holistic tradition as a design foundation, heuristics approach can provide a means to accomplish such effort. In addition, heuristics flexibility provides a chance to evaluate all the three holistic dimensions in an integrated manner. Lastly, as the presented holistic tradition is prescribing how to change the nature of digital artifact to mediate aligned existentiality, an optimizable heuristic deliberation fits this purpose.

The heuristic deliberations contain more than one hundred questions in total, and were developed with system designers as a target audience. Though developing heuristic deliberations for designers is not the main priority of this thesis per se, Chapter nine will briefly discuss the possible direction on how to use these deliberations in design setting. The main purpose of the heuristic deliberations is to assess both the overall holistic approach as a base for the design role and what a design role might look like in a holistic setting. In order to structure the design heuristics, the activity focused design framework introduced in the preceding chapter is used. In the background, Chapter six’s discussion of ontological design concepts and the praxis philosophical tradition discussed in Chapter five are considered.
1. Things

Heuristics proposition: the focus is to influence the practice of interaction to mediate politics through design. Thus, the design role is to identify and embed subjective characteristics including values, means of influencing social identities, deframing technology, ethics, sublimes, awareness of the self, etc. into technological objects.

It is possible to make technology to communicate ‘commitment of action’ during practice. The question here is ‘what experience do users end-up having about their world and themselves when they interact with technology?’ Both Marx and Heidegger suggested that the thingness of things during practice can make one feel either alienated or dwelled with care. Alienating experience results from technology enframing, where users become a ‘resource’ for new technology applications as the result of consumerism and the capitalist-based mass production system. The search for immediate satisfaction and novelty through technology was noted as contributing factor to the human alienation state.

But Heidegger has also illustrated how technology can limit our ability to extend our space and dwelling. The merely means-to-end artifact production narrows our focus to its functional use, leaving the influence on how it affects our general view of the world and ourselves in the hands of the designers.

As noted in the heuristic proposition, two important steps are needed to deliberate the thingness of things. First, the designer should identify what is considered ‘politically’ important values for the well-being of individuals and nature in general, and to the focal organization the system is designed for in particular. In the design deliberation below, a few commonly accepted well-being values will be identified and how the university where the empirical evidence was collected will be explored, to entertain such well-beingness notion in the implementation of Moodle. The second important step is to formulate how we embed these values to technology object to be exposed during use. This step is covered in the design process section below.

Design deliberation

This design deliberation addresses the question ‘what are the thingness of things that we wanted to expose during practice?’ It could be argued that mediating human welfare values as a thingness of technology contributes to the aligned existentiality in technological-lifeworld. Drawing on the philosophical and theoretical discussion in the preceding two chapters, some values, but not limited to, may include:

Well-being (mainly based on Heidegger's phenomenology)

- Does the technology promote immediate and constant novelty as a way of being?
- Does the technology consider users’ innate need of belongingness?
- Does the new technology take the existing cared ‘ecologies’ into consideration?
On what basis are novel features introduced?

Is it important to include novelty for the sake of ‘being modern’?

Do novel features aim to extend existing practices or replace them altogether? If so, why?

Are users’ ability to cope with novel replacements considered?

Is there a need to consider the technology’s effect on users’ care toward others?

Does the technology affect the relationship between humans and the natural world?

Does the technology make users to feel that their beingness extends or limits their space?

Personal significance/feeling of autonomy (based on Marx’s and Heidegger’s philosophies)

Does the technology make users feel competent/incompetent?

How does the technology contribute to users feeling that their work matters?

Does the technology have a tendency to take away users feeling that they contribute to the overall organization?

Are users able to see the ‘fruits of their labor’ in the form of positive feedback, such as reports?

Does the technology take over or transfer power to top-level managers?

Do users feel controlled by technology or dictated how to use it?

Social identity (mainly based on Heidegger’s equipment structure and instrumentalization)

To what extent does the technology define users’ social identities?

Does the technology provide equal opportunity for all users’ or does it benefit certain groups at the expense of others?

Does technology allow users to identify with a specific group like being eco-friendly?

Is there any intentionally inset social identity to be mediated through technology?

How does technology contribute to users’ feeling accomplished in their profession?

Virtue and ethics (based on Dewey’s philosophy of morality and ethics)

Does the technology mediate the notion of upholding acceptable moral values?

Are there standard engineering ethics regarding technology advancement?

What is the basis of ethical technology use?

Are there controlling mechanisms in the technology to retain the integrity of use?

What is the balance between autonomous and responsible technology use?

Does the technology promote/commit users to sustainable and environmentally friendly use?
• Is there a mechanism of evaluation to control proper use?
• Can the technology be used as ‘moral educator’ for the public? (Tonkinwise, 2004)
• Does technology enable users to develop characteristics such as empathy? (Wright & McCarthy, 2008)

Democratization of technology (based on Marx)
• Can the technology be isolated from the consumerist lifestyle?
• Does the technology enable users to use their creativity and experience the results?
• Does the technology promote social interaction between people?
• Does the technology drive users towards more commodity consumption?
• Does the technology have any deskilling effects?

Other:

Sense of responsibility
• How often does the technology remind users of their responsibility to their surroundings?
• Does technology have a mechanism that creates commitment to organizations, fellow colleagues or the natural world?
• Are there any remaining mechanisms?

2. Design agency

Heuristics proposition: the focus is to influence the activity of interaction through the materiality of the technological objects identified here as irreducible and mediating. The design role in this heuristics is to keep the integrity of technological objects as irreducible as possible from being a mere means-to-end tools, but transparent enough to mediate both corrective (redirective) practice and thingness. Both the designers’ role and materiality will be discussed here.

Closely related with thingness, design agency concerns the materiality of technological artifacts. Designers, users’, and the materiality of the object can play the role of design agency. Here, the discussion will be limited to designated designers and two of the designed object features: irreducibility and mediating practice. Users were also identified as design agencies, and their contribution as actants in the act of designing will be considered below in the appropriation heuristics.

Designers and mid-level implementers\textsuperscript{12} influence the outcome of technological objects in areas ranging from identified possible solutions existing in the

\textsuperscript{12} Mid-level implementers may include an organization’s IT staffs responsible for monitoring the implementation of new technology in the organization. They work in close
equipmental nexus to the development of properties and functions to the actual implementation, post-adoption, and maintenance strategies. Even if some of the traditionally ‘designated jobs’ such as exploring users’ environment is not technical by nature, it is attributed as part of the designer’s work. It is not uncommon to see anthropologies, ethnographers, and psychologists used in the design processes. The designer, like any user, operates within his/her own context of being-in-the-world including their ‘culture, background, personal experiences’ that determine their way of articulating the equipment nexus. The new product ‘embodies the blindness (Heidegger’s concept) that comes with the designers’ articulation of the design domain (Winograd & Flores, 1986). Since the effort of ‘bracketing’ their background from their profession is impossible (see Paper X), the designer’s personal profile and aptitude is as important as their technical skills.

**Design deliberation**

Reflection on designers’ being-in-the-world (mainly based on Dewey’s reflection concepts)

- Is there a provision available for designers to reflect on their experience as designers? (E.g. seminars, workshops.)
- Do they have ethnographical skills/qualifications before assessing the design domain?
- What is their personal philosophy in general about the world? (E.g. sense of right and wrong.)
- What are their beliefs in terms of the role of design?
- Why do they want to be designers? What are some of the personal characteristics relevant for the design work? How do they develop their design intelligence, and what does it mean to them to be a designer? (Tracey & Hutchinson, 2013)
- Is there a provision for constant updates to reflect new design thinking in the form of training and workshops?
- What is their ability to deal with uncertainty and user requests?
- What feelings and behaviors helped to assert their position as designers? (E.g. confidence in skills, empathy for users.)

Another important agency that can dictate practice and the transformation of artifacts to equipment is the materiality of design objects. In particular, the mechanism to ‘voice’ their thingness (mediation) and their way of acting as agency (e.g. irreducibility of thingness) during practice are subject of my inquiry. Both Heidegger and Marx stated that the objectification of materiality toward a mere means-to-end use results in Heidegger’s ‘homelessness’ or Marx’s ‘alienation’. The proximity with users compared to developers. In my empirical evidence, Moodle champions had the role of mid-level implementers.
concept of irreducibility indicates keeping the integrity of thingness of things during practice, which usually leads to the transformation of artifact into equipment. Just as our conversations with other people will not always be reduced to a symbolic representation but result in an action (e.g. what each party will do next), the interaction between users and technology becomes meaningful if technological objects are not reduced to mere functional objects.

**Design deliberation**

- What control mechanisms are there to keep the integrity of objects’ ‘commitment of action’?
- What provisions are there for the system to expose itself as a ‘redirective agent’ during practice?
- What is the thingness of things expected to be safeguarded during the practice?
- What are the possible ways for thingness of things to be reduced to mere functional objects?
- Does the object attract users to its irreducibility features such as its sustainability agenda?

Finally, on the agenda of design agency, we find the notion of object transparency identified here as the materiality of mediation. Our relationship with things, thingness of things, or simply artifacts are not direct, but ‘involves a third party mediation – an instrument’ (Béguin, 2003). As previously noted, artifacts become instruments during practice, thus an instrument is composite of ‘both human and artifacts’ (Beguin & Rabardel, 2000). The actual mediating characteristics of artifacts were only exposed during practice. This means that the focus is the mediating nature of artifacts during practice. That is, mediation is about facilitating the practice of the instrumentalizing process without reducing the thingness of things.

With the ‘right’ transparency, the use of technological object becomes experiential rather than a mere means-to-end tool. However, if the materiality of an artifact is opaque, the designer runs the risk of the product to become just an object without thingness – the situation which Marx warned would result in alienation. The mediating characteristics of materiality includes the type of mediation expected from the artifact – such as Latour’s delegation, translation, composition, and reversible black-boxing – and how the artifact’s contour such as its aesthetic enables these expectations to be met. Users’ input to the phenomena of the artifact’s way of use will be discussed below in the design deliberation of appropriation.

**Design deliberation**

**Pragmatic aesthetics and experience** – in a pragmatic sense, the aesthetics of a material is beyond the artifacts beauty or cosmetic make-up, though it is one of the concerns. Based on Dewey’s thought, pragmatic aesthetic targets the practice, and is
about ‘triggering imaginations, provoking people to think differently, engaging body and mind’ using mechanisms such as human sensory experiences, storytelling, and emotional makeup (Petersen, Iversen, Krogh & Ludvigsen, 2004; Fiore, Wright & Edwards, 2005). A successful pragmatic aesthetic is expected to enable users to develop unity and wholeness with their experiences—hence experiential computing (Yoo, 2010).

Aesthetic experience (mainly based on Dewey’s thoughts expressed in *Art as experience*)

- What materiality of expression is the artifact expected to use? (E.g. emotion provoking, storytelling, etc.)
- Which sensorial qualities of perception (sight, touch, sound, smell, and taste) is the selected aesthetic expression expected to use? (Verbeek, 2011)
- Does the aesthetic expression aim at the sixth sense, such as intuition, ‘spiritual perception’?
- What is the main goal of mediation the artifact is set up to accomplish? (Latour’s delegation, composition, etc.)
- Does the selected method of aesthetic expression fit with the mediation goal?
- What thingness of the things does the designer aim to express aesthetically?
- Are the aesthetic expressions developed on a physical or digital materiality of artifacts? (Jung & Stolterman, 2012)
- What kind of experience is expected when users embody the artifact?
- Is the experience expected to rearrange users’ space, e.g. hide some parts of reality while amplifying other parts? (Ihde, 2012)
- Does the aesthetic expression aim to create a connection with other artifacts, such as creating equipmental-nexus (e.g. Apple’s use of aesthetics to develop a network of systems within its artifacts)?
- Does the aesthetic expression invite users’ involvement?
- Are artifacts expected to play the role of sense-making of users’ experiences? (Wright, McCarthy & Meekison, 2003)
- What is the relationship between aesthetic expression and thingness (politics of artifacts) of artifacts? If known, is the aesthetic expression compatible with the thingness of things?
- Does the aesthetic experience allow users to validate their selfhood, such as social identities?
- What considerations are built-in into the artifact regarding beauty, elegance, and attractiveness to invite users’ to become involved in the aesthetic expressions? (The traditional understanding of the word aesthetic – ‘combining beauty and utility’.) (Udsen & Jørgensen, 2005)

Finally, the notion of sublime experiences is related to a way of seeing oneself and others as a part of a bigger whole. Mostly used in architectural design, it is also
used to evoke an awe like feeling of both fear and appeal. In technology design, we find such thought applied in different approaches from mediating a feeling of self-transcendence through music to ‘redirecting’ our perception to see what is hidden behind figures such as people behind statistics reports. To this end, the use of visual and image interaction can be used as a basis for sublime experience.

**Design deliberation**

**Sublime**
- Is the technology expected to transfer sublime experience where users immerse themselves in self-reflection and self-transcendence (e.g. mediating classical music to immerse listeners in self-reflection)?
- Does the technology provide means for visual interaction?
- Does the technology provide a magnifying or cascading meaning to give a bigger picture of work practice?
- When applicable, does the technology provide an experience where users’ contribution of work is placed in the bigger picture?
- When applicable, what effects and instruments can be used to provoke sublime experiences? (3d max and Google Earth could be examples.)

### 3. Appropriation

*Heuristics proposition: the focus here is to make sure users’ agency as ‘designers’ and their participation in the designing process is guaranteed in addition to the ‘plasticity’ of technology enabling users to adapt technology to their personal circumstances. The design role in this heuristics aims to create and keep the feed-loop between users’ and designer open, using design technology objects as learning tools, and adaptability of systems to users’ everyday articulations.*

Appropriation of new technology into daily practice is portrayed in this thesis as a continuous process where users tend to develop their own strategy to strike a balance between keeping their accustomed way of practice and what the new technology expects them to adopt. Appropriation is a practice filled with struggle, charged emotions, adapting and rejecting features, changing old ways, accepting the limitations of technology and the self, continuous practical exposure, failure and success that can also stir identities. But it is also an opportunity to re-structure one’s way of life, to discover, and learn.

From this perspective, users’ act as designers in their own way, both by changing their everyday routines, old habits, new bricolage and adapting technological features to their daily practice. Following Germonprez et al., (Germonprez, Hovorka & Gal, 2011), I identified users’ designing practice as ‘secondary design’. Secondary design takes place in the process of transforming artifacts into equipment, hence
involving an ontological change of technological objects – which also makes it an inevitable phenomena.

**Design deliberation**

**Secondary design (instrumentalization)**

- What provisions are there in the adoption process that accommodate secondary designing?
- Were workarounds properly documented by design implementers (e.g. Moodle champions)?
- Can the adoption process identify emerging secondary designed features for future updates?
- Does the new system consider the assembly of different systems used among users?
- What other residual effects of existing systems continue to dominate users’ secondary designing? (See Paper III for further discussion on ‘residual effect’.)
- How many ‘secondary design stages’ are expected in the deployment process?

**‘Plasticity’ of technological objects (instrumentalization)**

In order to facilitate smooth secondary designing, focusing on the adaptively of a system during appropriation is important. It is inevitable that both users and technology adapt to each other’s potential and limitations. Through the limitation of technology, users develop suitable workarounds, which technology implementers can pick up on to advance new system capabilities. On the same level, new technology features provide opportunities for users to develop their skills.

**Design deliberation**

- Does the main interface of the system provide plasticity for users to manage it their own way/according to their own preferences?
- Does the system in general have a tendency of being used as a learning tool to find good practice?
- What provisions are available when the goals of the users’ secondary designing and systems’ overall goals do not match?
- Is group (community) learning among colleagues using workshops and seminars to redesign features promoted?
- Does the system provide a clear sense of plasticity when it comes to localizing features in accordance with one’s everyday lifeworld?

**Feedback loop and communication (instrumentalization)**

- What channels of communication are there between developer/implementer and users regarding their redesigning effort?
• Are users able to communicate their articulations and workarounds as input for future system updates?
• Do users and system developers perceive artifacts as a way of learning and communicating with each other?
  (In this perspective, users’ secondary design changes on artifacts is seen as a form of message to designers while designers’ assumptions about how users’ everyday practice communicates through artifact).
• What provisions are established to perceive design and appropriation as a mutual learning process between end-users and designated designers, where designers learn from users and vice-versa?

4. Design processes

Heuristics proposition: the last design focus relates to the actual designing process of artifacts that takes users’ practice of transforming artifacts into equipment as the main input for design processes. Here, the design role focuses on developing (1) suitable features for a specific task, and (2) ‘appropriation features’ for smooth instrumentation (artifact to equipment transformation).

In the previous chapter, I have described how different technology features can be used to fulfill different roles in human-technology relationship. Two main classification of technology features were identified as suitable and appropriation features (see Table 7.1). In the following design deliberation, I will use Winograd and Flores (1986) four traditional system design processes to evaluate suitable and appropriate technology feature designing.

Design deliberation

Defining problem domain
(Dewey’s first stage of inquiry – having a ‘felt like’ sense about a given situation.)

• In what forms do appropriating features exist in the work practice (e.g. workarounds, articulations)?
• What provisions are there for wider user participation where they can outline what makes the system easy to relate to their ordinary everydayness (e.g. user interface arrangement, the names of features)?
• Does the formulation of the questionnaires for requirement elicitation aim to understand users’ articulation of suitable features?
• Does the design domain definition develop an exposé of their everyday workflow (e.g. ‘what is it like to be a teacher on an everyday basis’)?
• Do users have a simple ‘template’ form that helps them to ‘keep a diary of’ their everydayness (e.g. work-system template)? (Alter, 2011)
• Does users’ ways of assembling different software packages play a role in mapping the overall picture of the design space representation?
Formal representation of user requirements  
(Dewey’s second stage of inquiry – defines problems in a qualitative but specific manner.)

- During the design problem/solution task-tagging with formal notation, what provisions are there for users’ participation in ‘assigning tags’ (e.g. technical jargon vs. layman terms)?
- Does the formal notation have the ability to tag users’ articulations and workflows?
- Is the designer equipped with expertise and means to tag users’ coordination and mechanism of work practice?
- How do we expect to processes users’ notation of tags? (The argument is that users’ way of tagging articulation can be used as a blue print to understand how the new feature will be appropriated into practice).
- Do designers have the means to document users’ tags of their articulation and workflow to be used to design appropriation features?

Abstractions to computer representation  
(Dewey’s third/fourth stages of inquiry – hypotheses and suggestion of possibilities and application of method, which can be compared to the contemplative way of reasoning.)

- What aesthetic possibilities can designers use to develop appropriation features to the same extent as suitable features during the ‘computer mirror’ of formal representations?
- Can the adaptiveness of technology features build on familiar users’ articulation tags developed in previous steps?
- Are appropriation features properly aimed to facilitate users’ articulation/workflow while suitable features aim at meeting the product requirements of the task?
- Is it possible for designers to create a relationship map between appropriation and suitable features?
- Can users’ participation be present as a way to consult and support designers’ anticipation of how the new system will be appropriated?

Development of objects and properties  
(Dewey’s fifth stage of experimentation of ideas to verify practice intervention.)

- Is it possible to test newly developed objects using the existing system?
- Does the strategy outline for prototypes include an appropriation feature trial?
- Does the design object provide space for users to manipulate different features in ways they find efficient? (E.g. ‘support not control’ – making sure that the task can be done without defining how it should be done (Dix, 2007).)
- Does the visual interface have the capability of being rearranged and does it enable users to create shortcuts/links to other IT ecologies?
• Do design features take into account users’ general goal with employing the system? (E.g. users employ Moodle for the sake of being a teacher.)
• Are design objects compatible with existing IT ecologies commonly used by the general public? (E.g. Facebook, Skype, MS Office packages.)

8.3. Empirical evidence to evaluate holistic design approach

In an attempt to assess the overall holistic design approach and the design role in holistic setting, I have conducted a focus group study in a company that has been involved in system development since 2007. I had the opportunity to introduce the holistic design approach to familiarize participants with the bases of heuristic deliberations. The five participants consisted of two project leaders, one managing director, and two developers. As a result of participants’ different responsibility, I was able to have different perspectives in the responses. The focus group empirical material and analysis process are presented in Chapter three.

8.4. Idealizing holistic design approach into empirical evidence

This section reports the result of the empirical analysis divided into four themes: holistic oriented design role remarks, new concept recommendations, heuristics optimization remarks, and general comments.

Holistic oriented design role remarks

Using the heuristic deliberations, participants were keen to give their take on the visibility of holistic oriented design role through the lens on activity based ontological design concepts presented in chapter seven. Out of all four design concepts, the notion of things attracted most attention. One of the comments was a concern whether or not the concept of things fits into existing design role (“I have a question. One of the things you need as a designer is to work on an already proven working patterns. Can this fit anywhere?” P_E). Others have commented that the concept provided them with new means to conceptualize some of their design ideas as IT professionals (“I am using some new concept I have never used as an IT designer, it is working well” P_A). Another concern raised during the discussion was who will have a final say on the thingness of things (“How do we know if a feature is a well-being feature or not”? P_E). This also leads to an ethical question; who should decide what is ethical and what is not? That is, if it is ethical at all to design technology that ‘forces’ users to act in certain way (“Does your thesis take a stand between right and wrong lifestyle? P_E).

Developers were naturally keen to try to understand and comment on the design role in the ontological concept of design processes. One of the developers’ concerns was whether or not the new design role discussed in the ontological design processes fitted with the need for pattern use of system engineering (“we have learned
in software engineering course how to create pattern of users requirement” P_T). Others were quick to add that the word engineering is a problem for the system development field as a whole since it puts the designer on a pedestal (“System engineering words is wrong, like it is not engineering, but we develop ideas not engineering as if we have a certain way of doing things. It is not engineering, when it is in fact development” P_E) while others, as a joke, described the faulty nature of answering IT needs with engineering method with failed personal stories. (“Don’t you love me? Then I brought flower to show that. Then I get a response that I don’t want flower, I need love for god’s sakes! Personal story, but fits well with engineering solution =) P_A).

The other contentious subject in the design processes was the word requirement in the requirements elicitation process (“I don’t really like the work requirement. It is users’ need perhaps, as users’ don’t have requirements. The product is about expanding whatever you are doing, when I ask requirement, it set it the wrong path. You don’t have lists of it, I should be able to find needs and somehow develop it.” P_E). For most participants, the word development seemed to fit the idea of ontological design processes concept where user participation is a core interest.

Design agency, particularly the designer part of the concept, has also attract some discussion. For example, the designers’ non-IT skills were considered to be missing in system development projects (“I think, as a system analyst in RE, you need more skill that IT system analysis. I remember, we made some persona profiling and one IT analyst come up with a very ugly representation of a user. And it wasn’t turn out to be good, so I recommend to have a more social skill in RE analysts” P_E). Another discussion focused on the tolerance level of designers when collaborating with users, and providing ‘unfinished’ systems for easier secondary designing. (“Tolerance of designers, is a good question. Developing a strong personality for designers is an important thought . . . Those who are successful have a big tolerance for trial and error” P_E).

Finally, the design role in the ontological appropriation concept discussion was mainly concerned with how system analysts are used to see user’s environment as ‘problem domain’. In addition, how to keep open communication between users and designers was brought up. P_A commented that analysts are get use to see users’ world as easily definable lists of problems (“The whole problem is that analyst thinks that they are capable of extrapolating users’ problem. You come in as an IT expert, then the actual problem is not even in the user level, it can be on the relationship level between users, managers, and etc. It is not even an IT problem sometime ”). A recommendation is that feedback from users to system developer during postadoption should involve the same people who developed the system; it has turned out this is not the case, as maintenance is a different group. (“(here in this company) we are making most of the development part in the maintain phase. It is also sustainable...the people who develop the product should also the people maintain the product in this case. Then you have a good way of communicate your message across” P_E).

Overall, through the lens of activity based ontological design concepts, participants were able to critically reflect on the proposed holistic oriented design
role. Suggestions on particular parts of the design concepts has also shown that the proposed holistic design role needs further refinements. As illustrated by the picture provided in the Chapter three (Fig. 3.4), one of the participants has graded the clarity of the proposed design role based on the design concepts as follows: things 5/5, design agency 2/5, design processes 4/5, and appropriation 4/5. He underscores that designing digital technologies as mediators was not clear to him at the beginning of the discussion (hence 2/5), but was able to revisit the grade to himself by the end of the meeting.

New concept recommendations

Alongside the theoretical and heuristics discussions, participants recommended new supplementary concepts, and at times new heuristic questions. One recommendation that came up repeatedly during the session was how both system developers’ and end-users’ organizational culture is understood in holistic design framework. For example, organizational cultures where system developers work may need to organize seminars for designers to reflect on their own aptitude, philosophy, and personal experience (“From our experience, we have also this retrospective reflection about our work and not all people like this at all, they don’t take time to do it. So this kind of effort, you need to motivate them. Because it does need commitment.” P_A). Another recommendation is to what extent the developers’ organization is willing to embed different thingness values into new systems (“So the organization cultural and to what extend the origination live up to their values is important” P_E). In addition, tolerance of the developers’ organization for experimental designing practice was discussed (“How big is the tolerance for ‘perceived’ system development failure? . . . It comes down to the culture, and how is tolerant level of the existing design organizational culture? Cause most of the time, we want to know what we will produce before, it is actually produced, and the cost. Those who are successful have a big tolerance for trial and error. P_E)

Another interesting feedback in heuristic question form was if a system’s thingness could be used to encourage users to keep redesigning after post adoptions. (“Does the thingness of the system awakening or facilitating users’ to redesign technology while in use? P_T). One experienced project leader has also recommend the following heuristic question for the ontological design processes concept (“How do we deal with wicked problems such as problems regarding to human cooperation and communications?” P_A).

Participants were also interested in how the designers’ felt about their own profession and how the working environment affects the design products (“If you work on a product, the best thing is to feel like I am good at it. Would that fit somewhere? We need that or way of pondering about that, not only improving, but feeling like doing something good. Satisfied humans can do more stratifying jobs. P_M . . . The feeling of designers, their way of being and their history is going to be imprinted in the product,
including their sadness. And we may need to find some way we can define this. If you feel violence and experience bad thought, it can reflect on the artifact you develop. The energy can get there. So how can we formulate, that...like how peaceful is a designer =) ‘made with love’ =) P_E). I have classified this recommendation into the design agency aspect for further research work.

**Heuristic optimization remarks**

During the focus study, I have distributed a 5th of the heuristic questions and participants were also commented on the heuristic questions. At first, they commented on what the questions made them think about. For example, P_A commented on the personal significance of using the technology that makes users competent/incompetent. When he thought about the question he came to the conclusion that the designers have three different feelings: about ourselves, others and nature. He demonstrates that the question could make the designer reflect on how technology affects feelings in terms of the relationship with the self, others, and nature.

Others find some concepts elusive as a result of their wider application (“Does technology makes you feel belong to the natural world? This, for me, is a bit confusing and I see belongness as being nearest to family, or something. I want to include the whole family, so that I can communicate with them. So I was thinking, I mean this could be a small context, and I think we should localized it. So the nature world is some sort of big for designer to think about” P_M). In subsequent comments, P_A adds that; “as a designer we need some sort of specific thought about such question. And if I need to see things in my design, some other perceive, it could be a challenge for me to understand how I can connect the idea to the natural world to a design, as natural world is a big concept. Specially, if we talk on a specific level of products it can be even easier.” Some have recommended a change of wording in heuristic questions (“the word articulation and requirement elicitation is not clear. May be reframing?” P_M).

Some of new heuristic questions include “How do we document a product history, failed histories how do we do that?” P_E (design processes), “Is the designers’ working environment tuned so that the right mood exists to build wanted thingness?” P_A (design agency), “how can we help designers to change their mind about design environment?” P_A (design agency), and “does the technology make people feel authentic” P_M (thingness of things).

The discussion about heuristic questions was one of the liveliest sessions of the focus group study. I am planning to include this discussion as well as the discussion on ‘new concept recommendations’ future research work.

**General comments**

By the end of the focus group study, the participants were invited to give their thoughts on the proposed holistic approach. Some recommended that the holistic
approach, including heuristic deliberations should be used not only to design but also to evaluate once the technology was ready to be adopted (“as a designer make checklist of these or even when I finished, then I can validate using these question as a test. We can get some kind of feedback on how well we do? P_E). Others were keen to make additions to the holistic approach such as the environment sustainability agenda (“In the ethics part, I would like to see sustainability” P_A).

One participant commented that (“In general, when I read the question the design issues were easy to understand. And it also help me to think through a lot. Design agency in the first reading was harder to get, especially the materiality part. When I later get back, then I get the idea after the discussion of design process. Appropriation, the question I can understand pretty well. Design process, though I don’t like the word process, but it was really clear” P_A). Others had more positive comments and recommendations (“I have stopped working in my old job after been working for 16 years a year ago and I started here due to very much of the things we were talking about today. It is another boost that I am on my way on the right truck.” P_A . . . “A lot of new words, was interesting, a lot of confusion as well, but I liked it. I think, in for the future lessening concepts and new words in the heuristic can help the work to be easily accepted” P_T). Finally, by the end of the focus group study, the project leader commented the following; “I will bring in with me new ideas to incorporate into the future design. We have been trying to implement things around here with intuitions and trial and errors. Seeing our institution do have actually a meta-level knowledge base in the literature is a good feeling” (P_A).

My interpretation of the overall test-drive experience of holistic approach in a real-life design environment is as follows: the praxis tradition part of the research may need additional method in terms of communicating the philosophical aspect of design with designers lacking a philosophy of design background. To a lesser extent, this also applies to the ontological design framework. The practice dimension of holistic approach was easier to understand once the designer is equipped with the theoretical lenses. The focus group result has shown some future directions for the research. There is a need to have a better communication tool in order to implement holistic approaches in real-life design environment. In addition, ontological design concepts may need to further extend their contents to include other IS research interests such as organizational culture, though an overall individual cultural effect on design is covered in both appropriation and design agency concepts. The heuristic deliberations also need further optimization and reframing, in particular to its somewhat technical concepts. Finally, as greater emphasis on apps/service technologies is a widespread phenomenon, localizing the design role within such context could facilitate a greater application of holistic approaches. In the meantime, the focus group result provides positive feedback on the present research’s effort to conjecture technology as mediator of aligned existentiality.
8.5. Representing the design role foundation as holistic structure

This chapter integrates the three dimension of holism tradition in order for the design role to have a base to mediate aligned existentiality. The chapter also summarizes a response to the main research question; *how and why can design enable digital technologies to mediate aligned existentiality?* Design, as Flusser (2013) noted at the outset, has a flexible focus which can be dictated by the theoretical setting it is provided with. Using the history of technology, Chapter two has outlined that dualism worldview has *overturn* the influence of holism on design focus mainly since the scientific and industrial revolution. The change we witness in design focus, in turn, has influenced technological artifacts to have values such novelty and consumerism as their interest to mediate while in use. The design project that constitutes dualism as a core foundation has developed a technology misaligned with our aligned way of being-human.

![Diagram](image)

**Figure 8.3.** The core design role foundation to mediate aligned existentiality

This thesis targets to *overturn* the influence of dualism on the design focus and consequently on digital technology. It is argued that design is in the best position to influence the outcome of the technological lifeworld experience. First, it is malleable to reflect to a new way of being. Second, as it is witness before, it has a direct impact on what *values* an artifact constitutes within, thus can be used to both ‘redirect’ technology and its users from undesired values such as consumerism plus inset new values such as belonginess. In addition, it can accommodate both holism and
dualism traditions in a desired alignment without underestimating one another. Figure 8.1 portrays the three holistic dimensions in their order of abstractions. Though not represented in the depiction, the now-deferred dualistic approach is equally important for the privileged core holistic approach since ‘tangible results’ such as the actual development of digital artifacts depend on the dualistic dimensions input (Beath & Orlikowski, 1994).
9. CONCLUDING REMARKS

This dissertation proposes a coherent holistic design practice by combining philosophical, theoretical, and practical discussions of digital technology design foundations. As a desirable goal of design, I present human’s ‘common quest’ for aligned existentiality, which represents both of our need to feel rooted in the world (belonginess) and continuously reach for new opportunities and experiences (novelty). Initially, I argued that though both belonginess and novelty originate from being-human, belonginess proceeds novelty since it is where both the source and the outcome of novelty resonates. Consequently, most of our innate existential features fall into our belonginess facet of existentiality.

As technological lifeworld increasingly becomes our way of being-human, digital technologies are certainly expected to influence the alignment of our existentiality. What is taken as the main research problem in this thesis is the uncritical adoption of the science field’s foundation into an obviously social oriented field of information system research, and the embracing of capitalist system design values. As a result, two major misalignments were discussed. First, the relationship between belonginess and novelty was overturn, hence novelty is implicitly considered as the basis of belonginess. Second, since novelty has no innate nature on its own, it became vulnerable to the influence of capitalist values such as consumerism. In addition, the new value source has changed the constituent of novelty into to what I refer as ‘nihilism oriented novelty’ – unrelenting needs for newness and detached understanding of our existence as opposed to belonginess.

After arguing the ‘undesirable’ consequence of this inversion between novelty and belonginess, the research attempted to reinvert the relationship to the order as delineated in aligned existentiality. To do so, three steps were proposed. First, there is a need to ‘neutralize’ technology from its mix-base of thinking philosophical tradition and capitalist interest. Second, technology could be used for a ‘redirective purpose’ (a) to clear out the ‘damage’ of the new-novelty way of existence, and (b) to influence the well-being of humans through design knowledge. Third, an interdependent and transparent human-technology relationship should be sought in the field of IS research.

Taking these three tasks into consideration, my research was based on the practical and explanatory question ‘How and why can design enable digital technologies to mediate aligned existentiality? The question itself indicates that an alignment between technology and aligned existentiality can be achieved through design – in this research termed as ‘the design role’. These three challenges were, then, examined in chapter five through seven apiece. Chapter eight, using holism three dimensions of philosophy, theory, and practice, has presented holistic approach as a foundation for the design role to focus on mediating aligned existentiality.

The sense of belonging is one of our utmost existential state engrained in the essence being human. It continually motivate us to actively cultivate and familiarize
ourselves with our surroundings, ultimately leading us to deeply care for our developed structure of understanding (i.e., identities, human relationships, ideals, tools, way of tool use, and way-of-being). Our motivation to expand and express our belongingness in unique ways compels us to search for novel experiences. Through holistic rethinking of design practices, the thesis has argued that it is possible to design digital technologies in line with aligned existentiality. With such refocusing, the field of design can be a valuable asset to promote a desired way of being-human.

9.1. Related contribution of the research

In exploring the main research question, I have used IS continuance use as a research case study. The term IS continuance use implies “individuals continuance use of information technology well after the initial acceptance and adoption” (De Guinea & Markus, 2009b, p. 433). Due to its close relationship to IS acceptance and adoption studies, IS continuance use research framed on the philosophical setting of dualism, where human-technology relationship is studied based on ‘factors that lead to initial acceptance and use of information systems’ (Jasperson, Carter & Zmud, 2005). These ‘factors’ are considered to be found in either human or technology characteristics; hence the framing gives little attention to the actual nature of a relationship developed in course of time.

Using phenomenological framing, I was able to propose a theoretical framework (see Paper IX) that conceptualizes human-technology relationship progress as a ‘composite structure’; hence giving a background for research to give more focus on the relationship progress itself as oppose to the actors in the relationship. Framing long term use in holistic tradition also calls a different methodology to study users’ environment other than dualistic-oriented quantitative methods since in place of searching and/or associating factors, a researcher will focus on understanding and interpreting IS use experiences. Thus, causal logic and statistical model explanations may not be suitable for the study of subjectively rich human-technology relationships. In Paper X, I proposed the use of the Interpretative Phenomenological Analysis (IPA) method to study the progress of the human-technology relationship and illustrated its application with empirical evidence (Smith, 2004).

During the development of heuristic deliberations, I have used the three holistic theoretical dimensions discussion to brainstorm more than hundred questions that can be used to contemplate if a digital artifact we are designing is aligned with holistic tradition. In addition, the questions were aimed at illustrating what role a design can play within the context of holistic oriented designing. Even though, the main interest of this thesis was not about developing a general heuristics outlines/rules to evaluate holistic design approaches, the deliberations can point out how different concepts of holism can be implemented in the design practices.

Different direction can be followed to use the heuristic propositions. First, on a general term, one can see how to extrapolate philosophical based design into
development of actual artifact. That is, design philosophies (i.e. being eco-friendly) can be embedded into artifacts using heuristic exercise. Second, designers can choose one of the four deliberations (e.g. things, design agency) accordingly with their needs to contemplate on design values. I have developed an extended group of deliberations as my aim was to evaluate all the three holistic dimensions; philosophy, theory, and practice. This does not mean that all deliberations should be considered if one wants to follow holistic based designing. For a specific system developer team, it might only be the things deliberation that is important to consider or even sub values in things such as wellbeing. It is entirely possible to use specific values or deliberations accordingly with the desired goals. Finally, the proposed deliberations and questions are optimizable, in a sense that they are not definitive answers to all situations that aims to apply holistic tradition. They can be improved, altered, or modified in line with heuristic scheme itself. Thus, designers can ‘cheer-pick’ deliberations to optimize accordingly with their needs.

Other contributions include the explanation of the philosophical foundation of system engineering, the influence of the capitalist system on actual technology design, the development of coherent IS design and adoption framework – from philosophical, theoretical, and practical to methodological understandings of how and why we engage with information systems.

9.2. Limitations

The field of design is wide, and there are a number of different areas of research that could address design issues. The scope of this thesis had to be limited to the conceptual frameworks listed in Chapter two. Other interesting design approaches such as distributive cognition, the nature of science based on holism tradition, and design psychology, had to be excluded.

From a practical point of view, my empirical evidence have provided enough room to navigate the planned research questions. In keeping the tradition of engineering practice, however, more empirical evidence from the actual design practice, such as aesthetics development, could have been used to validate the philosophical and theoretical foundations. I will leave such work for future research.

Finally, the selection of Heideggerian and existential understanding of the world may have had the effect of highlighting some phenomena of the research as important while deemphasizing others. As in any other research endeavor, my alliance to holistic philosophical positioning may sometimes ‘blind’ sensible agreements from other tradition viewpoints. As such, I urge readers to consider my proposal an attempt to propose alternative design research setting, rather than an overall complete replacement of the existing tradition.
9.3. Future research, reflection, and Conclusion

Naturally, identified limitations are a good starting point for future research. But in addition to these, the dissertation opens different opportunities to other IS research interests. Within the context of the praxis tradition, for example, the current method of evaluating IS success will become incompatible as customary evaluation criteria focus on usefulness, efficiency, physical aesthetics, and novelty. Other technology evaluation themes are still underrepresented in the research field, and the dissertation brought up some of these factors in Chapter five and six. The same remark can be made about the lack of methodological methods.

Current design theories are closely tied to Simon’s (1969) claim that the main role of design is to ‘produce and synthesize efficient artifacts’. In holistic design setting, such focus is replaced with an ontological one where the act of designing is perceived as a ‘redirective practice’ or in Dewey’s word a ‘self-correcting method’. This design role, in turn, demands design theories to explore other design concepts such as the ones illustrated in Chapter six. The heuristic deliberations presented in Chapter eight and feedback from the focus group study opens up for additional opportunities to optimize and develop more ‘heuristic template versions’.

Finally, there are very few research works that explores what constitute as the wellbeing of human to discuss a desired thingness of things (Desmet and Pohlmeyer, 2013; Van de Poel, 2012). As it is demonstrated during focus group study, there is a still research gap how to evaluate which thingness are ethical, who would have a say on developing a generally accepted thingness, or if it is at all ethical to oblige users to act in one way or other using digital technologies.

In this dissertations, I take up on a challenge to advance a philosophical, theoretical, and practical foundation for design to mediate our two-facet of existentiality in equal footing. The suggestions advanced to invert dualistic with holistic way of being-human can be seen as a harsh critique toward IS research field where epistemology-oriented “theory is still a king” (Gregor, 2014). Heidegger’s (1993) own proclamation of “questioning build the way” has been a constant reminder that questioning, not definitive answers, can lead to new ways of thinking has been my main motivation.

Nonetheless, at times I have found myself with an ambition to provide all the right answers with strong opinion. In a sense, I have seen first-hand how dualistic way of understanding the world has heavily influenced my own way of thinking. But I have also witnessed that it is the nature of holism to further develop more ways of questioning our conclusions than affirming our answers. “The quest for certainty” in both personal and professional life can easily be confused with the need for belongingness (Dewey, 1929). This is something I have struggle throughout the thesis. Though the proposed theoretical frameworks will surely benefit from more refinements, I can finally say that I am starting to ontologically dwell with the ambiguity of being-human.


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