Understanding how Information and Communication Technologies matter to Youth

A network of developmental, social and technological dynamics

By

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Registered Nurse, General Hospital Altona, Germany, 1987
Bachelor of Social Work, Hochschule Bremen, Germany, 1994
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A Dissertation in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in Interdisciplinary Studies:
School of Child and Youth Care
Department of Computer Science

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Abstract

This dissertation explores the questions: (1) how use of specific information and communication technologies (ICT) matters to youth, (2) how use of these ICT is experienced by youth and (3) how youth conceptualize their relations to ICT in their daily lives. It provides a networked perspective that emphasizes youth's experiences of ICT in contexts. This networked perspective focuses on the dynamic connections between adolescent development, societal change and technological innovations when understanding youth's ICT use. Such a perspective positions youth as nexus in online and offline relational networks. It recognizes youth as actors who experience intense emotions when using ICT and who learn skills to navigate and negotiate these networks. Simultaneously, it situates youth's experiences of ICT use as emergent from adolescent, societal and technological contexts and within continuous cultural change.

Methodologically, this study draws on multi-sited ethnographic research practices (Marcus, 1998; 2005) as well as being guided by the notion of congruency between site, methodology, and phenomenon (Oberg, 2003). Data was primarily gathered through four interviews held with six youth aged 16-18, two focus groups, and the researcher's immersion over five years in the Computer Human Interaction Software Engineering Lab (CHISEL).

Three themes of how ICT use matters to youth emerged: Fun, Convenience and Connections. These themes illuminate how ICT have multiple ways of mattering for young people within their unique life contexts, such as providing continued connections to peers after school and shifting spatial and temporal boundaries. Patterns of emotional experience emerged that encompassed simultaneous existence of contradictory emotions (e.g., stimulating and overwhelming) when engaged in a specific activity such as instant messaging. Examples of Self-ICT relations are: "We're immersed" and "I feel empty without it." These conceptualizations are linked to networked theories of self that constitute ICT as in relation to self.

This dissertation concludes by applying a networked perspective to understanding youth's ICT use as well as stepping back in order to raise larger cultural questions. It argues for the importance of recognizing the complexities that shape human – ICT connections in order to assist youth in learning skills to negotiate their emergent sense of self successfully.

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Acknowledgments

First of all, I would like to thank my committee members. I am indebted to Marie Hoskins and Daniel Scott for encouraging me to go on this journey and for providing the academic and emotional support all the way to its final destination. I am very grateful to Peggy Storey for her belief in my work, her enthusiastic feedback, her financial support and her intellectual openness to engage with topics beyond her own discipline. I would also like to extend a warm thank you to David Silver and Hausi Müller for feedback and Seattle muffins along the way.

I would also like to extend a sincere thank you to the participants of the youth interviews and focus groups, as well as all other youth and parents, who candidly shared their stories of ICT use with me and from whom I have learned so much!

A special thank you goes to all the members of the Computer Human Interaction Software Engineering Lab (CHISEL) group! This group has been my home on the University Campus and I couldn't have asked for a better working environment. Academic exchanges, teamwork, potluck lunches, chair basketball and smartboard-dartboard games brought many smiles to my face. In particular, I would like to thank Jeff Michaud, Neil Ernst, Shohreh Hadian and Ian Bull for insightful comments on my work as well as Trish d'Entremont, Jody Ryall and Chris Bennett for brainstorming sessions, editing help and technical support. The monthly PhD student seminar in the School of Child and Youth Care was my methodological home during this journey. Thank you very much to everyone in this group for engaging in rich discussions and providing the invaluable connections to fellow travellers venturing along similar pathways.

I couldn't have completed this journey without the support of my extended and immediate family. I am very grateful to my father, Johannes Maczewski, his partner Bonnie Russell, my mother, Gerda Maczewski, and my parent in-laws, Louise and Joe Baur, who continuously provided encouragement, coffee, cookies, and my children with a loving environment in my working absences. I am appreciative beyond words for the love and support of my partner, Tony Baur, and my children, Maja and Timo, who were always, *always* there to provide hugs and smiles along the way. This dissertation is a result of many people working together, a heartfelt thank you to all of you!

McLuhan, 1974: Instantaneous Communication

Today in the electronic age of instantaneous communication, I believe that our survival, and at the very least our comfort and happiness, is predicated on understanding the nature of our new environment, because unlike previous environmental changes, the electric media constitute a total and near instantaneous transformation of culture, values, and attitudes. This upheaval generates great pain and identity loss, which can be ameliorated only through a *consciousness of its dynamics* [italics added]. If we understand the revolutionary transformations caused by new media, we can anticipate and control them; but if we continue in our self-induced subliminal trance, we will be their slaves.

Participants, 2005: Use of Internet, Cell Phones and MSN

It's different and it's fun.

(Debbie, 2005)

I mostly just talk to people [on MSN] just to stay in touch and stuff, because I don't see them anymore. And I just don't talk to them on the phone or anything.

(Jill, 2005)

It [MSN] can be overwhelming if 50 people are talking to you at once …. And they all keep sending you messages and you're trying to answer them but you can't and they keep sending and sending trying to say something, but then it's like, ahhhhh!

(Tanya, 2005)

I've had it [cell phone] for such a long time, I feel empty without it.

(Ingrid, 2005)

It's just sort of like you're online and you can talk to people. You're connected but not like I'm connected to a computer. More like I'm connected to like, something else. I can't put my finger on what that something else is. But you're connected to your friends, your thoughts, ideas …

(Andrew, 2005)

We probably have a lot of people [on MSN] who we've noticed haven't come on for a long time. And they've probably just deleted us. But I don't really care. I couldn't care less.

(Lisa, 2005)

Chapter I - Introduction

Youth are frequent users of the Internet, cell phones and instant messaging (IM) systems. In 2005, over 80% of youth in Grade 10 and 11 talk to friends on IM on a daily basis, in Grade 11, 51% have their own computer with Internet access and 46% own their cell phone (Media Awareness Network, 2005c, p.20). In a local newspaper, a teen describes herself and her peers as "obsessed" with technology, ignoring the outdoors, as they gather around each others iPods[1] and cell phones on the school bus (Rivers, 2006). She wonders what kind of impacts the focus on technological devices will have on their future lives. McKinnon (2006), another youth columnist, describes how her friends have broken up a relationship through Microsoft Messenger[2] (MSN) and explains that technologically mediated breakups happen more frequently than one would assume.

Youth's engaged and innovative use of information and communication technologies (ICT) make them interesting individuals to engage with, when exploring how ICT are used, experienced and conceptualized. In contrast to enthusiastic teens, parents' stories of their teens ICT use reveal more complex emotions: acceptance, frustration, curiosity, or lack of understanding of their child's use of ICT. Implicit in their stories are the following questions: What are young people doing online? What do they get out of it? How do I as a parent assess their Internet use? Is it beneficial or harmful for my children? Youth's enthusiasm, parents' concerns and visible changes in societal patterns of self-technology relations were my motivations for exploring the overarching research question: What's happening here?

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[1] See http://www.apple.com/itunes

[2] See http://get.live.com/messenger#102

Early research on youth's Internet use established an understanding of what youth *do* online (e.g., Lenhart & Rainie, 2001; Maczewski, 1999; Media Awareness Network, 2001). This research tended to separate youth activities into online and offline spaces, an emphasis placed on their online experiences. Children and youth were conceptualized as the "Net Generation" (Tapscott, 1998) or considered "Cyberkids" (Valentine & Holloway, 2002). Youth were presented as "techno-savvy", "wired" and "experts" within the field of Internet use.

Since then, technologies have changed, diffused and been adopted (Rogers, 2003), especially by young people. Stationary and mobile hardware, such as computers and cell phones, as well as communications software, such as MSN, blogging systems (e.g., LiveJournal[3]) and social-networking sites (e.g., Myspace[4]), have provided youth with tools that change ways of communication. These tools have also become increasingly embedded in youth's daily lives and therefore a conceptual separation of online and offline lives can be seen less frequently.

More recent understandings of young peoples' experiences with the Internet are contextualized and differentiated, including recognition that not all youth have access to ICT, not all youth are techno-savvy and youth's use of ICT are connected to the "real" world (e.g., Clark, 2005; Ito, Okabe, & Matsuda, 2005). Current research also addresses a wide range of issues, such as parent-youth negotiations (Clark, 2005), identity (Thiel, 2005; Valkenburg, Schouten, & Peter, 2005), constructions of cell phone use (Campbell, 2006) and social networks (Bryant, Sanders-Jackson & Smallwood, 2006).

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[3] See http://www.livejournal.com

[4] See http://www.myspace.com

My research adds to the rapidly evolving field of "Youth and New Media" studies by further understanding experiences of ICT use through youth's perspectives and by locating them within networked organizational structures (Barabasi, 2002; Wellman et al., 2003). I make visible the increasing interconnections of self and ICT in daily lives by locating youth as a nexus within online and offline relations.

The primary sites of this multi-sited, qualitative inquiry are the interviews with youth in which we explore their use, experiences and conceptualizations of ICT in their daily lives. The following three research questions guided our interviews:

1. How does frequent use of Internet and Cell Phones matter to you?

2. How do you experience ICT use?

3. How do you conceptualize ICT in your daily life?

Youth quotes on the first page are examples of their varied experiences and conceptualizations of ICT use. I interpret youth's responses through a network of theories that bring together aspects of social and technological change. I link youth's experiences of ICT use to facets of adolescent development (Steinberg, 2005), developments in societal structures (Livingstone, 2002; Wellman et al., 2003) and technological developments (de Kerckhove,1997; Rogers, 2003). The goal of my dissertation is to present *a network of perspectives* that contextualizes youth's ICT use and that enables a complex understanding of youth's ICT use to emerge from the connections.

Clarification of Terms

I use the terms network, emergence, self, identity, and nexus throughout the dissertation. A conceptual understanding of how I use these terms is important at the beginning of the dissertation and they are briefly described in the following pages.

Networks and emergence. There are many types of networks, such as social, technological and biological networks. The following is a representation of a biological network structure, which visualizes my conceptualization of a network.
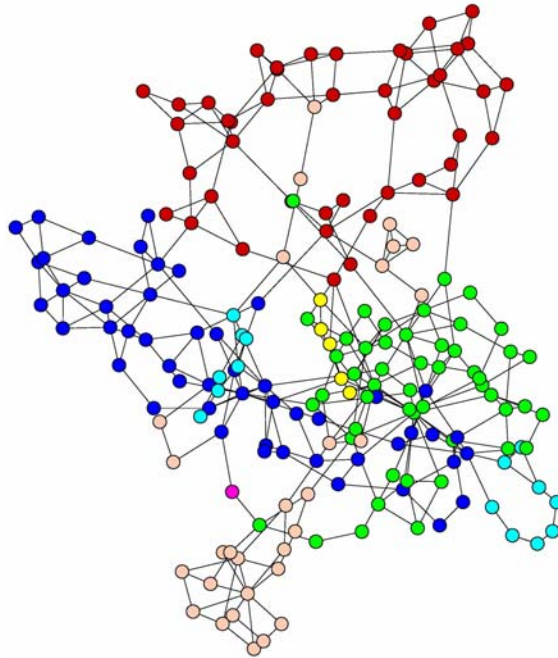
Illustration 2. Biological Network Structure. Erzsebet, Ravasz, no date. From http://www.nd.edu/~networks/Image%20Gallery/gallery.htm[5]

Within this dissertation the term network refers to a set of relations between individual nodes. These nodes can consist of humans, technologies or theoretical concepts and are dynamically interconnected. Consideration of a specific configuration of connections can lead to the emergence of, for example, a new understanding, a sense of self or an action. How something emerges from a network of connections can be visualized in the following way.

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[5] Why nodes are shaded in the way they are is not considered important at this time. The importance of Illustrations 1 and 2 are to provide a sense of networks and emergence in general.
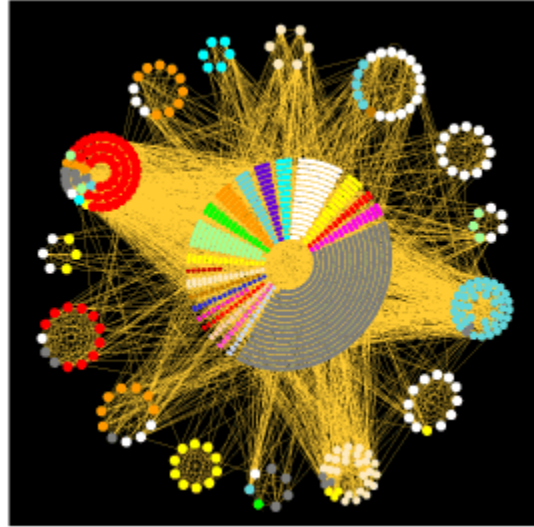
Figure 3. Emergence from Clustered Nodes. Osprey (2003).
From http://biodata.mshri.on.ca/osprey/servlet/Index

In the above image the center circle is visualized as emergent from the connections among the different clusters that consist of multiple nodes. The work of Barabasi (2002) is described in Chapter VII and provides insights into the dynamics of network structures.

Self, identity, and nexus. In the contexts of this dissertation, I have primarily conceptualized the self as consistent of multiple interconnected nodes. I use the terms *self* and *individual* interchangeably to refer to an embodied location of thoughts and feelings. The terms *sense of self* and *identity* I use interchangeably to refer to what emerges from the individual's position in networks of online and offline, technologically-mediated relations. The term *nexus* I use to emphasize the position of the self within online and offline networks as well as processes of navigation and negotiation within the individual at the nexus.

Dissertation Overview

I have organized the dissertation into 17 chapters. I have chosen multiple, shorter chapters to congruently present the nodes of the network perspective of youth's use of ICT. In Chapter II, I locate the researcher within the three research sites: the School of Child and Youth Care and the Department of Computer Science at the University of Victoria, and the Association of Internet Researchers. In Chapter III, I present an overview of the information and communication technologies used by youth: Internet, cell phones, MSN, Weblog (blog) and Social Networking Sites as well as introducing Rogers' (2003) theory of the diffusion of innovations. In Chapter IV, I illustrate youth's activities online and their increased ownership of personal ICT. In Chapter V, I locate youth's activities within family (Livingstone, 2002), societal (Wellman et al., 2003) and technological (de Kerckhove, 1997) contexts. In Chapter VI, I present a literature review of youth's experiences of Internet and cell phone use.

In Chapters VII, VIII, IX, I situate the research methodology in qualitative emergent research inquiry (Oberg, 2003) and in a multi-sited ethnographic research approach (Marcus, 1998; 2005). I describe methods of data collection and analysis that are congruent with the research questions.

In Chapter X, I present participants' demographic data and longer excerpts of the youth interviews to introduce the reader to the youth's personalities. In Chapter XI and XII, I present an interpretation of how ICT matter to youth and link this to processes of adolescent development. In Chapter XIII, I illustrate how youth experience ICT and present examples of emotional patterns that emerge. In chapter XIV, I offer examples of youth's conceptualizations of Self-ICT relations in daily lives. Youth's location as

navigating and negotiating nexus in family, societal, and technological contexts is visualized to form the networked interpretation of youths' ICT use.

In Chapters XV and XVI, I link above research interpretations to existing theoretical conceptualizations of Self-ICT in networks, suggest visualization techniques that facilitate understanding locations in networks and present examples of skills that are useful in navigating and negotiating networks. In Chapter XVII, I conclude this dissertation by presenting the research story, researcher reflections, ideas for future research and final thoughts. A brief overview of the chapters is given below.

Chapter I	Introduction
Chapter II	Researcher Locations
Chapter III	Information and Communication Technologies
Chapter IV	Youth's ICT Use
Chapter V	Family, Societal, and Technological Contexts
Chapter VI	Research Perspectives
Chapter VII	Research Methodology
Chapter VIII	Research Methods
Chapter IX	Data Analysis
Chapter X	Youth Participants
Chapter XI	How ICT Matter to Youth
Chapter XII	Processes of Adolescent Development
Chapter XIII	How Youth Experience ICT Use
Chapter XIV	How Youth Conceptualize Self-ICT Relations
Chapter XV	Conceptualizations of Self-ICT Relations
Chapter XVI	Navigating and Negotiating Self-ICT Relations
Chapter XVII	Conclusions

Chapter II - Researcher Locations

To research youth's experiences of frequent ICT use, I began an interdisciplinary

graduate program in 2001. My decision to pursue an innovative interdisciplinary PhD

was influenced by the lack of Internet studies programs available at the time. I illustrate

the research sites and my locations as researcher in the following diagram. I describe the

individual sites in the following sections.
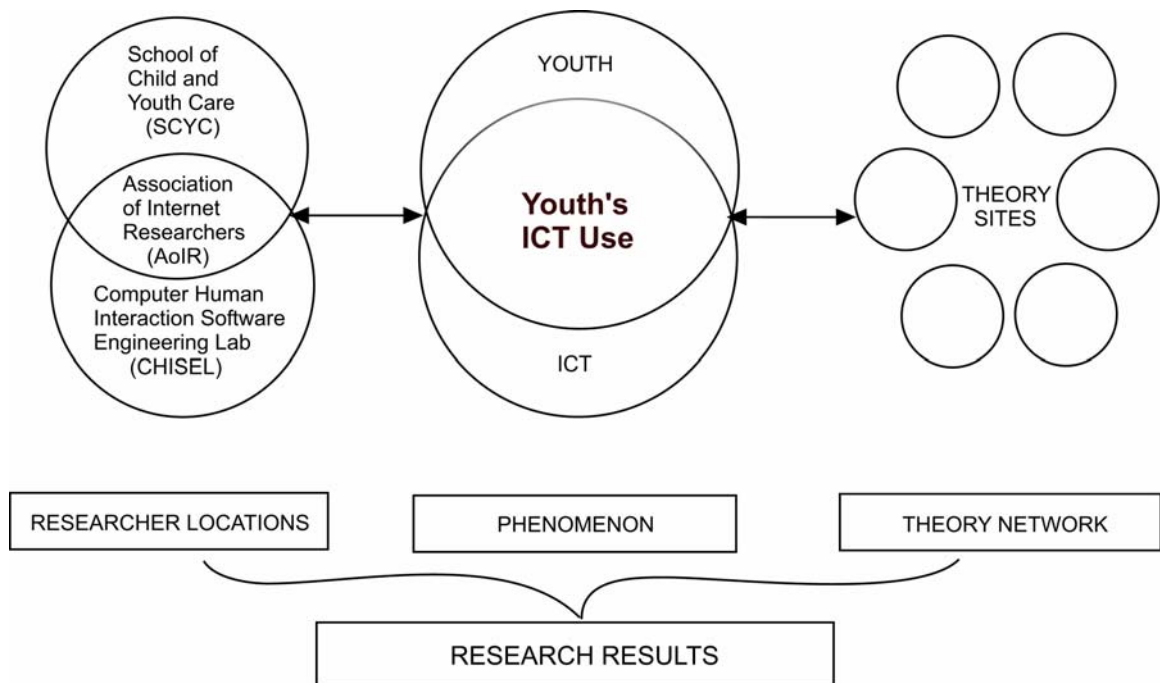
Figure 1. Research Sites and Researcher Locations

School of Child and Youth Care (SCYC)

My academic and professional background has been grounded in an interest in children and youth in both Germany and Canada. My theoretical lens throughout my academic journey has been shaped by an emphasis on children and youth's right to participation, voice, and identity as set out in the United Nations Convention on the Rights of the Child (1989). The sociology of childhood and children's culture (e.g., Hengst, Koehler, & Riedmueller, 1981; Qvortrup, 1994) has further influenced my work in that it positions children as actors within their life contexts who actively negotiate their identities. My professional journey as a social worker reflects work with children and youth in various settings: child care centers, parent support programs, and in educational youth programs. Grounded in the UN Convention on the Rights of the Child, my working relationship with young people has been centered around the notion of respect for and the significance of listening to youth voices, especially on matters that directly affect them.

In 1996, I enrolled in a multidisciplinary graduate program in the Faculty of Human and Social Development to further my professional career. My home department was the School of Child and Youth Care.[6] My interest in the Internet first arose out of personal experiences with the Internet. Living in Canada with most of my family in Germany, the Internet, especially e-mail, became relevant to my life in that it enabled me to stay more closely connected with friends and family. My experience of self within Canadian contexts felt extended through online interactions (Maczewski, 1999).

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[6] See http://www.cyc.uvic.ca

I became interested in exploring youth experiences online for my MA thesis because I suspected that online spaces, such as home pages and online communities, might provide young people with a place where their voices could be heard in different ways than onground.[7] My research findings illustrated how electronically interviewed youth perceived their identities to be positively and profoundly impacted by their online participation. They spoke enthusiastically about their online interactions and how they could experience different parts of themselves within online and onground environments. Given the ease with which young people seemed to travel among their online and onground selves, I wondered at the completion of the MA *how* young people negotiated these multiple identities in their daily lives. Given her expertise in studies of self and subjectivity, Dr. Marie Hoskins from the School of Child and Youth Care became a supervisor for my doctoral program.

Department of Computer Science (CS) and the Computer Human Interaction Software Engineering Lab (CHISEL)

As understanding the technologies used was important for examining their implications for identity construction, I therefore considered it beneficial to also locate myself in the department of Computer Science (CS)[8] in addition to my existing location in SCYC. I set out to be immersed in an environment where people worked with computers, software and the Internet and joined the Computer Human Interaction

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[7] The term *onground* was created for my MA to avoid the distinctions of online and offline, and virtual and real life as two separate spaces. This was important in 1999 in order to then locate online interactions as linked to offline interactions. Now, I use the term offline instead of onground, because online interactions in 2005 are more generally considered to be embedded in daily lives and online / offline not necessarily perceived as two separate spaces.

[8] See http://www.csc.uvic.ca

Software Engineering Lab (CHISEL) [9] group. This group was led by Dr. Margaret-Anne Storey who became my co-supervisor. The mission statement of CHISEL is: "Towards understanding the complex interplay of software tools, human behaviour and social structures in order to enhance the development and use of software tools" (CHISEL, 2006). In other words, CHISEL group members focus on exploring and using software visualization techniques to assist programmers and other professionals in navigating and understanding complex information spaces. Participation in this group provided me with increased understanding of the technological side of youth's ICT use.

I have remained an active participant in the CHISEL group for the duration of my research project. Theoretically the work within this group has been relevant to my work in that software tools are conceptualized as cognitive aids for humans in completing tasks. In addition, visualizations are used to assist the user in understanding information. CHISEL's work on visualizing concepts and their relationships within large databases has shown me how individual instances from a large database can be selected and represented in various forms to present different answers to a question. This technological navigation of complex information spaces resonates with me in relation to an individual's navigation of the multiple aspects of self-ICT relations in daily lives. In my dissertation, I have drawn on these understandings to help describe the complex processes of emergence.

The Association of Internet Researchers (AoIR)

As an individual, interdisciplinary researcher at the University of Victoria, linking two departments with very different content and research approaches, I found it difficult

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[9] See http://www.thechiselgroup.org The CHISEL group is described in more detail in Chapter Eight.

to find a community of theoretical interests and peer researchers to join in. I discovered

the Association of Internet Researchers (AoIR)[10] and attended their second conference in

2001. The common theme of this interdisciplinary conference was an interest in Internet

studies. Questions such as: "How do people communicate online?", "What happens in

online communities?" and "How is Internet Research conducted?" were discussed from a

variety of disciplinary perspectives, such as communications, sociology, computer

science and education. This group had formed because many individuals were struggling

within their own disciplinary communities to find connections to others with similar

interests. This conference presented a venue in which individuals with often very diverse

life paths and experiences came together to discuss their interest in the Internet and its

social, economic, political and personal implications.

A further common ground for many participants was the challenge of adapting

traditional research practices, such as ethnography, to spaces mediated by new

communication technologies. Although Internet Research has increased since then,

issues of how to integrate Internet Research into existing disciplines still exist. The

following listserv post after the recent 2006 AoIR conference demonstrates this:

> For me the best day of the conference was
> the Doctoral Colloquium on the previous day.
> It was brilliant to have all students, who
> are mainly involved in interdisciplinary
> research, and thus feeling on the margins of
> their respective departments, share their
> experiences of doing "Internet and" studies,
> e.g. Internet and psychology, Internet and
> education, Internet and family studies, etc.
> For many of us we found a centre, while we
> mostly feel on the edge in our home
> universities. Paul Teusner (2006)

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[10] See http://www.aoir.org

Internet Research, Internet Studies, Cyberculture Studies and most recently the field of New Media Studies have diversified immensely since 2001. Departments, projects and institutes have emerged to study the use of New Media and its implications e.g., the Canadian Children, Young People and New Media in the Home Project, the United Kingdom Children Go Online Project (UKCGO), and the United States Pew Internet and American Life Project. AoIR as an organization has begun to have a history. Certain shared experiences, people and studies are shaping and defining the field. Not only has the field expanded, but the technologies it studies have evolved as well. The shift from Cyberculture Studies and Internet Studies to New Media Studies makes visible theoretical movement in the conceptualization of technology and technologically mediated spaces. Instead of conceptualizing online and offline as two separate spaces, a focus now is placed on the contextualization of new media as embedded in people's daily lives. Paralleling the movement within the Internet Research field, my own research evolved from the study of young people's experiences of cycling through online and offline selves to understanding the dynamics of young people's ICT use and the sense of 'being connected' as situated in their offline lives.

You are combining SCYC and CS? Being an Interdisciplinary Student

Throughout the research process and the writing of this dissertation, the issue of researcher locations has given rise to many questions, e.g. how does this work relate to Child and Youth Care? How does it connect to the field of Computer Science? How has your embeddedness in the CHISEL group over five years affected your research interpretations? Students and professionals of both disciplines have been intrigued by the

combination but also have needed more information to understand where the connections are.

My location as a researcher has emerged from the connections among these two disciplines. In traditional ethnographic terms, I have simultaneously been an *insider* and *outsider* within the two disciplines to different degrees in different dimensions of the group. For example, in CYC I often felt perceived as the "tech" person, and being located "over there" in the computer science building. Personally, I do not think of myself as a "tech" person, I am not interested in programming or fixing soft- and hardware but in *youth's experiences* of the technology. In the CHISEL group I occasionally felt referred to as the social psychology expert whereas in the past ten years I have focussed on a bricolage of social constructivist perspectives of self and identity, childhood and adolescence, culture and technology from various disciplines. At the same time it is probably true that I feel more comfortable in technologically-mediated environments than many CYC people and it is probably true that I do have a greater understanding of childhood and adolescence than many CS people.

Through my location and constant interaction in the CHISEL group, we have found connections through research methodology involving technology and human experience, ethics discussions and visualizations of complex information spaces. In the Child and Youth Care setting this daily interaction has been missing and an immersion in SCYC would be beneficial in establishing new connections from CYC perspectives to my research topic.

In order to bridge institutional disciplines it is essential to look beyond the dominant assumptions made about a discipline and to connect to the differences and

similarities in theory and practice within both settings. Research findings within this interdisciplinary context emerged from the connections of my specific location and relationships to people in the individual departments. These experiences speak to the complexity of negotiating an academic researcher identity within the interdisciplinary process.

My immersion as a participant in the CHISEL group also raised methodological issues. A cultural immersion requires from the researcher to "move back and forth between involvement and detachment" (Wolcott, 1999, p.48) in order to gain a deeper understanding of cultural practices of being connected yet not to be blinded to other perspectives. Although my intent was not to study the CHISEL group but to learn about the technology used, my location within it gave me an insiders' perspective from which to understand experiences and patterns of "being connected". It therefore became important for myself as researcher to pay attention to how I experienced the technology as well as to pay attention to youth's and individuals' experiences of being connected who were located outside of the CHISEL group. Writing memos, field notes, presenting at conferences and seeking out diverse experiences of "being connected" was part of my process of maintaining credible research interpretations. For example, continuous contact with CYC students and professors enabled me to maintain an ambiguous relation to frequent technological use as I was met with feelings such as 'hesitation' and 'resistance' towards being connected as well as a critical analysis of technology.

In summary, I began the PhD process as a Child and Youth Care student who was going to learn about the Internet from being in Computer Science. Trying to combine the two disciplines I located myself within AoIR, where I could see connections being made

among social and technological realms of research. I ended this process with being a

researcher who looks beyond disciplines to see the connected and unique concepts of

traditional disciplines by conceptualizing them as networks of people, theories and

practices.

In addition to movement in epistemological grounding, changes can also be seen

in the development of information and communication technologies themselves. Whereas

e-mail and chat rooms were the main communication media used in 1999, in my current

interviews MSN emerged as the communication channel most used by youth. The ICT

mentioned in my interviews by youth are described in the following chapter.

Chapter III - Information and Communication Technologies

In this chapter, I focus on the technical definitions of the ICT used by youth: Internet, cell phones, and MSN. Blogs and Social Networking Sites are defined briefly as no youth participant currently used them frequently.

The Internet

Wikipedia[11] (2007e) defines the Internet as: "the worldwide, publicly accessible network of interconnected computer networks[12] that transmit data by packet switching using the standard Internet Protocol (IP). It is a "network of networks" that consists of millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as electronic mail, online chat, file transfer, and the interlinked Web pages and other documents of the World Wide Web. The World Wide Web is defined as "a system of interlinked, hypertext documents that runs over the Internet. With a Web browser, a user views Web pages that may contain text, images, and other multimedia and navigates between them using hyperlinks."

Wikipedia (2007e) also provides a visualization of the Internet which shows the networked structure of the interconnected computer networks. Brighter and more clustered areas show a larger density of computer networks than darker areas.

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[11] See http://en.wikipedia.org   Wikipedia is a "multilingual, Web-based, free content encyclopedia project. Wikipedia is written collaboratively by volunteers from all around the world. With rare exceptions, its articles can be edited by anyone with access to the Internet, simply by clicking the *edit this page* link. The name Wikipedia is a portmanteau of the words *wiki* (a type of collaborative website) and *encyclopedia*. Since its creation in 2001, Wikipedia has rapidly grown into the largest reference Web site on the Internet." (Wikipedia, 2007)

[12] The underlined words are active links to other Wikipedia definitions on the Web. I have left them in the text to demonstrate the complexity of parts of the definition.
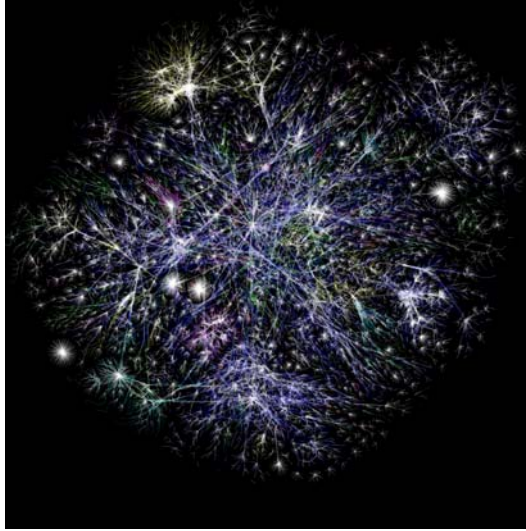
Illustration 3. Visualization of the various routes through a portion of the Internet. From http://en.wikipedia.org/wiki/Internet [13]

The above definition focuses on technical aspects of the Internet and describes networks that consist of hardware and software. Access to these two technical components is critical in terms of *how* and *by whom* the Internet can be used and experienced. What the above definitions do not convey is the social construction of the Internet. The technical definitions render users, software and hardware developers mainly invisible rather than active participants in its construction. For the purpose of this study, I use the term "Internet" as meaning the conduit that mediates communication and interaction among users. "On the Internet" or "being online" includes all forms of communication mediated through software and hardware.

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[13] Also see http://en.wikipedia.org/wiki/Image:Internet_map_1024.jpg "I (Matt, Britt) created this small partial map of the Internet from the 2005-01-15 data found here using a slightly different rendering technique than was used to generate the maps there. Each line is drawn between two nodes, representing two IP addresses. The length of the lines are indicative of the delay between those two nodes. This graph represents less than 30% of the Class C networks reachable by the data collection program in early 2005. Lines are color-coded according to their corresponding RFC 1918 allocation as follows: Dark blue: net, ca, us; Green: com, org; Red: mil, gov, edu; Yellow: jp, cn, tw, au, de; Magenta: uk, it, pl, fr; Blue-green: br, kr, nl; White: unknown."

Cell Phone

Wikipedia (2007b) defines a cell phone (mobile phone) as "a long-range, portable

electronic device for personal telecommunications over long distances."

Illustration 4. Mobile phones from various years, ranging from a large late 1980s-era phone to tiny 2000s phones. From http://en.wikipedia.org/wiki/Cell_phone[14]

As the picture provided on the Wikipedia site illustrates, cell phones have become

small and portable. They further include multiple features, such as camera, text

messaging systems, access to the Internet and music playing abilities, in addition to

personal voice communication. In 2005, Canadian children and youth were asked what

features their phones had, with the following result: Text Messaging 56%, Net Access

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[14] Also see "A photo documenting the evolution of the mobile phone. I took this photo. It is online here: http://www.norman.cx/photos/showphotonew.asp_Q_path_E_20060108%20PAD%2C%20Andy/IMG_607 5.JPG"

44%, Camera 25% and None of These 26% (Media Awareness Network, 2005c, p.15).

Whereas teens in my MA research spent many hours at home in front of their computers

to engage in e-mail and chat room conversations, teens are now able to retain Internet

access and remain connected to their friends and family while being mobile.

Instant Messaging (IM)

Wikipedia (2007d) defines instant messaging as "a form of real-time

communication between two or more people based on typed text. The text is conveyed

via computers connected over a network such as the Internet." IM software affords

individuals the opportunity to be in synchronous contact. In my interviews with youth,

MSN[15] was used synonymously for talking about instant messaging in general. I describe

MSN in more detail, because it was the technology that youth talked about most

enthusiastically in our interviews. Microsoft (2006) provides the following description of

MSN:

> MSN® Messenger is a world-leading free and easy-to-use
>
> consumer instant messaging (IM) service that allows people to
>
> connect with others in real time, expressing themselves in a rich,
>
> convenient and fun way. MSN Messenger is available in 26
>
> languages and is used in nearly every country in the world by more
>
> than 180 million active accounts each month.
>
> MSN Messenger customers can not only enjoy instant
>
> messaging, they can also initiate rich audio and video

---

[15] MSN has since been replaced by the Windows Live Messenger (Microsoft, 2007) and the quoted definition does not exist anymore.

conversations, play games, and easily exchange pictures with

others. Also, MSN Video Conversation enables people to see and

talk to each other over the Internet, and the personalization features

such as Dynamic Display Pictures offer people creative ways to

build their own digital personality and join friends around the

block or world in a virtual playground. (n.p.)

I've included this lengthy quote to illustrate the language used by Microsoft to market their product. As in many other advertisements for ICT, Microsoft conveys the idea that it is easy to communicate, to exchange pictures and to build digital personalities.

Technologically, MSN enables simultaneous, multiple connections to others through a software window that pops open on the computer screen. The conversation window allows individuals to communicate with each other. Text is typed into the screen window and upon hitting the "enter" key is transmitted to the conversation partner. The following screen shot gives an example of such a window.
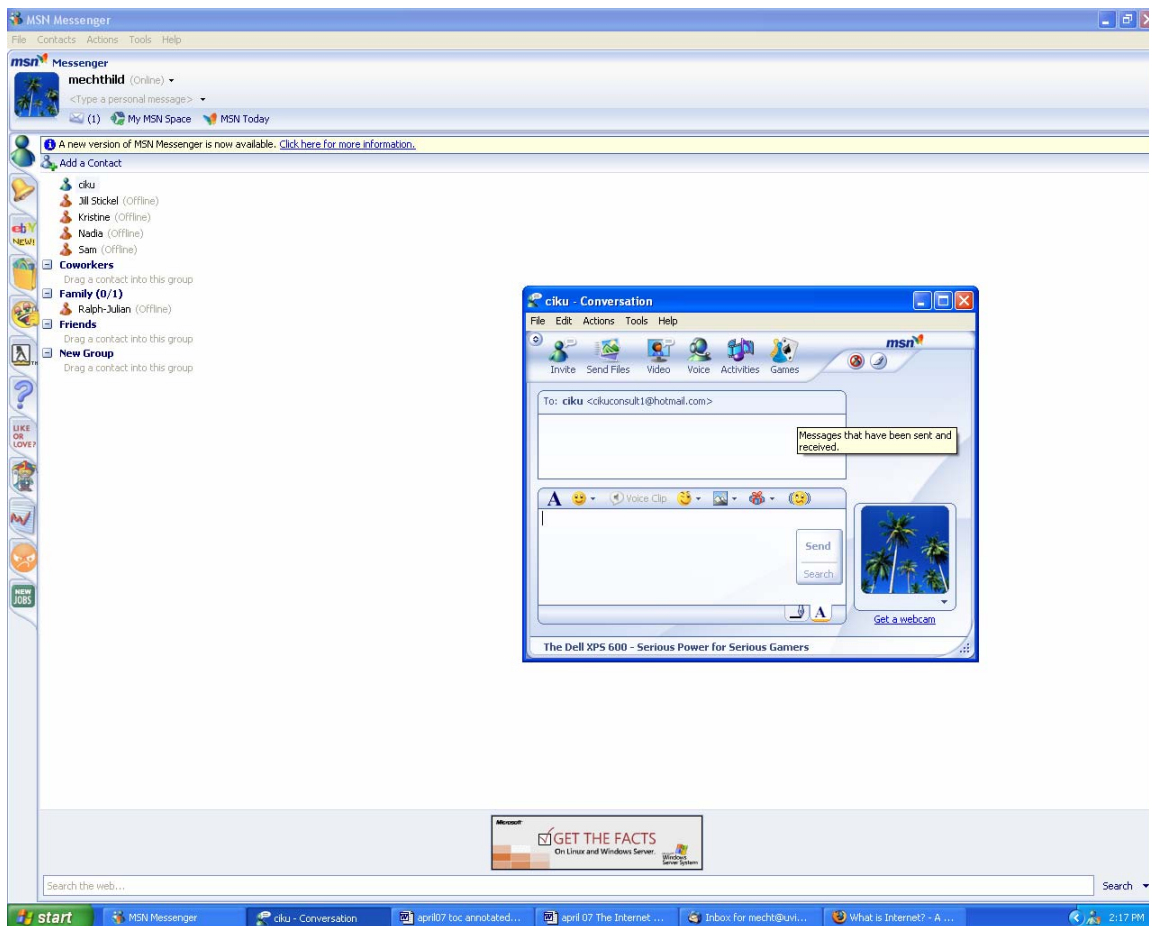
Illustration 5. MSN Window and Buddy List (2005)

The screenshot highlights two key features of the software: the buddy list and the conversation window. The buddy list, which in this case has six people listed, can be seen in the top left of the above window. This list is put together by the youth, most often encompassing friends, acquaintances and relatives. Young people in our conversations described having up to 200 people on their buddy list and engaging in multiple conversations at the same time.

The icon beside the individual's screen name is red when they are not connected and green when they are connected. Clicking on the icon will pull down a menu which gives the user options of connecting. They can, for example, choose to connect to the

other individual through an instant message, voice or by playing a game. A little sign appears for the user when a friend connects through MSN. The status of connectivity revealed by these icons is controlled by the user and can be set according to their preferences. For example, my status online can be set to away, busy, out to lunch or appear to be offline through a red icon. Individual messages can also display current information about the individual's whereabouts, a joke or brief messages. On the left-hand side, icons can be seen that could link to a kids help phone, jobs or other topics of interest. A log of conversations is kept by the program. The icons above are symbols of the type of conversation which will be initiated, e.g. video, chat or voice.

The conceptualization of easy use is initially mirrored in youth's perception of MSN in our interview. However, the personal and social challenges of using this communication software became visible with in-depth probing and they will be presented in Chapter XIII.

Weblog (Blog)

Wikipedia (2007h) defines a blog as "a website where entries are made in journal style and displayed in a reverse chronological order. Blogs often provide commentary or news on a particular subject, such as food, politics, or local news; some function as more personal online diaries. A typical blog combines text, images, and links to other blogs, web pages, and other media related to its topic. Most blogs are primarily textual although some focus on photographs (photoblog), videos (vlog), or audio (podcasting), and are part of a wider network of social media. A typical site frequently used by youth to design a blog is LiveJournal.[16]

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[16] See http://www.livejournal.com

Social Networking Site

In recent years, social networking sites, such as Friendster[17] and MySpace[18] have become popular among young people and are attracting more academic attention such as Boyd & Heer (2006). Whereas Friendster is linked primarily to college student use, MySpace was mentioned in our interviews. Wikipedia (2006f) defines MySpace as "a social networking website offering an interactive, user-submitted network of friends, personal profiles, blogs, groups, photos, music, and videos."

Blogs and Social Networking Sites take peer-to-peer connectivity a step further than MSN. Whereas MSN is still primarily used for text communication, blogs and social networking sites allow for easy and rich documentation of daily lives by making it easy to upload pictures, music and videos as well as facilitating connections in networks. Individuals can now present much more information to many asynchronously.

The following chapter presents a picture of how youth use ICT in their daily lives. The following section provides an overview of what activities Canadian youth engage in online and some of the factors relevant to use. I have paid specific attention to information relevant to youth aged 16-19 as this is the age range of youth interview participants in this study.

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[17] See http://www.friendster.com

[18] See http://www.myspace.com

Chapter IV - Youth's ICT Use

Online Activities

What do young people do online? Table 1 from the Young Canadian in a Wired

World study (2001; 2005) illustrates what activities youth engage in.

Table 1.

Respondents who engage in online activities "on an average school day."

Online Activity	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11
Talk to friends on IM	28	43	60	73	75	77	81	86
Download or listen to music	41	48	57	63	77	78	76	82
Use e-mail	33	52	61	70	74	74	72	78
Do homework using the Net	47	67	75	76	81	76	76	76
Work on a topic of personal interest	42	60	53	55	55	59	62	65
Play games on the Net	89	88	85	79	75	69	66	63
Get news, weather, sports	28	35	30	32	37	38	42	47
Download movies, TV shows	17	22	19	23	33	36	34	40
Shop or get product information	16	19	17	22	25	33	33	36
Visit chat rooms	15	23	20	21	21	24	22	25
Work on my own Web site	21	26	27	31	32	31	27	25
Blogging	14	11	8	15	14	19	18	17

Note. From Media Awareness Network (2005c, p.20), Respondents who engage in online activities "on an average school day" (Table 5).

Increase in students' regular online activities. Table 1 shows an increase from Grades 4 to 11 in the percentage of respondents who engage in online activities on a regular school day can be seen throughout all activities with the exception of game playing.[19]

Extension of youth activities from offline to online. Activities engaged in online include downloading and playing music, doing homework, getting information, shopping and blogging. What can be seen is that youth engage in traditionally offline activities, such as listening to music and chatting with friends, in online spaces as well. In its new release (Media Awareness Network, 2005a) the program coordinator finds that "the Net has become an integral part of young Canadians' social environment and a new forum for what are often normal developmental behaviours." (p.1)

Changes in choice and purpose of use. In 2001, 56% of young Canadians surveyed said that they used chat rooms. Among secondary school students, unmonitored chat rooms were most popular with 72% of respondents reporting that they often or sometimes visit these chat rooms. 39% of respondents reported enjoying chat rooms the most out of their online activities, 40% of respondents enjoyed instant messaging the most. (Media Awareness Network, 2001b). Although not directly comparable due to different research questions, Table 1 shows that only 20-25% of students from Grades 4-11 report regular use of chat rooms (Media Awareness Network, 2005c). This decreasing trend in the use of chat rooms can be partially related to the development and adoption of

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[19] The percentages used in this chapter are primarily taken from the Young Canadians in a Wired World (YCWW) study conducted by the Media Awareness Network. This study was conducted in two phases: Phase I was completed in 2001 and Phase II was completed in 2005.

instant messaging software. Lenhart, Madden, and Hitlin (2005) also describe increased

use and shifts in ICT use by youth:

> The number of teenagers using the Internet has grown 24% in the
>
> past four years and 87% of those between the ages of 12 and 17 are
>
> online. Compared to four years ago, teens' use of the Internet has
>
> intensified and broadened as they log on more often and do more
>
> things when they are online. … Not only has the number of users
>
> increased, but also the variety of technologies that teens use to
>
> support their communication, research, and entertainment desires
>
> has grown. These technologies enable a variety of methods and
>
> channels by which youth can communicate with one another as
>
> well as with their parents and other authorities. E-mail, once the
>
> cutting edge "killer app," is losing its privileged place among
>
> many teens as they express preferences for instant messaging (IM)
>
> and text messaging as ways to connect with their friends. (no page)

Media Awareness Network (2001c) data supports this. It reported that in 2001,

27% of respondents of 15-17 years old didn't use instant messaging at all, 13% used it

once or twice a month and 37% engaged daily in instant messaging (p.33). Media

Awareness network (2005c) shows that in 2005, 86% of Grade 11 youth engage daily in

instant messaging. Although email in 2005 is still used by 78% of Canadian Grade 11

students on a daily basis, youth report that the purposes of use have changed, e.g.,

whereas instant messaging is used to chat with friends, e-mail is now used primarily to

communicate with adults. These figures show how rapidly IM has become adopted and integrated into older teens' lives.

Gendered use. Online activities are linked to daily lives and gender affects which online activities are engaged in. The most noted difference between girls and boys can be seen in the area of gaming. Younger teens play games more often than older teens and boys play online games more frequently than girls. The Media Awareness Network (2005c) reports that in 2005, 85% of boys engaged in online gaming whereas 68% of girls engaged in online gaming (p.19).

Increase in computer and cell phone ownership. Media Awareness Network (2005c) survey results also show that respondents who have a connected computer for their own use spend approximately 25% more time online than kids who share a connected computer (p.24). Table 2 shows the percentage of respondents from Grades 4 to 11 that have personal electronic devices.

Table 2.

Electronic devices that kids have

Electronic device	I have one for my own personal use	I use one that other family members use too	I don't use this
MP3 player	41	13	47
Computer that has Internet	37	57	4
Cell Phone	23	45	32
Webcam	22	22	56
Computer that does not have Internet	12	14	74
PDA (Palm Pilot, Blackberry, etc.)	8	12	80
VOIP (Voice over Internet Protocol)	7	9	84
Pager	3	10	87

Note. From Media Awareness Network (2005c, p.17), Electronic devices that kids have.

37% of survey respondents of all ages have a computer for their personal use. 23% have their own cell phone. Approximately 57% of respondents share the computer with Internet access with other family members, and 45% of respondents share cell phones with family members; 4% of respondents do not use a computer with Internet; 32% of respondents do not use a cell phone.

It is important to note that Table 2 shows average numbers, hiding the substantial increase in personal possession from Grade 4 to Grade 11. Figure 2 of the Media Awareness Survey (2005c, p.16) presents that 20% of students in Grade 4 have their own Internet-connected computer rising to 51% of students in Grade 11; 6% of students in

Grade 4 have their own cell phone rising to 46% in Grade 11; 10% of students in Grade 4 have their own web cam rising to 31% of students in Grade 11.

Contextualized ownership. A further significant increase in ownership of a computer can be noted between Grades 4 and 11, rising from 25% to 40%, possibly relating to a transfer from elementary to high school. Lenhart et al. (2005) also note that having a driver's licence is a large factor in teens acquiring a cell phone. These findings connect technology use with other events in youth's lives.

Increase in communication channels. From the Internet, e-mail and chat rooms to MSN, blogs and Social Networking Sites, it can be observed how new technologically mediated forms of communication and interaction are quickly and continuously being developed and adopted by young people. Software and hardware developments have and will continue to diversify communication forms. These technologies are becoming increasingly mobile, portable, affordable and more closely connected to the individual. Table 3 presents a simplified representation of the adoption of specific ICT as relevant to youth's lives and this research process. Only those ICT that were mentioned in my interviews with youth were chosen to be represented. Highlighted here is the increase in communication channels available to youth from 2001 to 2006.

Table 3.

Increase in Communication Channels and ICT Used

ICT	2001	2002	2003	2004	2005	2006
E-mail						
Chat Rooms						
Instant Messaging						
Cell Phones						
Text Messaging						
Web Cams						
Social Net-working Sites						
Weblogs						

Note. The shading illustrates what ICT were commonly mentioned by youth in our interviews.

At the beginning of my research I was not able to predict how quickly new software developments would diffuse and how this diffusion and adoption would affect my research questions. After one of my presentations in the CHISEL group, a student asked me how I would deal with rapid technological changes. I responded that I would acknowledge the changes but was hoping that my findings on youth's ICT use would remain relevant regardless of technological developments. I have since realized that technological developments do change, not only what technologies are used but also how they are experienced. To understand more about the processes of technology development, adoption and diffusion it is helpful to consider Rogers' (2003) theory of the diffusion of innovations.

Innovation, Diffusion and Adoption of Technology

Rogers (2003) defines the process of "*diffusion* as the process in which (1) an *innovation* (2) is *communicated* through certain *channels* (3) over *time* (4) among the members of a *social system*. These elements can be seen in respect to the diffusion of the Internet, MSN software and cell phones. Rogers also points to five attributes of innovation that account for a large amount of variance in the rate of adoption of innovations: relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is the degree that an innovation is perceived as being better than the idea it supersedes" (p.229). Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters (p.240). Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use (p.257). Trialability is the degree to which an innovation may be experimented with on a limited basis (p.258). Observability is the degree to which the results of an innovation are visible to others (p.258). All of these attributes can be seen in the responses given by youth in the interviews and the attribute of compatibility is especially visible in youth's lives. For example, in the contexts of parent-child relations, the cell phone is seen as compatible for children and parents. It enables parents to contact their child in various locations and the adolescent to experience a certain sense of spontaneity in managing life's complexities.

Technological adoption provides one perspective that links technology to social processes relevant to youth's use of ICT. In the following chapter, I will present further perspectives that locate youth's ICT use within social and technological contexts.

Chapter V - Family, Societal, Technological Contexts

I chose the following three perspectives to make visible how family, societal and technological structures evolve over time and to locate youth's ICT use in 2005 temporally. In this chapter, the technological or the social is foregrounded to emphasize specific points, yet at all times technological and social processes remain linked. The terms technosocial or socialtechno are further used to illustrate the connections and specific focus.

Changing Family Contexts

Livingstone (2002) states that "the contexts of childhood and youth shape the meanings, uses and impacts of media just as these, in turn, contribute to shaping the experience of childhood and youth" (p.11). Cultural and technological aspects need to be linked when understanding media use.

Family media use. Livingstone describes the change in family media use from the introduction of the television in the 1950s to the existence of a media-rich home at the end of the 20th century. She describes media use in the 1950's as a family event. Family members watched the same TV show together in a communal space, the introduction of the television having afforded new temporal and spatial rhythms within the family context. In comparison, she describes 1990s media use as much more individualized, with family members frequently watching their own shows in their personal bedrooms. In addition, multiple media can be found in family members' bedrooms, often including a computer and mobile phone.

Livingstone further presents that, over the past 50 years, children and youth have been increasingly excluded from public places and the perception has increased that children are not safe outside of the home. In parallel, an increase in value of the home "as the centre of a screen entertainment focused, privatized and individualized leisure culture" (p.159) has occurred. The outside world is increasingly brought into the house and changes family relations. In 2005, this can be seen in the contexts of MSN and Webcam use, whereby youth's peers are able to be present in the home without physically being there. Colin, a focus group participant, shared that his mother expresses strong discomfort when being visible in her own home to his friends through his webcam.

Simultaneously, cultural transitions and resistance to these transitions within the family are influenced by parental values, e.g., "going out is risky, while staying home is safe, being with others is healthy while being alone means being isolated or antisocial, organized time is time well spent while free time is easily wasted, and so forth" (Livingstone, 2002, p.159). Livingstone suggests that the 1950's ideals of a core family unit still live on and affect parents' parenting ideals and their ideals of what a happy childhood entails. However, through cultural and technological changes parents' "frames of reference derived from their own experience are invalidated, and parents become involved in a process of negotiating with their children over mutual identities, rights and responsibilities" (p.179).

Individualized lifestyles. As individual family members have access to their own media devices, family interactions change as well. Whereas one family household TV set requires some form of negotiation of family members, multiple, privately located sets afford individuals to choose their own program with less negotiation required. Whereas

this can be experienced positively e.g., decreasing arguments over what program to watch or enabling a parent time on their own , it can also be experienced negatively as requiring less personal interaction and potentially isolating. Livingstone (2002) illustrates how media shifts the focus of interaction.

> The growth of a market for personal ownership of television sets, videos and computers is multiply determined. Crucially, children and young people value using the media alone, despite adult worries about 'isolation'. Yet this privatization does not necessarily mean that social contacts are being replaced with social isolation, for media can offer new means for social interaction, albeit often peer-rather than family-focused interaction. (p.158)

She raises the point that media use can be solitary or social. The notion of being alone is often considered a problem by parents whereas being social is constructed as favourable. In 2005, the tension among Internet use as being physically isolating and yet electronically social can be seen in many settings, such as youth's use of MSN and academic work practices. Yet what seems accepted in work environments, the individual who sits in their office working at the computer, seems to be conceptualized more ambiguously in contexts of children's and adolescent's use and behaviours.

This is interesting to note. If I understand children's and youth's development as learning to be part of society, then they learn and imitate their behaviours from adults who, in this case, would be spending much time engaged in screen-mediated activities. Yet in my parental environment, parents still value children's creative play, unstructured outside play and imaginary play. Is this an issue of cognitive development and when is it

appropriate to introduce "the computer", or specific computer-mediated activities

(Wallis, 2006)? Are parents concerned about limiting children's imagination? Is limiting

use of children's computer use a partial critique of adult work practices and what we

value?

Experience gaps. Livingstone (2002) offers the gap in experience among children

and adults as one explanation.

> As the media environment changes, parents balance their anxious
>
> sense of decline in the quality of childhood against the unknown
>
> but significant promise of the new information and communication
>
> technologies, and within this they chart their course for parenting.
>
> Children, on the other hand, are relatively unburdened by this
>
> sense of decline, by ideals of proper family life, of the moral
>
> superiority of reading or talking over viewing or surfing. For these
>
> and other reasons, their views do not always coincide. (p.23)

Not being able to relate to young people's experiences from parents' personal

history, is an important point to recognize. Although this may have been the case in

previous generations as well, the shift from print to digital media may be experienced

with more anxiety because it is seen as having a larger, possibly dangerous, impact on

adolescents' lives. The renegotiation of public and private boundaries, living together

with individualized lifestyles and what it means within these to provide for children's and

adolescents' best interest are currently emerging and being debated.[20] "Doing family"

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[20] This discussion in the media has primarily been characterized by fear and hype, polarizing positive and negative effects of ICT use. In times of transition, one way to assist assessment and decision-making in regards to ICT use, risks and benefits, is to understand more of the dynamics at play from social,

with individualized lifestyles can be understood within the contexts of technological development as well as the movement from group-based to network-based societies.

Family structures and parent-child relations are embedded in changing societal structures. In the following section, Wellman et al. (2003) present current shifts from a group-based to a networked societal structure.

Changing Societal Contexts

Wellman et al. (2003) describe current communities and societies as "changing towards networked societies where boundaries are more permeable, interactions are with diverse others, linkages switch between multiple networks, and hierarchies are flatter and more recursive" (p.17). This also means that individuals do not primarily relate to one group anymore, but cycle through relations with many others from many different groups.

> Changes in the nature of computer-mediated communication both
> reflect and foster the development of networked individualism in
> networked societies. Internet and mobile phone connectivity is to
> personas and not to jacked-in telephones that ring in a fixed place
> for anyone in the room or house to pick up. The developing
> personalization, wireless portability, and ubiquitous connectivity of
> the Internet all facilitate networked individualism as the basis of
> community. Because connections are to people and not to places,

---

technological and user perspectives, people who have been immersed in these settings with or without experiences with traditional media. Gaining insights from people who have not engaged with ICT or are skeptical users may result in understanding more about what is lost, relationally and content-wise, through introduction of new ICT.

the technology affords shifting of work and community ties from linking people-in-places to linking people at any place. (Wellman et al., 2003, p.17)

Communities are now comprised of networks that are "diffuse, sparsely knit, with vague, overlapping, social and spatial boundaries" (p.17). In Table 4, Wellman (2001) identify different forms of communities and connections associated with different types of societal organization:

Table 4.

Comparing Group-Based and Networked Societies

Group-Based Society	Networked Society
United Family	Serial Marriage, Mixed Custody
Shared Community	Multiple, Partial Personal Nets
Neighbourhoods	Dispersed Networks
Face-to-Face	Computer-mediated Communication
Spaces	Public Private Spaces
Focused Work Unit	Networked Organizations
Job in a Company	Career in a Profession
Autarky	Outsourcing
Office, factory	Airplane, Internet, Cell phone
Ascription	Achievement
Hierarchies	Matrix Management
Conglomerates	Virtual Organizations / Alliances
Cold War Blocs	Fluid, Transitory Alliances

Note. From Wellman (2001, n.p.). Comparing Group-based and Networked Societies (Table 1).

In adolescent contexts of ICT use, partial personal nets are visible and their participation in dispersed networks commonplace. For example, youth switch among multiple, partial personal nets when they switch between family communications and MSN-mediated peer conversations at home. Youth are participants in dispersed networks as they interact with people globally in addition to their local peer group. They

frequently engage in computer-mediated communication. Both types of organization are visible in youth's lives. Youth's position as an individual in these networks can be understood through Wellman's concept of "networked individualism."

Wellman et al. (2003) also suggest that "the technological development of computer networks and the societal flourishing of social networks are affording the rise of networked individualism in a positive feedback loop." The authors see individuals' flexibility of geographical location and belonging to less bounded social networks as creating demand for ICT that afford collaboration within these conditions, as well as the rapid developments of ICT encouraging the transition from group-based societies to networked societies. In youth contexts, one participant described using the Internet to stay connected to a parent in a different country. This is an example of how ICT are used to maintain previously locally bounded ties. Youth's use of cell phones is an example of the second element of the feedback loop, in which youth use the cell phone in order to extend their boundaries further beyond parents' direct supervision.

Whereas Wellman et al. (2003) emphasize occurring societal changes linked to technological innovations, de Kerckhove (2002) focuses on making visible how a technological medium affects social and psychological processes.

Changing Technological Contexts

McLuhan (1964/1997) discusses the connections among technological, social and psychological sensibilities in the following way:

> In a culture like ours, long accustomed to splitting and dividing all
>
> things as a means of control, it is sometimes a bit of a shock to be
>
> reminded that, in operational and practical fact, the medium is the

message. This is merely to say that the personal and social

consequences of any medium – that is, of any extension of

ourselves – results from the new scale that is introduced into our

affairs by each extension of ourselves, or by any new technology.

(p.7)

He argues that the introduction of every new technology changes social structures

and the psychological sensibilities of humans. These technological effects on human

beings alter "sense ratios or patterns of perception steadily and without any resistance"

(p.18). Although McLuhan predated the Internet, his observations are based on

characteristics of electric media in his time such as television, and useful in

understanding how subtly technologies affect human ways of thinking, feeling and being.

De Kerckhove and Viseu (2003) take McLuhan's ideas into the age of the Internet

and present a comparison of the main features of knowledge visible in two different

media types: print (text) and electronic media (hypertext). The different forms of social

and cognitive processes associated with the specific type of media are shown in Table 5.

The highlighted bars are the processes most relevant to this dissertation.

Table 5.

Main Features of Knowledge associated with Text and Hypertext

Text	Hypertext
Frontality / Horizontality (Page/Stage)	Total surround / Immersion (Screen/VR)
Linearity	Random access
Causality	Self-organization / Serendipity
Sequentiality	Simultaneity
Fragmentation	Integration
Centralization	Decentralization
Rationality	Emergence
Abstraction	Simulation
Analysis	Pattern recognition
Representation	Participation / Interactivity
Historicity	All-at-onceness

Note. From de Kerckhove & Viseu. (2003, n.p.). From memory societies to knowledge societies. The cognitive dimensions of digitization.

The three factors most visible in this study are: simultaneity, emergence and all-at-onceness. For example, in youth's contexts of MSN use, sequential and simultaneous communication co-exist when youth have multiple text conversations at the same time. Instead of having sequential, temporally linear, phone conversations with one other person, youth hold several conversations simultaneously through multiple open screen windows on different topics with different friends, possibly being on the phone at the same time. At the same time the buddy list can be seen as representing a form of "all-at-onceness," in which youth's past and present peer relations can be seen all at once.

De Kerckhove and Viseu (2003), also point out how forms of thinking are different, depending on whether they are performed in text or hypertext conditions. They suggest that internal processes are becoming externalized, for example, people in print media contexts speak silently and refer to it as thinking and people in electric societies

write orally. Access to memory in literate minds, they state, is private. However, in hypertextual conditions, they define thinking as the process of being able to be connected to everybody else's memories and share the existing knowledge capital.[21]

MSN, and even more so blogs and social networking sites, can be seen as technologies that more clearly afford ways of thinking as de Kerckhove and Viseu (2003) define for certain types of media. In real time, people are able to access the thinking of others and contribute to an overall process in interactive forms. Both forms of thinking are present in current Canadian society as electric media are just beginning to be more widely adopted. Many Canadian youth having grown up using electric media frequently are reflecting ways of thinking that de Kerckhove and Neveu describe. Whereas it is important to recognize larger technological transformations taking place to understand youth's ICT use, the site of youth's ICT use is also useful in making visible the theoretical claims made by de Kerckhove and Neveu.

As seen above, youth's use of ICT is linked within larger contexts of family, societal and technological developments. In the following literature review, I present research perspectives specific to understanding youth's use of ICT.

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[21] They also contextualize their statements as nuanced by political and economic situations.

Chapter VI - Research Perspectives

1998-2005: From Great Risk and Liberation to a Balanced Perspective

Initial research on youth's use of the Internet focused on quantitatively exploring their activities online and was designed to understand how young people use the Internet. Lenhart and Rainie (2001) illustrate with quantitative data how the Internet had a pivotal role in the lives of American teenagers and also pointed out that many parents had concerns over how Internet use impacted their children. The Media Awareness Network (2001a) also provided data that found differences in youth's and parents' understanding of what Internet use was all about. For example, parents said that they knew where their kids were going online and kids said that their parents didn't know; kids said that the Internet's biggest benefit was socializing and communicating, parents believed that the Internet's biggest benefit was educational; and parents thought that their kids used the Internet for homework, while kids said that they like to use the Internet for a wide variety of activities.

The Media Awareness Network (2005) no longer highlighted these different understandings in their findings. Instead of emphasizing differences among parent and child perceptions, researchers highlight more specific issues of contextualized Internet use by children and adolescents. For example, they found that (a) parental involvement has increased over the past four years and Internet rules set by parents make a difference in how youth use the Internet, (b) mainstream websites expose young people to inappropriate content and risky situations, (c) the Internet is youth's main choice for schoolwork but students want better research skills, (d) for some young people the Net is a vehicle for bullying and sexual harassment, (e) young people are aware of privacy

issues but often give out personal information online and (f) kids' favourite online spaces are commercialized environments.

The Media Awareness Network (2001s) notes that online safety is the biggest concern at home, Media Awareness Network (2005a) points out that youth find their online experiences generally positive and rewarding, online safety in general is not highlighted anymore. Livingstone, Bober and Helsper (2005) in their final report of the UK Children Go Online project also recommend a balanced approach to youth's Internet use that makes use of Internet-mediated opportunities while maintaining safety and providing media literacy skills to do so. I interpret the shift in interpretations of Media Awareness Network data from 2001 to 2005 as a result of an increase in Internet use and greater understanding of its use, as well as being reflective of a more general research shift toward understanding Internet use as generally positive, complex and contextualized in socio-cultural-political-psychological-economic contexts.

The following research review encompasses a variety of lenses through which research with youth and young people has been interpreted. I organize the research review according to these interpretive lenses in order to make the reader aware of the many different perspectives that shape a holistic understanding of youth's ICT use.

Technology and Adolescence

The "Net Generation." I will highlight Don Tapscott's (1998) *Growing Up Digital. The Rise of the Net Generation* as the first book to specifically explore young people's experiences online. In his work, Tapscott emphasized youth's ability to use the Internet in positive and empowering ways. He described how young people experienced different forms of communication, for example, by being able to transcend age

boundaries online. He put forward 10 themes of Net Generation culture: (a) fierce

independence, (b) emotional and intellectual openness, (c) inclusion, (d) free expression

and strong views, (e) innovation, (f) preoccupation with maturity, (g) investigation, (h)

immediacy, (i) sensitivity to corporate interest and (j) authentication and trust. In his

work the affordances of the Internet, meaning the ways of interaction and communication

that the Internet enabled, were positioned as the primary factors in determining youth's

use and experience of the Internet.

Technologically, socially and culturally located individuals. Thurlow and McKay

(2003) question the applicability of the term "net generation." They raise the issue that

use of the Internet, Web and mobile phones world wide remains the privilege of a small

number of people and point to the existence of a large divide between the "media rich"

and the "media poor." [22] The authors position adolescent communication technology use

in contexts, stating that "the picture is complex and changing, with different technologies,

different young people, different patterns of use – especially in terms of the variable

uptake of different technologies across the adolescent age range and from country to

country" (p.96).

In 2006, Buckingham (2006) also questions the existence of the digital generation

and presents evidence that technological changes affect everybody, young and old alike,

although differences among defined groups exist. He argues that

> the technologically empowered cyberkids of the popular
>
> imagination may indeed exist. But even if they do, they are in a

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[22] The term media here seems to be focused on the mentioned technologies, disregarding other forms of media such as books, television and magazines.

minority, and they are untypical of young people in general. One

could even argue that, for most young people, technology is a

relatively marginal concern. Very few are interested in technology

in its own right, and most are simply concerned about what they

can use it for. (p.11)

He suggests that the discourse of the digital generation is primarily a type of

marketing rhetoric whose aim it is not to provide an accurate description of who

adolescents are, but to suggest to the public who it is that adolescents should be or need

to become. He further argues that although technological developments present new risks

and opportunities for children, "they can only be adequately understood in the light of

other changes – for example, in the political economy of children's culture, the

sociocultural policies and practices that regulate and define childhood, and the everyday

social realities of children's lives" (p.9).

Thurlow and McKay (2003) as well as Buckingham (2006) are examples of

current research that renders Tapscott's characterization of the Net Generation as overly

simplistic, optimistic and technologically deterministic. In hindsight, Tapscott's work

can be seen as an example of the focus on the positive, liberating and empowering

opportunities that are acclaimed when a new technology, such as the Internet, is

introduced into society.

Technology, Youth, Health and Safety

Dependency. McMillan and Morrison (2006) explore through autobiographical

essays how growing up with the Internet and related technologies influenced American

communication students' lives. The authors frame a major finding as "the duality of

feelings that interactive media technologies evoke for young adults." For example the duality of active and passive is seen, when on the one side, a participant expresses being active online while searching for information, while another participant describes configuring their portal in order to passively receive information. They suggest that "these yin and yang attitudes toward the media technologies in their lives are manifest within a context of dependency" (p.88). For example, the authors frame an individuals' response that they "did not see what people did before the Internet was invented" (p.87) or reports of fear of being excluded from a community as being dependent on the technology. The notion of dependency is used to conceptualize the "deep personal need that participants feel for the Internet" (p.87).

Social isolation, contextual use. Gross, Juvonen and Gable (2002), in their study of 130 Grade 7 students from a middle-class school in California, found that time spent online was not associated with their daily well-being. Their findings suggest that there is an association between the closeness of instant message communication partners and daily anxiety and loneliness in school. In continuing research, Gross (2004) explores three common assumptions in the field of youth's Internet use: that gender predicts usage, that Internet use causes isolation and depression and that adolescents use the Internet for anonymous identity experimentation. She again finds no associations between Internet use and adolescent well-being. As a general finding in regard to use, she states that "on average, they described their online social interaction as (1) occurring in private social settings such as e-mail and instant messages, (2) with friends who are also part of their daily, offline lives, and (3) devoted to fairly ordinary yet intimate topics (e.g., friends, gossip)" (p.646). However, Gross also points out complexity and contextualization of

relations among gender, identity and Internet use and that relational findings are very dependent on how research questions are asked. An example of this complexity is that her findings show that "among boys and girls alike, participants reported devoting most of their online time to private communication" (p.641). Simultaneously a minority of users are heavy gamers. Within this minority group 12 users were boys and two users were girls. Whereas the former finding contradicts perceptions that girls use the Internet more than boys for private communication, her latter finding supports the perception that boys are more frequently heavy gamers than girls.

In her study, she also finds that "the proportion of people met online was inversely proportional to the amount of time youth reported spending in each online communication domain" (p.642). Her findings imply that when youth report spending more time in instant messaging environments than in electronic chat rooms, they report meeting fewer strangers.

Technology, Youth, and Policy

ICT use and policy implications. Shade, Porter and Sanchez (2005) present findings from semi-structured interviews with 35 children and youth within the context of their project: Children, Young People, and New Media in the Home.[23] The Internet is found to be integrated in young people's daily lives and a "commonplace communication tool, one that coexists alongside other communication devices in their homes" (p.520). Young people use it for entertainment (e.g. music downloading, game playing) and information purposes. Most young people do not have an e-mail account but use instant messaging.

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[23] See http://artsandscience.concordia.ca/comm/shade/index.html

The authors position youth as active technology users who are often the experts in their homes. They are identified as primarily technology consumers who are not very concerned with privacy issues, pornography, commercialization of online spaces or legal issues. For example, young people's knowledge of cookies and data mining practices are limited and commercialization of game sites or product placements in games is taken for granted. Shade et al. also find that many users do not know how to verify online information. Therefore the authors stress the importance of privacy awareness becoming an important element of teaching web literacy. In regard to Canadian policy creation, the authors advocate taking into account young people's attitudes and perceptions toward Internet practices and recognizing that they "have become a viable and integral online target market." As well as teaching media literacy, it is important to protect them from misuse of their personal information.

Technology, Online and Offline Relations

Social networks. Byrant, Sanders-Jackson and Smallwood (2006) explore the use of socially interactive technologies (SITs) and their relationship to offline social networks through data from 40 seventh graders. Data was analyzed statistically and with the use of network analysis software. Their results show that there was little overlap between SIT-facilitated and offline social networks; adolescents in the study were not creating more ties using SITs, nor were they creating weaker SIT-based ties. They found that socially isolated adolescents were less likely than other adolescents to use SITs. The authors express "that many [youth] consciously use the Internet and SITs to influence their peer networks" (p.3). For example, 48% say that they use SITs for improving relationships. The authors point to the need for further research to address the relationship between

offline and online friendships. They suggest that "if there is high correlation between offline friendship networks and online SIT networks, we can assume that the online ties are mapping onto and strengthening the offline ties. If, however, there is not a strong correlation between the networks, then the adolescents are looking outside their friendship network for communication partners and possibly social support" (p.5).

Youth, Technology, and Cultural Practices

    Cultural practices of cell phone use in Finland. Kasesniemi and Rautiainen (2002) conducted a study on the use of text messaging among Finnish adolescents aged 13-18 and how use of mobile communication devices shapes existing cultural practice among youth. The authors show how Finnish teenagers have integrated short messaging systems (SMS)[24] practices into their daily lives and how SMSing serves various communicative purposes with friends and family members. Whereas communication with family members is primarily organizational, e.g. to organize a pickup after school, communication with peers includes many topics and emotions. Kasesniemi and Rautiainen also describe the characteristics of the text messaging culture that has formed among youth, e.g., collecting messages, circulating chain messages and writing and reading collectively.

    Text message style and language "divide into a variety of styles depending on their content and form" (p.185). The authors see gender differences in style and content of messages, e.g. boys typically write shorter messages about what they have done

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[24] In my experience, the term SMS, synonymous with instant messaging, is often used in European contexts and in regard to sending instant messages via cell phone.

whereas girls' messages tend to be longer, their language nuanced and meandering and their messages reflecting on incidents and their effect.

The authors' conclusions suggest that adolescents use their SMS practices to "manage their unique position between childhood and adulthood" (p.189). They point out how mobile information technology affords these practices which in turn influence teenage communication and relational practices, as well as shaping further technological developments.

Portability, mobility, and technosocial practices. Ito and Okabe (2005) emphasize the cultural construction of social practices and use the Japanese word *keitai*[25] to represent the use of mobile communication devices in Japan. In their ethnographic work, they present "examples of technosocial situations that span a range of physical locations but still retain a coherent sense of location, social expectation, and role definition" (p.260). For example, in the analysis of youth's *keitai* use in the context of a dinner meeting, they describe the pre- and post-contact expansion of shared co-presences, e.g. participants share when they will arrive at a meeting as well as thank people afterwards for the nice evening. Instead of interpreting *keitai* as taking away from meetings, the authors show how the personal meeting can be augmented through the technologically mediated co-presence of others. They "propose the term 'technosocial situations' as a way of incorporating the insights of theories of practice and social interaction into a framework that takes into account technology-mediated social orders" (p.259). The authors believe that it is essential to "remain attentive to the local particulars of setting,

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[25] *Keitai* means "roughly translated 'something you carry with you.' … A *keitai* is not so much about a new technical capability or freedom of motion but about a snug and intimate technosocial tethering, a personal device supporting communications that are a constant, lightweight, and mundane presence in everyday life." (Ito and Okabe, 2005, p.1)

context, and situation in the face of these translocal flows if we are to avoid a technical

determinist argument that these technologies necessarily lead to a blurring of spatial and

social boundaries" (p.260).

Selective sociality. Matsuda (2005) describes how over time Japanese society has

become more individualistic and introduces the notion of personal choice as a factor in

family relations as well as more general interpersonal relations. She introduces the term

"selective sociality" in order to describe how youth navigate their online and offline

social networks within contexts of Japanese mobile phone text messaging.

Constant contact. Clark (2005) analyses her interviews with teenagers about their

use of ICT and finds that "control over one's environment therefore emerges as a central

theme in this analysis of teen usage of new media, a control that is negotiated through,

and within the context of constant contact with one's peers" (p.216). She points out that

trust is being developed in online conversations and that "being accessible to one's peers

thus becomes a central component to being a part of a network built on trust, a network

that is cultivated and developed and that simultaneously serves as an expression of one's

status relative to one's peers" (p.217). She suggests that within environments of ICT use

"teens must learn to negotiate personal privacy issues such as when to elect to not answer

instant messages, text messages, and e-mails, how to respond when your own

communication with others goes unanswered, and how to negotiate various

transgressions of online friendship norms" (p.218). She makes a strong case for how

"constant contact" is frequently experienced as liberating and empowering during

adolescence yet may become restricting and alienating later in life.

Youth, Technology, and Identity

Motivations of identity exploration. Valkenburg, Schouten, and Peter (2005) investigated 9-18 year olds' engagement in identity experimentation through chat and instant messaging. Their results indicate that 9-12 year olds (72%) reported experimenting with their identity significantly more frequently than 13-14 year olds (53%) and 15-18 year olds (28%), revealing that early adolescents experiment with their identities more often than older adolescents and use techniques that were similar to gendered stereotypes in offline spaces, e.g. girls presented themselves as more beautiful and boys presented themselves as more macho. They also found that "among younger adolescents, the extroverts were more likely to present themselves as older and flirtatious; among older adolescents, the introverts were more likely to present themselves as older and flirtatious" (p.397). The researchers also explored motivations of internet-based identity experiments and found that

> the most important motive to engage in internet-based identity
>
> experiments was self-exploration (i.e. to explore how others react),
>
> followed by social compensation (i.e. to overcome shyness) and
>
> social facilitation (i.e. to facilitate relationship-formation). The
>
> motive to engage in internet-based identity experiments for self-
>
> exploration was predicted only by gender. (p.397)

In regard to experimentation for the purpose of social compensation, they found that girls and introverts tended to do so more frequently than boys and extroverts. Their interpretations of these results place their findings in the contexts of adolescent developments of identity, self-esteem and peer

relationships and the researchers regard them as in accordance with traditional social theories. For example, girls are more likely to lose self-esteem in adolescence and therefore may be more likely to compensate online.

Negotiated and constructed identities. Thiel (2005) researched girls' negotiation and construction of identity through IM use. She specifically focuses on the cultural narratives and representations that are used and how these practices contribute to the construction of gender identity in adolescent girls. She presents five themes emergent from her interview data that capture girls' narratives of IM use and conceptualizations:

1. IM is a space that is free from adult supervision and interference;

2. It is a means of constructing social status among peers;

3. IM is a technology that alternately allows adolescents to experiment with sexuality and gives them a more "normalized" space in which they can communicate with the opposite sex;[26]

4. IM functions as a diary or journal in many ways and often seems to be the prime space for working through identity issues, such as religious conviction and sexuality;

5. and despite all the empowerment that might be found through online communication, the discourses in IM are largely patriarchal, and often the medium is yet another avenue for exclusion" (p.188).

Her work emphasizes that IM-mediated interactions present locations of identity construction that contribute to girls' negotiation of identities. Her conclusions suggest that identities may in the future be primarily constructed in online realms. She positions

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[26] Various sexual communities are represented online.

young women as experiencing agency within online spaces that primarily remain structured through dominant cultural discourses of gender and power.

Construction of girls' cell phone use. Campbell (2006) researched girls' use of cell phones, emphasizing the discourses used by teenage girls, their parents and the media (phone and cell phone advertisements) in regard to cellular phone use. She finds that girls' discourse is centred on self-determination and sociability, parents' discourse is centred on safety and danger and media discourse highlights image and independence. Drawing on Foucault, she suggests that "the cellular phone becomes a part of techniques and practices by which the teenage girl shapes her identity" (p.204). Campbell also introduces the contradiction within girls of a sense of independence from and surveillance by parents when they carry their cell phone. She identifies practices of resistance of control, e.g. through turning the cell phone off or giving false information. However, the cell phone is carried, and as such can become an object that encourages self-monitoring of activities. Similar to Thiel's study, she deconstructs the notion of a neutral technologically mediated space. For example, the notion of a dangerous external world for girls has been internalized by parents and girls. The cell phone is used to improve safety and to extend parents' power into spaces out of the home.

Extensible identities. Valentine and Holloway (2002) also critique the discrete separation of real and virtual spaces and the resulting construction of cyberkids, which implies disconnectedness from offline lives. Their research work is informed by the perspective that children's online and offline environments, and the objects that make up their material surroundings are mutually constituted. Their study of young people's ICT use is based on the use of the Internet-connected PC. In regard to the technologies used,

the authors suggest that these do not have "inherent properties" but are instead conceptualized as a different sort of tool for different groups of children within their individual communities of practice.

In their work they illustrate how "the extensibility afforded by ICT enables children to reconfigure their social relationships and identities in on-line spaces" (p.316) and how these reconfigurations are simultaneously strongly connected to their offline identities. The authors identify four processes which connect children's (11-16 year olds) online identities to their offline worlds: "(1) through direct (re) presentations of their off-line identities and activities; (2) through the production of alternative identities contingent upon their off-line identities; (3) through the reproduction on-line of off-line class and gender inequalities; and (4) through the ways in which everyday material realities limit the scope of their on-line activities" (p.316).

Emergent, embodied identities. My own research (Maczewski, 1999; 2002) highlighted positive aspects of youth's experiences in order to present an alternative perspective to the predominantly negative and fear-based rhetoric of the Internet at the time. Youth participants of the study expressed great enthusiasm for online participation and interactions. Located in the technological parameters of the Internet and online spaces at the time (e.g. anonymity in chat rooms), it became visible that youth could explore themselves online through activities and relationships that were not available in their onground environments. Youth did not separate their online and offline interactions as real and virtual, but considered both interactions as part of their embodied real life and their real self. They moved fluently among their multiple experienced identities and considered their online interactions as having profound and primarily positive influences

on their identities. In my work, only glimpses of their onground contexts were heard, e.g. being a person with a disability. I could make no firm connections between onground contexts and youth's experiences online. In 1999, I argued that youth's experiences online and experiences of self were "cycled through" (Turkle, 1995) and youth's experiences of self needed to be conceptualized as embodied and located at the intersection of online and offline spaces.

What remains invisible?

What can be seen in the reviewed literature are diverse understandings of youth's use of ICT in their daily lives, e.g. youth's practices of ICT use in the home, new cultural practices of youth through ICT use and ICT use leading to extended practices of identity exploration and identity construction. Reviewed literature articulates the many ways in which ICT *use* influences social and cultural practices. Although it is frequently stated that the technological and social are mutually constituted, it appears to me that this is based on the primary conceptualization of technology as a tool. How humans *use* the technology shapes the further developments of the technologies and *consequently* further technological developments shape humans use of the technology. What is less visible, except in the work of Ito and Okabe (2005), are the forms in which technological features and affordances, for example, transmission speed and memory capabilities, influence social and psychological processes not only through use but through the medium itself. Based on McLuhan, self, social processes and technology are seen as inextricably linked (Benedetti and de Hart, 1997).

Howard (2004) presents a similar perspective of new media and society. He talks about the use of communication tools and at the same time sees them as embedded in personal lives. He sees that

> communication technologies became deeply embedded in personal
> lives very quickly, mediating our interactions with other people
> and the way in which we learn about our world. Understanding
> society online requires that we study media embeddedness – how
> new communication tools are embedded in our lives and how our
> lives are embedded in new media. (p.2)

He argues that in order to understand interactions between humans and technology, the boundaries of human and technology as well as networks need to be explored.

This dissertation takes Howard's notion of media embeddedness in daily lives as a departure point. It contributes to the field of youth's use of ICT by exploring how frequent use of Internet and cell phones matter to, are experienced by and are conceptualized by six youth living in Victoria, BC. How ICT use matters to youth and how mattering can be located within psycho-social processes of adolescent development contribute to understanding youth's use of Internet and Cell phones.

I have not found literature on youth's in-depth accounts of emotional experiences of Internet use. By exploring emotional experiences of use and conceptualizations of self-ICT relations with youth, it becomes visible how contradicting emotions appear simultaneously while engaged in the same activity. Interpretation reveals how differently

ICT are embedded in relational processes and how youth negotiate them in online and offline relational networks.

Exploration of self-ICT relations builds on my previous work of how online and offline selves are negotiated when they are extended into online spaces. Youth talk about their diverse relations with ICT in their daily lives. Interpretation of their comments indicates several layers of self-ICT conceptualizations from ICT as tool to ICT as indivisible from self.

I take Howard's argument for contextualization and networked understandings into account by situating youth and their use of ICT as nexus among a network of technological, adolescent and societal developments. Within this dissertation I locate youth as individuals with agency in their ICT use as well as their ICT use as emergent from within online and offline technological and relational networks. I will present and argue for a contextualized, negotiated, networked and emergent understanding of youth's ICT use. Before presenting a networked perspective, I describe how I conducted the research.

Chapter VII - Research Methodology

Temporal Research Process

The temporal location of this study between 2001 and 2006 is important as it included significant technological, theoretical and experiential developments of ICT that shifted research questions and influenced methodological decisions. The first part of the research process was characterized by establishing research sites and connections in 2001. The second part was characterized by the defense of candidacy papers, acceptance of the research proposal and initial research focus groups in 2004. The third part began with a revision of the research proposal and adaptation of research methods to changed socio-technological contexts at the end of 2005. Interviews with youth were also held in late 2005. In 2006 data analysis and writing of the dissertation concluded the third part. The research process was interrupted through two maternity leaves.

Grounding in Qualitative Research

I chose a qualitative research approach for this inquiry, as it was most suited to exploring new or little understood phenomena (Creswell, 2003). I further was interested in understanding youth's perspectives of ICT use and how Internet and Cell Phone use mattered to them. A defining element of qualitative researchers is that they "study things in their natural settings, attempting to make sense of or interpret phenomenon in terms of the meanings people bring to them" (Denzin & Lincoln, 1998, p.3). The third element influencing my choice of research approach was my interest in advocacy for youth as individuals with agency within their Internet use. Creswell (2003) states that

a qualitative approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences, meanings socially and historically constructed, with an intent of developing a theory or pattern) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative, or change oriented) or both. (p.18)

An advocacy perspective allows me to actively resist aspects of technological determinism that portray youth as victims of the Internet.

For my research approach to be congruent with my epistemological position considering knowledge as emergent from networks, my research approach also needed to allow for an emergent process. Oberg (2003) introduced the notion of congruency of research topic, researcher and methodology, meaning that the connections among them and the emergent findings are important for engaging in qualitative inquiries. She described how writing and reflecting, re-writing, re-flecting and remaining open throughout the inquiry were her ways of knowing and her methods of research practice. These practices were critical in maintaining an emergent research path.

Altheide & Johnson (1998) also support an emergent research process.

Qualitative research, … , is carried out in ways that are sensitive to the nature of human and cultural social contexts, and is commonly guided by the ethic to remain loyal or true to the phenomena under

study, rather than to any particular set of methodological

techniques or principles. (p.290)

Throughout the first and second parts of the research process, my research

interest remained constant but a congruent methodology remained elusive. I

realized that I needed a research approach that allowed for connections among

multiple sites and that also allowed for acknowledging technological influences.

This latter point, I considered invisible within traditional research methodologies

such as ethnography and grounded theory. A congruent, emergent research

approach meant that researching youth's experiences of ICT use and a sense of

"being connected" would best be explored through research approaches focusing

on connections. Although not able to articulate it clearly at the time, I thought of

my methodology operating as a network, looking similar to Illustration 6.
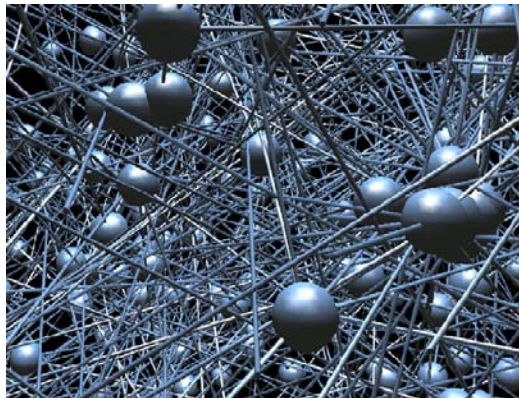
Illustration 6. Image of Social Links in Canberra, Australia.
From http://www.nd.edu/~networks/Image%20Gallery/gallery.htm

Within this network research model the research findings would emerge from

connections of the various nodes. However, I was unsure of how to put this into action.

I also felt constrained by a lack of technological means and skills to support the presentation of emergent knowledge. The following field note presents my recognition of how research methods and ways of knowing were linked to my technological tools and practices of use.

In March 2002, I was still contemplating what a methodology of connectivity would look like in practice. No matter what paths of exploration I undertook, I was not able to capture connectivity in my writing or presentation of ideas. A presentation for the CHISEL group on the progress of my research work and ensuing discussions led to the emergence of a theoretical research framework.

First, I realized that technological mediation [through the computer and Internet] enabled me to become aware of connections and the complexity of connected information. As a human researcher, with limited human and social capabilities, who is relying on technological mediated avenues to conduct research, it has become impossible for me to present and write about these findings without technological tools. As my mind creates a sense of the technologically mediated whole of information by linked technologies and people, my use of verbal language falters in simultaneously expressing the complexity I am now aware of. This in itself is an interesting phenomenon, which has implications for research and personal identity.

In order to present my research work in contexts of connectivity, it seems like I would need a database, links and immediate presence of others to augment my presentation to present in a form that accurately reflects the research process and findings. Therefore, I also would need technological tools [or connectivity] to assist me in writing and presenting my research. It seems that on a student and research level these tools do not yet exist, are not commonly available, I do not know of them, I have not yet thought to look in the right places for them and/or I lack the expertise to quickly employ them throughout my work. The boundaries of my work, which I had been having difficulty defining within contexts of connectivity, have now become clear as they are linked to my personal limits of knowledge management and access or lack of access and skills to make use of technological tools. The impacts of technological mediated interactions throughout this research work are interwoven with setting, seeing and navigating the boundaries of this study.

At this point I recognized the embeddedness of technologies in my ways of knowing, textual and visual knowledge representation. A new insight for me was that methodological and content boundaries of my research project were clearly linked to technological means. I turned toward the field of Internet Research to understand how technologies were connected to research process and experience.

Our article "Conducting congruent, qualitative research in technologically mediated environments" (Maczewski, Storey and Hoskins, 2002) was grounded in the connections of online, onground and technical spheres. We created the following diagram to highlight the interplay and connectedness of the three research spheres:
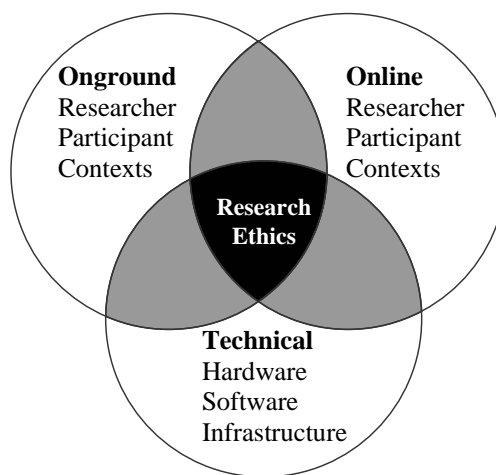
Figure 2. Interplay of Onground, Online and Technical Issues in Research Ethics. From Maczewski, Storey and Hoskins, 2002, p.64.

We argued for acknowledging situatedness of researcher, participants and technologies in order to conduct ethical research online and posed the following questions to consider:

How are the technical characteristics of the Internet

enabling research interactions? What are the human and social

implications of using this new medium? Extended into the

contexts of conducting qualitative research online, the questions

become: how do technical characteristics of the Internet influence

qualitative research? What social and ethical implications do

Internet-mediated forms of human and social interactions have on

qualitative research practices, specifically researcher-participant

relationships? (Maczewski, Storey, and Hoskins, 2002, p.63)

Understanding of Internet-mediated Interactions to conduct research in online spaces was only partially relevant for my research topic. Although these aspects remain salient when the online space is considered a place in itself[27], the daily experience of Internet-mediated technologies has moved towards more interactive and social-networking technologies, such as MSN and social networking sites. For my research questions, communication is not primarily conducted in bounded online spaces, but located contextually and embodied in daily lives among people who often already know each other.

The technological parameters are not directly discussed within this dissertation, however the recognition that the technological affordances themselves play a role in structuring experience still informs my understanding of young people's experiences of connectivity. For a study of ICT use and a sense of connectivity, however, where the online and offline worlds are imagined to fluidly move through each other and multiple

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[27] For example, research that is located in the virtual community "Second Life". See
http://www.secondlife.com

uses of different technologies are assumed, the individual parameters of the technologies

themselves were considered less relevant. For example, interviews with young people

did not draw on a combination of online and offline methods but were conducted in

person. Reflective of the theoretical shift to embedded media, the technologies used with

participants reflected the medium most suited for the specific communicative purpose

e.g. initial contacts through e-mail, and interviews person to person.

Continuing the move from separate places to interconnections, I began looking for

research approaches that reflected the travelling of connections and again found it in

ethnographic research practices. Burawoy[28] et al's (2000) book *Global Ethnography* was

relevant because it explores how (sociological) ethnographic studies can be positioned in

the dynamics of local and global forces, while critically viewing the construction of all

dynamics within their contexts. The authors describe how all studies are designed around

three axes: "first, they delved into external forces; second, they explored connections

between sites; and third, they uncovered and distilled imaginations from daily life" (p.5).

Connections in this dissertation can be seen, in that I have first understood how ICT use

matters to youth and then connected these themes to developmental forces.

Burawoy et al. (2000) also reflect on the reframing of ethnographic traditions that

were required for their global, ethnographic research approach. They comment that

> to be a global ethnographer is one thing; to do global ethnography
>
> is another. We had to rethink the meaning of fieldwork, releasing
>
> it from solitary confinement, from being bound to a single place

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[28] The dedication in this book reads: "To Eudora, without whom this would not have been possible." This dedication to a software product that enables electronic mail, reveals the central importance of ICT to this book on the third page of the book – the first dedication to a technology that I have consciously come across!

and time. We had to endow fieldwork with the flexibility to adjust

to the space-time coordinates of the subject population. We had to

self-consciously combine dwelling with traveling. (p.4)

As in Hine's (2000) and Markham's (1998) work in the context of Internet

Studies, the meaning of fieldwork is re-conceptualized within the contexts of the inquiry,

e.g. re-conceptualizing ethnography by describing forms of fieldwork and reflexivity in

the contexts of virtual communities. Burawoy et al. (2000) reflect on place and time

issues in offline settings and reflect on how multiple sites are connected. With their

move toward travelling among multiple sites, the issue of mobility becomes apparent. As

technological developments included movement towards portability and mobility, finding

an inquiry framework that allowed for mobility as well was necessary.

Much of the recent theory and ideas of connections relevant to my topic of

connectivity I have found in research on mobile communication devices e.g., Katz and

Aakhus, 2002; Ling, 2004; Ito, Okabe and Matsuda, 2005. Katz and Aakhus (2002)

suggest that for the exploration of mobile technology use, a new theory is needed. Katz

& Aakhus "coin the neologism Apparatgeist to suggest the spirit of the machine that

influences both the designs of the technology as well as the initial and subsequent

significance accorded them by users, non-users and anti-users. The neologism has its

origins in Latin and is derived currently in the Germanic and Slavic word Apparat,

meaning machine, which includes both the technical and sociological aspects" (p.305).

The authors also draw on the German word Geist, "which denotes spirit or mind" and

link it with the German philosophical notion of Zeitgeist (spirit of the times). Similarly

to Zeitgeist, the authors suggest that Apparatgeist, although it is "directing human

activities", can "be only indirectly observed throughout the intellectual, moral and cultural climate of an era." (p. 306). The authors see that

> there is a logic, or nascent philosophy, about personal communication technology. It is both a logic that informs the judgements people make about the utility or value of the technologies in their environment, and a logic that informs the predictions scientist and technology producers might make about personal technologies. Our goal is to articulate this logic and to demonstrate the content of this spirit. The logic that informs the Apparatgeist is perpetual contact, at least in potential terms…
> (p.307)

For example, in Victoria today, technological advertisements that portray ICT as cool and necessary for the confident young person are part of this philosophy, as well as the expectation that individuals are always able to be accessed. Spending time on one's own or valuing times of technological disconnection are not addressed in this logic.

An interesting dynamic within the development of *Apparatgeist* is that the authors are moving away from a single theoretical perspective, from which to analyze technologically-mediated interactions, toward a meta-framework that simultaneously encompasses many aspects of existing, at times traditionally defined as conflicting, theories and research methodologies. The book editors achieve this by framing diverse chapters on aspects of personal communication technology use in their own bookend chapters – the initial one framing the inquiry and the final chapter illuminating patterns among the individual chapters. In other words, understanding the connections between

chapters at the same time as being aware of their unique embeddedness in historical, political, ideological, social, and psychological processes is an essential part of their framework. I see their theory of *Apparatgeist* as emergent from and made visible by the many chapters in their book.

I have described the work above with the purpose of revealing how ethnographic research practices, such as fieldwork and being in the field, are modified to adapt to changing technological, social and cultural contexts. In all of the above approaches important ethnographic elements, such as time and space, researcher locations and partiality, are addressed in different ways congruent with the research contexts and media in which they are operating. Researchers and their research questions all include the intersections of technology and human experience and make them visible. Connections are made among different sites from which the field emerges. Mobility between sites is part of fieldwork. I realized that my initial difficulty of finding a methodology was characterized by the challenges of adapting a traditional ethnography to rapidly changing, networked and technologically-mediated contexts.

Single Site to Multi-Sited Ethnography

Although my study had not initially been designed as an ethnographic study, the strongest theoretical methodological influences throughout my MA and doctoral research have been grounded in ethnographic ways of knowing e.g. Denzin (1997), van Maanen (1988). These include research practices such as fieldwork, observation, interviews and understanding perspectives from research participants' points of view. In 2003 I attended an ethnography workshop by Michael Agar who spoke about the goals of ethnographic research as intending to understand meaning with specific contexts. The

concepts and patterns arrived at through ethnographic research allowed for the formulation of lenses with which individuals could understand the world. For him, the basic question for ethnographic research projects was: How does the world work? (Agar, 2003). This research text presents one such perspective from which to understand youth's experiences with ICT.

Agar's talk about his personal experiences engaged in ethnographic projects and the multiple possibilities to engage in them was liberating in removing me from my perceived boundedness of the "real" ethnography as characterized, for instance, by Creswell (2003): "Ethnographies, in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting, primarily, observational data." (p.14). In 2006, reading Marcus' work on multi-sited ethnography (1995; 1998; 2005) assisted me further in making sense of my own research process and design. The content of the following e-mail exchange between George Marcus and a former student, Kim Fortun, reflects the gap that I had been experiencing within my understanding of ethnographic research and my lived research experiences. Fortun writes the following e-mail part.

> The template for teaching students ethnography is still that they go
>
> out into the world and find other cultures –some do – the
>
> Malinowskian scene – but many more (those who I tend to
>
> supervise) tend to find themselves in the middle of distributed
>
> knowledge systems, which is the way that other cultures manifestly
>
> present themselves these days anyhow. These are not the contexts
>
> of culture in villages and communities etc. – but the form that

culture takes so that even if you are not studying experts first, or as such, and are working in villages, you are also operating in distributed knowledge systems which are the challenge of fieldwork to figure out and operate within. Ethnography needs a new set of understandings of itself as metamethod still in the anthropological tradition to come to terms with this, etc. (Fortun as cited in Marcus, 2005)

Marcus' website further states that his "continuing agenda is to find new ways to describe and write about, from within the ethnographic and cultural anthropological tradition, the massive and minute changes in contemporary societies." (2005, Webpage) I understand his work as being reflective of movement. In 2006, it became useful for myself as researcher to think about my research approach through the following, more open, ethnographic lens: "What is distinctive about anthropology … is the pretense and claim to be able to work through subject positions, perspectives, and meanings in order to establish one's own knowledge" (2005, p.14).

In 1995, Marcus writes that "empirically following the thread of cultural process itself impels the move toward multi-sited ethnography" (p.97). In 2005, Marcus offers the following description of the multi-sited field:

The multi-sited field is either conventionally a map of a process in various senses, but a map that is already understood and relied on by being expressed in some scholarly or academic literature, or this field is found in the field itself, even in full knowledge of the academic literatures, through an orienting ethnographic process

conceived as collaboration. In the formal mode, multi-sited ethnography emerges from the objective following of a known conventional process, or an unconventional process – following a commodity/chain/productive process, migration networks, or following a plot/narrative, a metaphor, or circulation of idea. [no page]

My process of collaboration and my positioning in Computer Science and Child and Youth Care influenced my recognition of the field retrospectively. Close to Marcus' description, I have been following a plot/narrative about youth's experiences with Internet/ICT as well as later following a metaphor or circulation of idea: the sense of being connected.

In regard to writing the multi-sited research text, Marcus (1998) writes that:

rather than a strategic single site ethnography, written against a canned view of what the system is, I would argue for a multi-locale ethnography whose purpose is to fundamentally revise … our view of the macro-structure itself. The question is whether the ethnographic text can bear such complexity – this is a key question for experimentation and innovation. (p.45)

In 2005, Marcus writes that "multi-sited projects potentially overwhelm the norms of intensive, patient work in ethnography – the response is a motivated and accountable norm of incompleteness …" (p.21). I have represented complexity in this dissertation by linking diverse contexts and perspectives of youth's ICT use into a networked perspective. The focus in networks emphasizes the connections between the existing

nodes. A form of incompleteness can be seen in this dissertation, when looking specifically at an individual node and recognizing the complexity of the individual node outside of what can be captured within the scope of this dissertation.

The Accidental, Multi-Sited Ethnography

The work and conceptual movement of George Marcus on the re-functioning of ethnography, extending ethnography to include multi-sitedness and locatedness in the contemporary, gave me language and a conceptual framework to interpret my research process as a multi-sited one.

I began thinking of SCYC, CHISEL and AoIR as research sites as well as defining Youth and ICT as content sites. When the research question shifted to exploring ICT use and a sense of connectivity, instead of online and offline selves, my ongoing participation in the CHISEL group became my immersion in the field. Although not constituted by adolescents, CHISEL members were young people who frequently used information and communication technologies. CHISEL research projects involve visualizing complex processes, such as the navigation of software code, and had demonstrated visually my ideas of connections and emergence. Although never recorded, except for exceptional examples, many of my observations of connectivity had been happening within the CHISEL group. Most of my experiences with new ICT have been initially linked to CHISEL group processes or stories told by CHISEL group members. In retrospect, I realized how strongly my immersion in the CHISEL environment had shaped my perspectives on connectivity. It is interesting to note that I came to the CHISEL group to learn about the technology itself, the 'data' had been conceptualized as coming from youth. As it turns out, the CHISEL group has been a site for exploring

connectivity through student experiences in a computer science environment. Themes from youth interviews resonated and a sense of data saturation occurred because I had seen the themes played out in CHISEL group interactions many times. My research had not been conceptualized as ethnographic, but in retrospect had many components of ethnographic research. In this methodological framework, youth became another site of the exploration of connectivity.

I currently name my methodology an "emergent, accidental, multi-sited, ethnographic research approach" or somewhat simpler: a multi-sited research approach. Technological, theoretical and research question movements have led to the emergence of an accidental ethnography of processes within a culture of connectivity and recognition that my research results have emerged from the connections among the multiple sites.

When I began this research, I had conceptualized a form of networked research. Barabasi's (2002) work on the science of networks became a theoretical framework from which to understand dynamics in networks which also could be applied to the dynamics of the inquiry and researcher locations.

Research in Complex Networks

The science of networks, as discussed by Barabasi (2002), mathematically proves that complex systems self-organize governed by specific organizing principles. This science applies to a specific form of networks, scale-free networks, which are defined as "dynamic systems that change constantly through addition of new nodes and links" (p.106). These networks are not random or ordered but somewhere in-between,

representing the structure of many real world networks, such as living cells and social communities[29].

The evolution of these networks is governed by processes of "growth" and "preferential attachment" (p.96). Growth refers to the addition of new nodes over time, and preferential attachment signifies that some nodes are more often linked than other nodes. This latter phenomenon occurs because the node (a) already has many links due a history on the web, and / or (b) the node's fitness is high, meaning how well the node fits, is useful and meaningful within given contexts. For example, in the case of the Internet, growth is characterized by more computers being connected to the Internet. Preferential attachment means that the networks they attach too are "the best" for their purpose and situation.   As can be seen in the quote above, not all nodes are equal nor do they have the same number of links. A few nodes have a vast number of links (hubs) and many nodes have a small number of links (just a node). For example, many webpages are linked to [Yahoo](http://www.yahoo.com)[30] and [Google](http://www.google.com),[31] which are considered to be hubs. When scale-free networks grow, their evolution leads to the appearance of hubs, clusters and power-laws,[32] three defining characteristics of scale-free networks.

I used Barabasi's (2002) organizational structures of scale-free networks to think about what interpretive lenses I chose and why. For example, I chose Livingstone (2002) because I considered her a "hub" in the field of Youth and Internet Research. She

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[29] To see a visualization of complex networks, such as the Internet, Social Networks, Biological Networks and the World Wide Web, please see http://www.nd.edu/~networks/Image%20Gallery/gallery.htm

[30] See http://www.yahoo.com

[31] See http://www.google.com

[32] The power law describes the mathematical distribution of nodes within a network. It declares that " in most real networks the majority of nodes have only a few links and that these numerous tiny nodes coexist with a few big hubs, nodes with an anomalously high number of links." (Barabasi, 2002, p.70)

incorporated many links to others within her own work and as such represented issues emergent from a large network of research. The processes of "fit" and "preferential attachment" can also be seen in my choice of perspectives as I chose them because they resonated with my interest in sociological and technological views. I further used Barabasi's work to understand processes in the research inquiry. For example, it was useful in articulating changes in researcher role in networked research environments.

Changing Researcher Role

Traditionally, located within a bounded disciplinary field the individual researcher has been responsible for their research within that field. As Internet Research examples have shown, re-functioning ethnography means the emergence of adapted researcher roles. Researchers are increasingly engaged in collaborations over local, national and global distances that bridge and / or synthesize disciplines, theories and knowledges. An individual's expertise is now not only linked within a specific discipline, but is linked with many others in similar and different fields. How can the role of the researcher then be described within electronically networked information systems?

Perhaps one way of looking at the researcher's role could be as a nexus, a node of meaning and pattern making within networked societal contexts.[33] I will suggest that the location of the researcher in this study on youth experiences of connectivity changes from being "an expert in the field" to being a node tying together relevant connections. In these contexts, I as the researcher have the pivotal role of gathering data as well as making and interpreting the connections. As the researcher, an important task is making meaning of patterns and connections emergent from the links among identified sites.

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[33] How much this is shaped by technologies used is an interesting question but beyond the scope of this study.

Whereas previously, the emphasis of "expertise" has been on content knowledge, the emphasis now, as more information is accessible to many, could be seen on making visible relevant connections and constructing a networked point of view.

From personal experience, the role of the researcher positioned at the nexus of multiple sites includes, but definitely is not limited to, the following processes:

1. Accessing important clusters of information;
2. Identifying texts with relevant connections to the research topic;
3. Creating the links and making visible the links among them;
4. Illuminating an emergent, dynamic, networked space in which the research phenomenon is positioned;
5. Defining the boundaries of the study in relation to the research question;
6. Managing and navigating the knowledge emergence process;
7. Continuously re-positioning the researcher among mobile networks;
8. Interpreting research results within network contexts.

As my research location moved beyond disciplinary boundaries into multi-sitedness, I feel that I have become a nexus among multiple online and offline networks. Defining and navigating these networks became a skill, which required remaining flexible, open, translating among disciplines and redefining boundaries. I found that my location as a nexus among sites gave me unique perspectives from which to understand the research phenomenon. However, it was also isolating in that no cohort student group with similar interests existed locally while maintaining connections to distributed peers was time-consuming.

My research approach raised many methodological questions. For example, what were my research boundaries among multiple sites? What was included and what was excluded from my research networks? What was considered "depth" in multi-sited research? What were ways of ensuring credible research in multi-sited conditions? In my work I have addressed these questions by taking qualitative research guidelines into

multi-sited contexts. For example, I have addressed the issue of research credibility through ongoing feedback from participants in the multiple sites: CHISEL members, committee members, CYC students, youth and conference presentations. I have made my research path among multiple connections transparent and the dissertation presents a picture of youth's experiences of ICT emergent from multiple sites of understanding. Situated within multiple sites and networks, it was difficult to keep the primary research question in focus and to not become distracted by the many other pulls in networks. Learning to remain grounded in networks while seeing multiple connections became a skill, possibly similar to those skills of young people negotiating their online and offline identities.

The most challenging part has been to trust the emergent process in networks and to take developments among the nodes into account without changing the entire research process. The most interesting part has been to disentangle and connect the sites of technology and human experiences. I began by thinking of them as separate and now am experiencing and conceptualizing them as inextricably linked.

Research Limitations

The strength of one research approach is also related to the limitation of the same research approach. One of the limitations of a multi-sited research approach is that by connecting sites to each other the researcher is unable to address each site to the depth that has been expected within single-site research approaches. There is a time and capacity issue involved for the individual researcher when looking at multiple sites. Presently I believe that these drawbacks are being partially addressed through increased collaborative research practices. Because it is impossible to make all connections, it is an

important task of the multi-sited researcher to define their location within online and offline networks.

A second limitation can lie in the location within networks. When boundaries of community based research practices are permeated, the networked locations of the researcher are a further important part of situating the research results. When I began this research, I was not aware of how important these networked connections would become.

A third limitation of this research is the unique situatedness of this research project within the interplay of the multiple research site locations, participants interviewed and the researchers' identity. For example, the emergent themes of mattering may have been different if youth from different socio-economic backgrounds or youth with no offline peer relations had been interviewed or if my research project had been located solely within the School of Child and Youth Care. The emergent interpretation of the research interviews and its interpretive lens need to be located and evaluated within the specific relational networks of people and information.

A fourth limitation that I would like to highlight is the lack of technological tools to assist in all parts of the research process. For example, collecting data from moving sources and recording online experiences would have been easier if tools had existed for participants to record their experiences in fun, convenient and connected ways. In the following chapter, I present the research methods that were used.

Chapter VIII - Research Sites and Methods

Development of Research Questions

When I began the research process in 2001, my specific research question was: How do youth negotiate their online and offline selves? Throughout my research process I have been guided by the assumption that youth must experience ICT use differently than people growing up without these ICT available to them. In the initial focus groups, CHISEL members spoke quite differently about their experiences of and use of MSN than youth participants. For example, whereas many CHISEL members felt that MSN was used very selectively and often considered intrusive, youth spoke about their intensive use of MSN with many friends. It became apparent that youth had embedded MSN, and other ICT, into their lives in different ways than members of the CHISEL group had articulated.

The youth focus group also revealed that participants were so immersed in technologically-mediated connectivity that an articulation of their experiences of self in relation to technology or their experiences of online and offline selves was difficult to draw out verbally. These two focus group experiences influenced the further research process in that they forced a shift in approach. If the separation of online and offline really wasn't experienced, I needed to rethink how I would be able to engage youth in a conversation about their negotiation of online and offline selves.

In 2005, I shifted the overall research question to: *How do youth experience 'being connected' through ICT?* To be able to engage in conversations with youth about their experiences of 'being connected', I re-formulated the question to: *How do you*

experience frequent use of Internet and Cell Phones? For the interviews I added three sub-questions to assist in exploration of the primary research question:

1) How do ICT matter to you?

2) How do you experience ICT?

3) How do you conceptualize ICT in your life?

I chose the term "mattering" (Marshall, 2001) for the interviews, because previous research had shown that this term allowed youth to connect to abstract issues in the contexts of their personal lives. I present an overview of the research sites through which the research questions were explored in the following section.

Overview of Research Sites

My immersion in the CHISEL group over the past six years as well as the two focus groups held played an important role in how this research inquiry unfolded. During the course of this research, I continuously reflected on data provided by individual stories, media discourse and my personal experiences of ICT use. Given the emergent path of this ethnographic inquiry, I came to consider these latter research sites as influential in shaping my interpretive lens of the youth interviews.

The primary sites for understanding youth's use of ICT are four in-depth interviews. Youth participants, interviews and analysis methods are described in detail. The focus of the data analysis and interpretation are these interviews. I describe and link important insights gained from previously mentioned research sites when I considered them useful in describing contexts and issues of ICT use.

In summary, I used the following research sites and methods to explore the phenomenon of youth's ICT use:

1. Immersion in CHISEL group
2. Focus groups
3. Interviews
4. Individual stories and media discourse
5. Researcher experiences

The following sections describe the individual research sites and methods in more detail.

Immersion in CHISEL Group

Given that the research question shifted to the exploration of "being connected," my immersion in the CHISEL group became increasingly relevant to my research project. Throughout the research process I have been a member of the CHISEL Group. As mentioned earlier, the focus of this group is to design, build and evaluate software tools that enhance software programming as well as afford knowledge visualization. For example, the software tool Groupware enabled Integrated Learning and Development (GILD) was built to be employed in an entry level computer science course to facilitate students' learning of basic programming skills. Another example is research work in collaboration with the United States National Cancer Institute (NCI) focused on developing tools that assist clinicians in visualizing and understanding complex information gathered through clinical trials.

At any given time, there are about 10-15 students in the CHISEL group. About half the students share working space within a lab setting, the other half are located in smaller offices in close proximity to the lab setting. During the time I have been part of this group, I would characterize two student cohorts. The initial one was present from 2001-2004. In 2004 many students graduated and many new students enrolled, therefore the second cohort begins in 2004 and extends to the present, with some doctoral students spanning both cohorts. In comparison to other computer science groups, the CHISEL

group has always had several female members, at one point representing half of the group. Most students are between 20 and 30 years old and engaged in the Masters of Science program on a full-time basis. Some individuals are employed as programmers and become students, some come temporarily on co-op terms or as exchange students. Students also represent various national backgrounds. My desk and writing space throughout the PhD program have been located in this group and my office shared with several other computer science students.

The first focus group to test research questions was held with members of the first CHISEL cohort. The conversation we had was very in-depth, presented many insights and had a great impact on my choice of the following research direction. I believe that this focus group was so insightful, primarily because there was an ongoing relation among participants and myself, the researcher, and a high level of trust was established. Not only that, but these students had been exposed to my research topic from the beginning, had seen its development and had been engaged in several discussions about it. As a result, I believe, their level of reflexivity and awareness of this topic would have been greater than most focus groups with unknown and unprepared participants.

The dynamics of a culture of being connected or a culture of connectivity are visible in the CHISEL group as demonstrated by the following examples:

1. In group meetings, some participants engage simultaneously with their computers on other projects or check their e-mail which seems to be accepted within the group.

2. The idea that during the upcoming building move from our current location to a new building there may be two weeks of no "network" access was initially perceived as very disturbing, comments ranged from "what are we going to do then?" to "once you have it [the network], you can't go back!"

3. E-mails are sent at all hours of the day and instant replies are expected. Example: "I posted something on the website on Friday night and when nobody had replied on Monday morning I was mad! …. Maybe I should have been a little bit more patient."

Events and comments like the above have been copious during the past years, but not documented as I didn't recognize until recently how important these observations were within the contexts of my inquiry. Somehow my location within this group was tied to my understanding of "the technology" and the "data" that would come from youth. I perceived a separation between the two sites. However, as technology became embedded in daily lives my perceived separation of technology, use and experience dissolved. If I now look at myself as an ethnographic researcher within this site, it was and is an ongoing mirror for my insights gleaned through interviews with youth as well as personal experiences. My physical location in the CHISEL group encourages me to engage with my topic on a daily basis.

To actively resist the image of a computer science student as a "techno-geek" I need to point out that this group presents a great mix of technologically-mediated and personal connectivity. Parties are held frequently to celebrate birthdays, babies and graduations, group lunches and activities are common occurrences and trips to conferences build the person to person relations among group members. In this group it becomes visible what Wellman, Quan Haase, Witte and Hampton (2001) suggest: online interactions supplement personal interactions and do not necessarily decrease social capital among person to person connections.

By giving presentations in this group I have received ongoing valuable feedback, input and insights from their personal experiences. This process of having presented to

the group regularly is an important factor in ensuring that my research results are credible. For example, when I presented to the second CHISEL cohort in December 2005, after having held my first interview, I used a quote (see Andrew, p.138) from a participant reflecting on how use of the Internet affected his sense of self. One of the CHISEL group members responded to this quote (in essence): "That's not what it feels like to me. I only go on to see when the bus runs or what movie is playing. I go on and off again." This encouraged me to think beyond the concept of Internet use as always affecting users' sense of themselves.

Being situated within this group, taking part in group meetings, listening to project talks, presenting my work and observing interactions among group members has been a great part of my understanding of the notion of connectivity. Although never formally put down on paper, my daily observations immersed in this group over a span of six years have greatly influenced my understanding of and perspective on my own research. These students have introduced me to new technologies by their talking about and use of them. For example, before blogs were commonly used, the CHISEL group experimented with group members writing blogs as part of their research journeys.

I would also generally characterize these students by an interest in or passion for technologies as well as by curiosity and fun in regard to experimenting and "playing" with new technologies – definitely early adopters. As such, I was exposed to the world of connectivity, in working and observing, that I would have not experienced through location in the School of Child and Youth Care or within my personal networks of friends and family. Although I have been a member of the group, an insider, I have also experienced myself as an outsider. My personal status as a mother with two small

children, the fact that I was the only person with one computer screen instead of two on my desk and my interdisciplinary status among a group of computer science students positioned me as an outsider of the group. Furthermore, when computer students are talking about parents and children, they are doing so in the context of software code. I believe that this gap in experience and perspective allowed me to observe individual experiences of connectivity within the group from a more distanced position.

As I continued data analysis and the writing of the dissertation two new students arrived. This allowed me to receive feedback on initial research interpretations from a group of students who were not as intimately aware of my research journey and thus have been able to comment on my research interpretations and methodology from a more distanced perspective.

The following researcher field note describes the physical location of the CHISEL group in a new building on the University of Victoria campus.

Physically separated and electronically connected.

May, 2006. The CHISEL group has just moved into a new computer science building. The building is six stories high and is shaped as a rectangle. The short ends are constructed nearly solely out of glass windows, the long ends are hallways with offices and lab spaces going off from either side. Our lab consists of a lab room, from which three small student offices can be entered. The inside of the rectangle resembles a courtyard, a large, high open space. On the higher floors, the offices on the outside of the rectangle have spectacular views of trees and ocean, the offices on the inside look into the courtyard and into opposite inside offices on all floors. The inside office walls towards

the courtyards are all transparent of glass, bringing to mind living in tall apartment buildings. When I walk along the hallways I can see into the inside and outside office spaces through windows and open doors. The building has not been officially opened yet and undergraduate student traffic is not yet in full swing, thus leaving the building still somewhat eerie and in need of "life."

Given the transparency of the building structure, I can simultaneously see many people in their inside offices working – and this invoked for me a different feeling of presence. I feel that I can see more fully who is there and who isn't. The larger student networks in different offices as well as staff lounging in the transparent kitchen are much more visible than in the previous structures of solid walls. The notion of presence is intriguing in itself and this seeing of physical presence in transparent windows for me mirrors in an offline environment the visualization process of the MSN buddy list. Practices of blocking are already appearing, as individuals paint their windows to prevent people looking in and people in inside offices close their blinds.

The other issue that strikes me is that when I see students in their offices, what this most frequently entails is sitting in front of a computer, surrounded by paper and books and coffee cups and water bottles, intently staring at the screen. Talks with students and colleagues are also seen, for example in the communal kitchen, but the predominant image is: an individual sitting in front of the computer screen. Neglecting the contextual differences of work and play, family and work settings for a moment, the actual physical process of "adults at work" and "youth in leisure on MSN" are remarkably similar. When located on their own, individuals are separated in a bedroom or office and engage in thinking, learning and communicating with others primarily

through the screen. In the CHISEL group, the practice of siblings at home to send

messages to each other from their respective bedrooms is practiced by students

communicating with each other through email from office to office, or by listserv to the

whole group. The same processes apply as mentioned by Grinter and Palen (2002) for

youth: IM in their family environment is less disruptive at certain times and more

convenient than talking to somebody in person or on the phone. Plus it allows for

communication among networks. I have noticed that my attitude towards sending em-

ails to members in the group has shifted in the past five years. Instead of interrupting

somebody when they are staring at the screen, which feels increasingly awkward, I will

send an e-mail and they can respond at a convenient time for them. My supervisors also

commented on finding it nearly "strange" when a student calls, why didn't they just send

an e-mail? My main point is that what seems strange when youth engage in these

practices at home and with friends seems to be a common practice among students and

professors in my university departmental contexts.

Focus Groups

In addition to my immersion in the CHISEL group, I conducted two focus groups

in 2004. In these groups I tested my research questions. Focus groups were chosen as a

method, because they are helpful when exploring unknown topics, to get a sense of the

field. The questions used as a guideline for these focus groups can be seen in Appendix

A. Both were held in a university meeting room. Cookies were available for the first

group and pizza for the second.

The first focus group was comprised of members of the CHISEL group. Their

age ranged from 20 to 40 years. Participants were computer science students and their

supervisor. Eight people participated, five male and three female. To experiment with a further research method, I encouraged people to draw how they saw themselves situated in relation to technology in the future. This resulted in a further discussion about the drawings themselves. The second focus group was run with a group of young people aged 16-19. Six adolescents participated, three male and three female. Two participants were 15, three were 18 and one was 19.

To recruit youth for the focus group and individual interviews an information website[34] (Maczewski, 2005) was designed to provide 24/7 access to more detailed information about the research project for youth and parents. This way they could access the background about the researcher, project and research goals that were mentioned on the recruitment poster. However, during the research session it seemed that participants had not really or just briefly looked at the website.

Youth Interviews

As a response to the Focus Groups, I then chose to conduct interviews. I felt that it was necessary to hear more in-depth information about the experience of frequent Internet and cell phone use than I was able to hear through focus groups. At the end of 2005, I held four interviews with six participants aged 16-18, two single and two pair interviews. Participants were given a choice of where the interview would be held: one was held in the room of a participant, the other interviews were held in a university meeting room.

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[34] The website can be found at http://connectedyouth.cs.uvic.ca

Selection criteria. The age 16-19 years for youth was chosen for the several reasons. Previous research had shown that age plays a role in young people's use of ICT. This age group with a minimum of a year's experience with ICT was designed to find young people who can still reflect on their experiences as a pre-teen yet have reached a developmentally more reflective age. At age 16 it seemed likely that youth will have used information technologies frequently for at least one year[35]. Choosing this age range would provide the researcher with a large potential pool of participant youth. I assumed that youth, aged 16-19, would be more clearly able to articulate and reflect on feelings and thoughts about connectivity than younger teens. Youth, aged 16-19, would most likely have entered teenage years with the Internet being part of their daily lives and as such offer a different perspective than older youth, who may still remember times without the Internet and other ICT.

Finding participants. Finding participants aged 16-19 to explore this topic was a difficult undertaking. Young people were asked to come to a two-hour interview to talk about their use of new media, such as Internet, MSN and Cell Phones. A poster presenting the information can be seen in Appendix B. Participants were recruited on a word of mouth basis, through e-mail, phone calls and poster distribution. One participant was found through web presence, the other five were found through local connections. Several others expressed interest, but did not follow through on committing to a specific time. As the interviews are voluntary in nature, the researcher did not pursue the potential participants beyond one follow-up call or e-mail.

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[35] Having used technologies frequently for at least one year became somewhat of a joke, as all participants had used technologies frequently for over five years!

Single and pair interviews. To overcome the possible barrier of "being interviewed," I also gave potential participants the choice of coming in on their own or with a friend. Two interviews conducted were single interviews, and two interviews conducted were with a pair of participants. Both types of interviews revealed useful information. As the interviewer, I found the pair interviews more challenging to conduct, for example, as they required keeping track of multiple tracks of information, similar to having two conversations open on MSN. I also had to balance my interest in pursuing one thread of information deeper with one participant while at the same time giving both participants the opportunity to talk. At the end of the interviews, participants were asked, if they felt comfortable, to pass along the research survey URL to their friends. As part of the original research proposal, an online survey on the dynamics of connectivity was designed. I did not receive a single response to the survey. This leads me to believe that the survey may have been too complicated, that there was a boundary to be crossed in inviting friends to do this or participants had no interest in doing so.

Individual and Media Stories

In addition to the above sources I paid attention to individual stories and media discourse. These are some examples of the many personal stories I have heard over the course of the dissertation journey.

1. Terry's young daughter has moved away from Vancouver to study in Seattle. At home, she was continuously very social both online and offline. She had a boyfriend in Seattle with whom she had just broken up with when she and her dad talked on the phone. She commented that she felt lonely, and her mom pointed out to her the online connections and friends that she still had. She replied that this wasn't the same, they were not there. (January 2004)

2. Did I tell you about my aunt in Sweden? She was visiting my Dad at the hospital and she had hurt her foot. She is 80 years old. I offered to drive her home, but she answered: "I'm okay, I'll just text a nun at the convent and they will pick me up". Everybody in Sweden has cell phones, texts each other. If you do not have one you are out of the loop! (September 2005)

3. My son was at a hockey game with a friend of his. His friend was constantly text messaging on his blackberry. My son was annoyed by this behaviour but didn't comment on it. For some reason the technology presented a boundary which couldn't be crossed. (November 2005)

In the first story the differences between the experience of online and offline experiences are tangible. In the second story tensions of inclusion and exclusion are heard. In the third story issues of inclusion and exclusion as well as the technology both presenting a boundary as well as permeating boundaries can be seen. It is the tensions visible in these stories that emerge within youth's interviews as well.

Beyond stories of individual experience, I also followed stories presented in different media forms, e.g. comics, television and North American print media that related to youth's experiences of Internet and ICT. Comics such as *Between Friends* and *Zits* primarily focus on the different experiences and technological skills among parents and their children. The following are two examples.

Illustration 7. Between Friends © King Features Syndicate

Illustration 8. Zits © Zits Partnership, King Features Syndicate

The local newspaper, the Victoria Times Colonist and North American Time magazine, also comment on current technological issues. These headlines demonstrate aspects of the dynamics of connectivity. For example, "Logging on to break off. Why deliver the bad news in person when your fingers can message text without stuttering" (McKinnon, 2006a) and "The multitasking generation" (Wallis, 2006). Whereas the first example looks at how a technologically-mediated contact can be experienced as less stressful, the second article looks at how connectivity is present in youth's lives.

Popular television shows highlight harmful aspects of Internet use for youth, such as getting lured into pornography and becoming victims of sex offenders. For example, the Oprah Winfrey Show (Oprah, 2006) aired an interview with a teen who was engaged in cyberspatial sexual encounters. The newspaper reporter, who had talked to the teen, recommended web cams not being located in teens' bedrooms. This is an example of how the technology is primarily made responsible for youth's experiences. A further example was presented by the National Broadcasting Company Dateline show (Hansen, 2004). Having a member of a cyber crime team pose as a teen online, the team lured sex offenders to a potential date with a minor in a house and confronted them on camera. They made the point that online predators come from all walks of life and from all age

ranges. In regards to this dissertation, I have not focused on the actual issues e.g. pornography or bullying, but have looked for the dynamics that are important to recognize within these situations, e.g. the potential anonymity provided by technologically-mediated conversations.

Researcher Experiences

My own journey with ICT use has also brought certain issues to the forefront of my research perspective. Here are some aspects of my own experience of connectivity that illustrate the themes of this research inquiry.

In 2003, I created a webpage to enable committee members to follow my research journey, to see the complex location and navigation within networks. In 2004, I became the proud owner of a cell phone after the birth of my second child. The meaning of being able to be connected while on the go became more important with responsibility for a child. During my maternity leave, I hardly used the computer at all. My contacts were primarily local and there seemed to be no time to even switch on the computer, wait for it to load, yet alone write a coherent e-mail. In 2005, my brother, who lives in Germany, and I used the telecommunication software Skype[36] for the first time. Visual communication had become cheap and more relevant as kids were now old enough to participate and be a visible part of this communication. My return to university in 2005 also brought with it a return to putting MSN on my computer. I have six people on my buddy list, only one of my closer friends and one family member is on my MSN buddy list. In 2006, I have focused on writing and analysis which seems to have taken all my "computer energy" and not engaged in many MSN conversations. I remain the only

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[36] See http://www.skype.com

student in the CHISEL office with only one monitor on my desk, not wanting to deal with yet another change. I become somewhat anxious at the idea of even more information coming my way at once (although I see how useful a second monitor for editing purposes would be). [37] In comparison to a few years ago, I feel that becoming a parent has reduced my interest in technological changes and innovations primarily due to the lack of time to engage with them. I notice that I am becoming more like the parents in the comics as technological innovations continue to emerge around me e.g. Flickr[38], Web 2.0.[39], and I become more removed from the experiences of youth.

As I write this, I am acutely aware of the variations in technology use and their conceptualizations within my locations in social networks. My personal networks in Victoria still primarily think of the cell phone as just a phone and none have text messaging capabilities. I feel that I have to apologize for answering my cell phone in their presence. Is this gap of understanding of technology integration what young people experience with their parents? My friends don't apologize when they answer their land line in my presence. Why is location in a land-based space conceived as a reason for a person to be more accessible? At the same time, I'm not sure how I would manage all the connections if everybody were electronically connected – having not yet been exposed to this situation, there remains a certain fear of overextension.

What the above experiences show is how ICT in my life are strongly embedded in social networks and have relevance to my life. How I use ICT and in what contexts is

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[37] Since December 2006, I do have a second monitor on my desk.

[38] See http://www.flickr.com

[39] Web 2.0, a phrase coined by O'Reilly Media in 2004,[1] refers to a perceived or proposed second generation of Web-based services—such as social networking sites, wikis, communication tools, and folksonomies—that emphasize online collaboration and sharing among users. (Wikipedia, 2007)

related to my personal relations with individuals and the power dynamics among us, e.g.

do I feel comfortable enough to answer the cell phone in their presence and what calls do

I take? At the same time it makes me aware of when I feel limited by not being able to

use technologies (in professional life and more intimate relationships), as compared to

those times where technologically-mediated interactions feel unnecessary, inconvenient

and an overextension. The following story illustrates the above dynamics and is located

in an elevator of a Chicago Hotel at the AoIR Conference, October 8th, 2005.

> At about 9:00 pm a group of graduate students returned from a dinner organized by the community informatics group at a Puerto Rican Community Center in Chicago. I went to the room for Internet Access set up by the conference organizers and discovered that access times were between 8:00 and 5:00pm, pretty much the same as the conference sessions. Room Internet access was $12.95, I'm not sure if there was a special rate for conference attendees. I was somewhat stunned at the access hours. I had checked the room previously to access my e-mail, but at each time, all six computers set up for use were busy with people working on their own wireless computers in the room as well. I returned to the elevator and met two students from the community dinner while elevating to our respective floors. I briefly mentioned my frustration, and as a response heard: "Oh, didn't you bring your own computer?"
>
> My immediate reaction was astonishment. I felt stunned. These were the same people who had eaten dinner with me and who had participated with me in an evening that was all about inclusion, exclusion, oppression and community action research. I also felt this pang of exclusion. I hadn't brought a laptop as mine is old, it's a hassle to carry it through airport security and I had thought that checking my email once or twice during this time would be sufficient. I wasn't preparing a talk, so the files on the computer were not important to have. But not being able to access e-mail at all did not seem okay. And I felt powerless to do anything about it. I was upset that conference organizers did not feel the need to provide access for people with lesser funds or technologies available to them. Was it assumed at this conference that all participants were "experts" with the technologies and were financially able to afford the personal laptop? Did doing Internet Research go hand in hand with having personal access? At the same time I was upset that I hadn't brought my laptop, and had

> assumed that there would be sufficient public access available (as had been my experience at the last conference I had attended). Food for thought.

The above experiences illustrate to me ways in which technology can extend and limit our sense of self. Having access to technologically-mediated networks has become critical to being connected in areas that are significant to an individual's location in life. Issues of inclusion and exclusion are technologically mediated beyond issues of technological access but permeating all group settings online and offline.

Chapter IX - Data Analysis

Data Management

I transcribed the focus group interviews and a professional transcriber transcribed the interviews with youth. The interviews were then imported into the qualitative data analysis tool, Atlas.ti[40], which was used in the analysis process. After experimenting with both NVivo[41] and Atlas, I chose the latter tool, because its navigation process was intuitive to me and the company allowed for an unlimited student license at a reduced cost. I found it helpful to have a tool that supported data organization, including storage of e.g. memos, codes and some visualization of data relationships, all in one place.[42]

The Analytical Process

I chose methods of data analysis that I considered congruent with the research methodology and research question.

Thematic analysis of mattering. Youth interviews were thematically coded in regard to what *mattered* to youth, how they *experienced* ICT use, and how they *conceptualized* ICT use. I approached the interviews with multiple questions:

- What are young people telling me about?
- How do ICT matter to them?
- How are they experiencing ICT use?
- How are they conceptualizing ICT use?

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[40] See http://www.atlasti.com

[41] See http://www.qsrinternational.com

[42] Atlas's toolbar also had a hammer button in the tool bar that said "click when frustrated" which came in handy at times.

The interviews were approached with an open coding system. All interviews were coded in response to the above questions and three themes of how ICT mattered to youth emerged. In general, analysis of qualitative texts is an iterative process in which researcher intuitions and insights are linked with structured analysis procedures such as coding. These connections need to be made explicit in order for the reader to understand the connections made by the researcher which contributes to the credibility of the study. I used the data analysis spiral suggested by Creswell (1998, p.143) as a general process guideline for data analysis and representation. He proposes a spiral that consists of the following steps: organizing and managing data, reflecting, reading, memoing, describing, classifying, interpreting, representing, visualizing and writing the research account. In my experience his spiral presents the fundamental steps of the analysis process. In extension, however, the loops in the spiral are not just completed once but iteratively. The process is not linear from bottom to top but resembles a "Snakes and Ladders"[43] board game: You go up a ladder, come down a slide, land in a different position, continue upwards, slide down again, land in a position further down, go up a ladder, start again and eventually reach the top.

Emotional patterns of ICT activities. In addition to Creswell, I used Kvale (1996) as a guide for interview analysis. He describes several forms of analysis, such as meaning condensation and categorization. Although many parts are inherent in the total analysis process, the primary analysis process followed was the "meaning structuring through narratives" (p.199), in which special attention is paid to stories told by participants. When reading the transcripts of the interviews, I was continuously struck by

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[43] See http://funschool.kaboose.com/arcade/games/game_snakes_and_ladders.html

the strong language that was used when describing experiences. These words, which primarily were used in negative contexts, such as "intrusive", "annoying" and "ahhhhh!!!," intrigued me from the start. I decided to look more closely at the stories, examples that included strong emotional words: What were these emotional key words telling me, where were they coming from, what were they reflecting? Stories of youth were analyzed in regard to common patterns of connectivity. I drew on Wolcott (1999) who presents the following insights on ethnographic data analysis:

> identifying patterns, or inferring patterns from what one has observed, is what ethnographers do. Pattern seeking, the identification of regularities, is, in fact, what all observers do. Ethnographers accomplish this through positing and examining, patterns and changes in patterns as reflected in life cycle events (e.g. birth, puberty, finding a mate), pervasive themes (e.g., the themes of competitive-ness or self-reliance associated with mainstream American society), annual cycles of activities, observance of rituals, world view (shared ideas about how members of a society see themselves in relation to everything else), or through cultural patterning revealed in well-contextualized personal life histories. (p.265)

To understand youth's experiences of ICT, I proceeded to try and determine what categories their experiences could be divided into. Only oppositional categories came to mind, e.g. beneficial vs. not beneficial. To remain congruent with the concepts of networks, emergence and movement, I looked for an analysis tool that would assist in

preserving movement. I decided to use the McLuhan tetrad (1988), which not only

preserved dynamics among experiences but linked these to the technologies used.

     Tetrad analysis. The four Laws of the Media, also known as the tetrad, assist the

researcher in reflecting on how any medium will extend, reverse, make obsolete or

retrieve some other medium or human faculty when introduced into society. McLuhan

(1988) emphasizes that the four effects visualized in the tetrad are not sequential but

simultaneous processes that present a complex equilibrium and need to be considered in

"relation to its ground rather than in consideration of the abstract." (p.99) He visualizes

the four co-present processes in the following way:

Extension	Reversal
Obsolescence	Retrieval
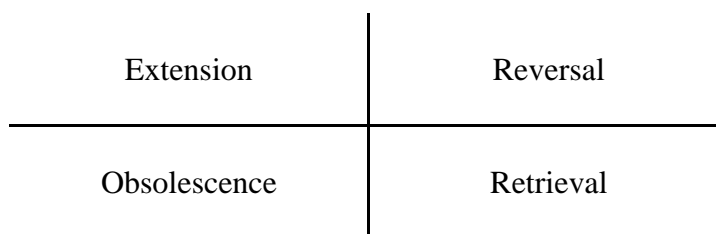
Figure 3. Tetrad

     To further understand the four quadrants, McLuhan explains:

> our laws of media are intended to provide a ready means of
> identifying the properties of and actions exerted upon ourselves by
> our technologies and media and artifacts. They do not rest on any
> concept of theory, but are empirical, and form a practical means of
> perceiving the action and effects of ordinary human tools and
> services. They apply to all human artifacts, whether hardware or
> software, whether bulldozers or buttons, or poetics styles or
> philosophical systems. The four laws are framed as questions:
>
> 1. What does the artifact enhance or intensify or make
>   possible or accelerate? This can be asked concerning a
>   wastebasket, a painting, a steamroller, or a zipper, as well
>   as about a proposition in Euclid or a law of physics. It can
>   be asked about any word or phrase in any language.
> 2. If some aspect of a situation is enlarged or enhances,
>   simultaneously the old condition or unenhanced situation is

displace thereby. That is pushed aside or obsolesced by the new 'organ'?

3. What recurrence or retrieval or earlier actions and services is brought into play simultaneously by the new form? What older, previously obsolesced ground is brought back and inheres in the new form?

4. When pushed to the limits of its potential (another complementary action), the new form will tend to reverse what had been its original characteristics. What is the reversal potential of the new form? (p.98)

A frequent example to explain the tetrad is the invention of the automobile. De Kerckhove (De Kerckhove and Bemejo, n.d.), a former student of McLuhan, illustrates this:

Extension	Reversal
extends a human property (the car extends the foot)	flips or reverses its properties into the opposite effect when pushed to its limits (the automobile, when there are too many of them, create traffic jams, that is total paralysis)
Obsolescence	Retrieval
obsolesces the previous medium by turning it into a sport or an form of art (the automobile turns horses and carriages into sports)	retrieves a much older medium that was obsolesced before (the automobile brings back the shining armour of the chevalier)

Figure 4. Automobile Tetrad

In my analysis, the tetrad enabled exactly what it was intended to: It challenged me to think of the many different ways in which introduction of ICT, especially Internet, MSN and cell phones, influenced youth's lives. What did ICT extend, reverse, obsolesce and retrieve in adolescents' lives? The following tetrad presents an example of an unfinished, first, exploratory tetrad use, when entering youth's accounts of their

experiences, January 16, 2006.   I am putting this "unfinished tetrad" into the text to
make visible the process of analysis from its early stages.

Extends	Reverses
Connecting abilities with friends, relatives, older acquaintances, friends of friends, etc.	Overwhelming – too much info
Exploration of self – boundaries are different from off line living (age, physical characteristics, local/global, etc.)	too close of access and interconnection – abuse of "no boundary zone" – pornography, sexual predators, etc.
Collective thinking abilities (homework, planning, managing)	"addiction" to gaming, chatting, etc. – person becomes paralyzed (self)
"contact" with info (access)	goes into the negative: such as invasion, intruded, dependency…(boundaries)
kinds of stimulation, entertainment – can read fan literature online, can just talk to people differently, play games…	always present (visibility)
methods of knowing "absorption"	
adding the multiple	
externalization and internalization (you can see into their head, get to know yourself better)	
visibility / presence	
Obsolesces	**Retrieves**
(probably doesn't really obsolesce, but becomes a method of choice – obsolescence in very early days, because of excitement, etc. but then wears off and becomes a choice?)	Critical thinking skills (?) e.g. TV replaced by online interactions? Passive toward interactive
Slower communication forms such as letters (become something special)	Writing – blogs, etc.
"learning things" by heart – different form of memory… use of cell phones as the telephone directory	Visual knowing – complexity is coming again, information to be represented in visual ways to allow for understanding of process and complexity – away from diagrams, illustrations, etc.

Figure 5. Unfinished Tetrad showing Tetrad Analysis Process

What quickly became apparent is that once I had entered an experience into the Extension Quadrant, associated with an account of a positive experience, it would later show up in Reversal Quadrant associated with an account of a negative experience. What emerged early on from these dynamic movements and visual simult-thinking[44] was the concept of boundaries. This was exciting, because it moved the codes out of one category into a fluid movement of contextual boundaries. My first dissertation title in January 2006: "It's all about boundaries" still permeates the data analysis and thinking about youth's ICT experiences as well as self – technology relations. As the Internet, for example, permeates physical and geographical boundaries, individuals, families and communities are forced to re-think and re-adjust their relations to each other. Within the context of this dissertation, not only the introduction of the medium is highlighted but connected to other social movements occurring at the same time. The reader will see all items in the tetrad appear in the research findings.

The most surprising discovery for me was that positive and negative emotions experienced by youth arose from the same activity. I thought activities such as talking on MSN or blogging would have been experienced positively or as not interesting. However, in youth's answers the same activities were experienced ambiguously, simultaneously (although the positive emotion outweighed when the activity was engaged in). The tetrad tells me that with a medium, four processes occur simultaneously. I focused the analysis of these experiences to the quadrants extension and reversal, because these were the dynamics perceived to be most pertinent to the research topic and youth's lives.

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[44] I created the term simult-thinking to direct attention to the movement from linear thinking A to B, to seeing multiple dynamics at the same time.

Conceptualizations of self-ICT relations. In this section I selected responses from the youth interviews that demonstrated a conceptualization of Self-ICT relations in their daily lives. Passages were chosen that visually reflected a conceptualization, e.g. we're wrapped. I linked youth Self-ICT conceptualizations to congruent existing conceptualizations of Self-ICT relations. It was interesting to note that youth found it difficult to articulate how they saw ICT located in their daily lives. How closely or more distantly they associated themselves with ICT emerged when I looked at their responses of how they would experience not being connected through ICT.

Presentation of Research Interpretations

The diagram below highlights the messy location of youth's ICT use within adolescent, social and technological developments. The different sites of the network perspective are presented in the dark grey circles and examples of sites not addressed are located within the white circles. The lines show the connections among the different sites with Youth's ICT use located at the centre.
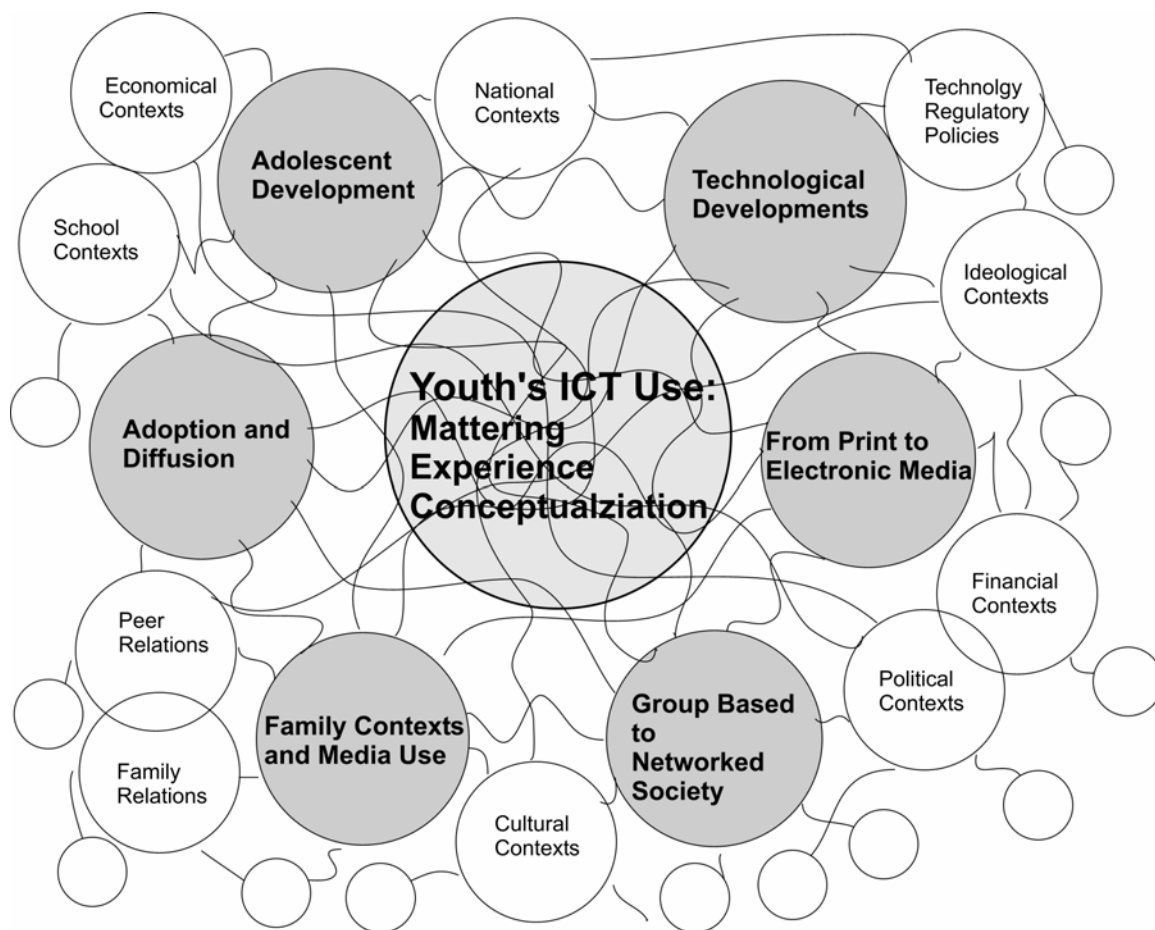
Figure 6. Emergence of Understanding of Youth's ICT Use

In the next chapter, I present demographic data of youth participants and excerpts of youth interviews to introduce the reader directly to youth's stories. All names of youth have been changed to provide anonymity. Following these excerpts, I present the research questions with emergent themes and patterns of mattering, experiences and conceptualizations.

Chapter X - Youth Participants

Demographic Data

At the beginning of the interviews, I asked participants to complete a questionnaire to gather demographic information. They were asked to indicate how long they felt that they had been a frequent user of ICT and to subjectively define what frequent use was for them. The data is presented in Table 6.

Table 6.

Age, Gender, Length, and Frequency of Use

Name	Age	Gender	Length of ICT Use	What is frequent for you?
Ingrid	16	F	Over 5 years	Most of the day I am connected through ICT
Tanya	16	F	Over 5 years	Most of the day I am connected through ICT
Lisa	16	F	Over 5 years	I am continuously connected through ICT
Jill	16	F	Over 5 years	Most of the day I am connected through ICT
Debbie	16	F	Over 5 years	A few times a day I connect through ICT
Andrew	18	M	Over 5 years	I am continuously connected through ICT

Table 6. Age, Gender, Length, and Frequency of Use

All participants identified themselves as having used the Internet frequently over the past five years. Lisa and Andrew experienced themselves to be continuously connected through ICT. Ingrid, Tanya and Jill experienced themselves as connected through ICT most of the day. Debbie experienced herself as connecting through ICT a few times a day.

The questionnaires also asked participants to state what types of information and communication technologies they used, which ICT they used on a regular basis and the locations in which they used ICT. The data is presented in Tables 7, 8 and 9.

Table 7.

Types of ICT Used

Name	Ingrid	Tanya	Lisa	Jill	Debbie	Andrew
Phone	yes	yes	yes	yes	yes	yes
Fax	no	no	no	no	no	no
Cell Phone	yes	yes	yes	yes	yes	yes
Palm Pilot	no	no	no	no	no	no
Laptop	no	yes	no	no	yes	yes
Computer	yes	yes	yes	yes	yes	yes
Web Cam	yes	yes	no	no	no	yes
Other	no	no	no	no	no	no

Table 7. Types of ICT Used

Table 8.

ICT's Used on a Regular Basis

Name	Ingrid	Tanya	Lisa	Jill	Debbie	Andrew
E-mail	yes	yes	yes	yes	yes	yes
SMS	yes	yes	yes	yes	no	no
MSN	yes	yes	yes	yes	yes	yes
BB	no	no	yes	yes	no	no
Surf the Web	yes	yes	yes	yes	yes	yes
Personal Webpage	no	no	yes	yes	no	no
Blogs	yes	no	yes	yes	no	yes
Interactive Games	yes	yes	yes	yes	no	no
Other	no	no	yes	yes	yes	no

Table 8. ICT Used on a Regular Basis

Table 9.

Location of Use

Name	Ingrid	Tanya	Lisa	Jill	Debbie	Andrew
Home	yes	yes	yes	yes	yes	yes
School	yes	yes	yes	yes	yes	yes
Work	no	no	no	no	yes	no
Community Centre	no	no	no	no	no	no
Library	yes	yes	yes	yes	no	yes
Friend's House	yes	yes	yes	yes	yes	yes
Relative's House	no	yes	yes	yes	yes	no
Other	no	no	no	no	no	no

Table 9. Location of Use

All participants used the phone, cell phone and the computer. Ingrid, Tanya and Andrew used a webcam and Tanya, Debbie and Andrew used a laptop. The Internet practices that all engaged in on a regular basis were: e-mail, text messaging on the phone, instant messaging on MSN and surfing the web. Home, school and friends' houses were mentioned by all as locations of ICT use. A relative's house was a location of use identified by Tanya, Lisa, Jill and Debbie. Only Debbie reported that she used ICT at work. As other young people worked as well, this may be an indication of how ICT are conceptualized. When talking about being connected, this might imply thinking about ICT as personal media for connecting and not use of the Internet or computers in a work setting. Possibly, the missing element of personal connectivity in a work setting, especially cell phone and MSN use, may then be considered as a different form of ICT use. Use of ICT and being connected may have been associated with personalized

technologies and to personal friends instead of using ICT as information processing devices.

In the interviews, participants talked about where their access to MSN was located. Debbie uses her father's work computer in their basement. Ingrid has her own computer in her room and owns a cell phone. Tanya uses a common computer in her mother's house and her father's computer in his house (which she basically considers her own as he never uses it) and is between cell phones. Jill and Lisa have their own computer and cell phone. Andrew has his own computer, laptop, and cell phone. This is relevant as ownership of technology is associated with increased use of the technology (Media Awareness Network, 2005c).

Demographic data of these youth matches data of the Media Awareness Network (2005c), taking increased adoption rates and price drops since then into consideration. All but one participant owned a cell phone (83%). Tanya and Debbie used shared computers at home in a common space (33%). Four had access to their own computers (66%). Andrew, Ingrid and Tanya said that they used a web cam, the points of access here were not clearly stated. All participants point out that they use e-mail, surf the Net and use MSN on a regular basis.

For Grade 11 respondents who engage in online activities on an average school day, the Media Awareness Network (2005c) lists the six activities top activities as: talk to friends on instant messaging (86%), download or listen to music (82%), use e-mail (78%), do homework using the net (76%), work on a topic of personal interest (65%) and play games on the net (63%) (p.20). Except for the use of e-mail, which youth may not consider an activity, the top six categories were frequently mentioned by my participants.

The last item on the above list, blogging, was mentioned by four out of six participants. Media Awareness Network (2005c) data indicates that 17% use blogs. The increased popularity of the weblog points to increased accessibility, usability and adoption of blogging technologies and Social Networking Sites.

Data also shows that the average respondent engages in six of the above activities on a daily basis (Media Awareness Network, 2005, p.21). It is interesting that several activities that rank very low among free-time choices, choices they would make if they had an hour to spend online, are ones that youth nevertheless engage in on a regular basis. These include visiting news / weather / sports sites (1-2% free-time choice, 25-50% regular activity) and shopping / getting product information (2% free-time choice, 15-40% regular activity).

Participants in my interviews hardly mentioned the use of shopping or the accessing of information sites. One way of explaining this discrepancy is through looking at it in terms of what is important to teens' lives. As our interviews were focused on what matters to young people and how they experience the use of these technologies, shopping and information sites may have been neglected as enthusiasm to talk about MSN use was high.

To contextualize demographic information, I asked participants in the beginning of the interviews to talk about the technologies they use and what they use them for. I have included longer excerpts of their responses in order to directly introduce and engage the reader with youth's accounts of their experiences, their individual perspectives, personalities, interactions and life contexts.

Interview Excerpts

Ingrid & Tanya [30-104]

> M - Well, you've got a lot of activities going on. So within that, what kind of technologies do you use?
>
> Ingrid - I download a lot of music. And I'm constantly on MSN. Like every time my computer is on, it's on. I'm basically connected day in and day out.
>
> M - So can you describe a day for me? What does that look like? You get up and turn it on, or… ?
>
> Ingrid - Sometimes I leave it overnight. It's in my room. So sometimes I leave it overnight and I use the Internet to look up a lot of things for like my homework and stuff. I do research on the Net. Which makes it a lot more easier than going to the library and looking up books and stuff. So that works well. Even when I don't have anything to do, and I'm not in my room, when I'm not at home, the computer is still on, Internet is still connected, MSN is still on. It stays on when I sleep sometimes.
>
> M - So when you get up do you check it then and then you go for breakfast and…?
>
> Ingrid - In the morning I just sort of just turn the monitor on to see if anyone messaged me or not. But usually I don't do a lot in the morning. I just have it on. Just in case if someone needs to contact me then it's there. It's just convenient, in a way.
>
> M - And then after school you come back home and check…?
>
> Ingrid - And then I go on again. It's mainly at night.
>
> Tanya - I don't put it on in the morning. 'Cause mine is not in my room.
>
> M - Where's yours?
>
> Tanya - It's in the computer room. [A common room in the house?] Well, kind of. Well, my mom has it in her study office. And my dad is just, he doesn't use it, so it's like mine. I get home and if I'm not doing anything - whenever I'm basically on the computer I have it on, and usually when I'm at home I'm on the

computer. 'Cause if I want to talk to people about homework or - it's just a lot easier than calling them.

M - What about cell phones? Do you have them? Do you use them?

Tanya - I'm in the market. I'm inbetween cell phones. Hopefully for Christmas.

Ingrid - I have a cell phone. I've had one for 3-4 years now. I like it. I've had it for such a long time I feel empty without it. Sometimes I go out and I forget it and I feel I'm not connected in any way. And it just scares me because I can't call anyone. And if I get lost or anything, I can just easily call and …ya.

M - So you said you feel empty. Tell me some more about that.

Ingrid - Like, if I go out and I forget my cell phone, then, 'cause I don't memorize phone numbers, like I'm not the type that can. I don't keep little slips of paper. So without a cell phone I'm basically kind of by myself and I can't call anyone. It's like, if there's like a stalker or something, then I [word missing]. Another thing is, there's a clock on a cell phone, and I don't wear watches. So that's always good.

Tanya - I rely on my iPod for my clock.

M - This is what I found. Because my cell phone disappeared last night, so it doesn't have the right time. It's like 40 minutes off. Oh well, it'll do.

Ingrid - And then I feel really unsafe without it, because I don't feel like I'm connected to anyone in any way. And if anything happens, then I'm just kind of, what do I do?

Tanya - And then you may not have money for a pay phone. Or there may not even be a pay phone. And you're, like, lost.

Ingrid - That's scary.

M - Do you use the text messaging on it too?

Ingrid - I do.

M - And when you have one?

Ingrid- It's good for if you're in class [word missing].

Tanya - And then they text message you and it makes a noise and it's in a middle of test when it always happen. People glare at you.

M - Is that common, that people text message in the classroom and stuff?

Ingrid - It's quite common. It happens.

Tanya - And people aren't really smart enough to put it on silent.

Ingrid - I was in my English class and it was during silent reading, and I was totally bored. And I texted my friend and when he texted back I had my cell phone on vibrate in the desk. And it's like whirrrrrrr - so loud in the middle of silent reading. And she's like 'turn it off!' I was like, sorry! I'm bad.

Tanya - We were writing our science exam last year and someone's cell phone went off and then they said they went and turned it off. And it rang again. And they're like 'What! I turned it off!' Well, obviously you didn't. And someone else's went off.

Ingrid - Ya. It happens a lot.

M - Do you feel more connected with it in class too? Like when you have it on there or is that different when you're off on your own.

Tanya - I never brought it to class because…

Ingrid - I think it's different because in class normally it's nothing important. It's just for the heck of it. It's because you're bored and you have nothing to do, so you text people, like, 'hey, what's up? I'm bored' 'what are you doing right now?' 'Oh, I'm doing a test' So it's like one of those things. When you're out of class, it's more, there's like a purpose for it. If you're meeting someone and you can't find them, then you call. Like we were just trying to call you. There's more of a purpose if you're…

M - So that purpose, do you find that too? [word missing] in school it's more [word missing]

Tanya - I don't really see the point in bringing it to class.

Ingrid - Ya. Because you can't really talk on it anyways. But if you really want to connect, the only way you can is through text message on your phone, then it's something important.

Jill & Lisa [49-91]

M - Maybe you can just start of with what technologies you use and how you use them.

Lisa - The computer. A lot.

M - Maybe one question - for the sake of the tape and the transcribing - if you can try to interject, but sort of wait until somebody is finished. Just for hearing the interview afterwards, it'll be easier to understand. I don't want cut off the total [word missing], but just a little bit. That would be helpful.

Lisa - Internet. As in MSN a lot. Checking e-mails. Pretty much talking to people; it's like an easier way to use the phone. It's a lazier way to use the phone. When you're like, I really want to talk to this person forever, and you can just like - it's kind of just easier to communicate with them over the computer and you can talk to a bunch of people at the same time, rather than being just being tied up to a phone. And cell phones. Big on cell phones. [word missing] about everything. Friends and family. Like if you're not near a computer.

M - Can you give me some examples?

Lisa - Of cell phones? I don't know what you mean by example.

M - Example like the cell phone, how you use it. Like do you use it on the streets, do you use it everywhere, do you have it on in your pocket right now…

Lisa - I do. I use it all the time. I call my parents up and let them know where you are and stuff like that, for safety wise. Like, if you're ever somewhere away from someone, your parents or something like that, it's a good way of communication. And friends, if you're trying to make plans; if you're at work or something like that. It's good, [word missing] communication. And if you're not really near a phone and don't want to spend 25 cents or can't find a pay phone.

M - Hard to find it, probably.

Lisa- And then there's text messages, which are kind of like MSN.

M - Do you use it for that too?

Lisa - Ya. Definitely. All the time. Every 5 minutes. Only because it's free right now. But after that it's going to be pretty bad.

Jill - MSN is a big one for me. Just like talking to friends and stuff like that. Ya, what Lisa - everything Lisa said. Like you can talk to so many people at the same time, and not having to use up the phone lines and stuff. Cell phones are a big one. Because then people can reach you, too. Like if they need to talk to you or find someone or whatever. Just to have phone numbers [word missing] too. Because, just like what Lisa was saying, how I use it at work. I usually just use a normal phone at work, but I have phone numbers in for people, and I text people a lot during school and stuff if I don't want to talk to them - because I can't because I'm at school.

Lisa - And the phone will make so much noise and shock the whole class.

M - When you say during school, you mean during the class? They're not in the same class?

Jill - Sometimes.

Lisa - I talk to her when I'm in class, and she'll send me something back. Just stuff like that.

Jill - But paying attention to school at the time.

Lisa - Of course!

Jill - We're very keen on that.

M - Of course. Tell me how that works?

Jill - Education first! (ha ha)

Debbie [6-71]

M - So what kind of technologies do you use?

Debbie - I have a cell phone. So I use it. Sometimes. Not everyday, but I have it with me everyday. I use the Internet, probably everyday. Listen to music.

M - So you come down here [interview is in the basement in the computer room], and the…

Debbie - Ya, either here or [laptop] at school. I talk on MSN a fair bit. Not everyday, but often.

M - Do you turn it on when you use the computer?

Debbie - It's always on, actually. I never sign out. The computer never turns off, so it just stays there.

M - Anything else - like blogs, or web cams or anything like that?

Debbie - Nope. I sometimes read people stories, which are like any story, kind of. But they are written about people or musicians or whatever, and you can just go and find stories. I like to read. So. It's different topics kind of.

M - And when you say you go online and you - like you have specific areas or …

Debbie - Mostly music.

M - So, downloading songs…

Debbie - Well, ya. I can't download songs anymore because it's my dad's work computer. And he doesn't really like that. But I'll listen to songs and then maybe buy the cd or whatever.

M - When you have these technologies - what or who are you connected to through them?

Debbie - On the Internet? Like, MSN - it's usually my friends or my cousin, who used to live in Taiwan for two years. So we MSN all the time, because that's the only form of communication we had. Because it was just [word missing].

M - So far away.

Debbie - Ya. But, cell phones are usually just for my parents, just to like, so they know where I'm going.

M - So they can call you or you call them?

Debbie - Yes, exactly. Both. Mostly I call them. But. Sometimes I call my friends, but mostly it's just for basically like, [word missing] reasons.

M - Do you get friends calling you on the cell as well?

Debbie - Sometimes. Not … I only have - I have three close friends and then just other acquaintances, kind of. And only one of them has a cell phone, which she doesn't use very often. So. I don't often get calls, but sometimes I do.

M - It depends on who else has one. And MSN, you have…?

Debbie - I don't have a ton of people. I have seven, six or seven. So, just whoever's on when I'm on.

M - So this is a bit different from - because it seems that you're [word missing] sporadic. You're not on all the time, or connected all the time, but you use it just once in awhile. Occasionally. Can you maybe describe a day, a typical day of when you'd use it? Sort of what that would look like?

Debbie - I'd come home from school and then I usually have a soccer practice or field hockey practice or exercise class, stuff like that. So then, come home, eat dinner, do some homework. And then I'd either come down here and go on the computer for an hour or watch TV or talk to my friends, stuff like that.

M - OK, so it's sort of - you don't check in necessarily during the day or anything. But it's more an evening activity…

Debbie - It's more of an evening. It's kind of just, [word missing] kind of…

M - And so, what matters to you in those connections that you have? Like, let's say that you can be connected to the cell phone, with your parents or…

D - Cell phone, I like just 'cause I know I can get a hold of people. I like knowing that. Not just being somewhere and having no way to talk or tell someone where I am. More security, kind of. But, MSN is - I don't know - it's different than talking. You can, not necessarily say different things, but just communicate differently or something. I don't really know how…

M - So tell me more about that.

Debbie - My friend, she's really, really quiet. But on MSN she never stops talking. So it allows you to be a little bit different, or just kind of be different than you normally are. Because you're not face to face, you don't have to look people in the eye and then tell things. You can just kind of talk to them and…

M - Do you find that for yourself as well? Or do you find that…?

Debbie - A little bit. But not hugely, I guess. It allows you to do different kind of things.

M - Any other different kind of things that you're thinking of ? Can you think of an example when you did it differently on MSN than you would have otherwise?

Debbie - (Pause. Thinking) I don't think so, honestly. I'm not a big MSN person, so I don't really have an option - and I only talk to a few people. I don't talk to people that I don't really know. So for me it's a little bit different than for others.

Andrew [14-68]

M - OK. What kind of technologies do you use? Like what do you use, and how long have you used them? Can you talk a little bit more about them?

Andrew - I use cell phones all the time. I'm like connected. I actually over-talk; I use up my minutes too much and I always have to, like, pay my dad 'cause he pays the bill. But, if you go over a certain amount, he always gets me to pay. And I always end up having to pay like $40 extra.

M - So how many minutes do you have?

Andrew - It's free after eight on evenings, and free on the weekend. But then it's like 200 minutes for the month. So I guess I

do use it a lot. I go on the computer all the time. I watch TV. Just basic stuff like that.

M - Your cell is like the regular cell phone, or is it with pictures…

Andrew - It's a camera phone actually. It takes pictures. I took that picture in my background.

M - What street is it?

Andrew - It's on Johnson.

M - So you use that quite frequently too, that feature?

Andrew – U-huh. It's fun; it's like going around taking pictures. Ya. It's pretty cool.

M - And what do you use it for?

Andrew - I just call my friends or family. Keeping in touch - like meeting people. That always works. I don't usually use instant messaging on my phone. I don't know, I don't why, I guess it's like hard to push all the little buttons. And it costs money.

M - Is that extra on your plan?

Andrew - Ya. So.

M - And the computer? What do you use that for?

Andrew - I'm always on MSN. I hate it sometimes though, especially 'cause like when I'm trying to do homework. I just get so distracted. Or like I'm talking to my friends and people say things online that normally they won't say in real life. So, I don't like…I don't know. Sometimes I just try like to stay from it, but ya, I just surf away and occasionally blog. I haven't posted for a long time, I've been so busy with school. But, um…,

M - Have you gone through phases when you've posted more? Or is it sort of just …

Andrew - It's, I guess, sometimes like when a lot of things are happening or I just have a lot of time, and things are happening, then I just post. But if I'm busy and, I don't know… I think actually lately, I've noticed, like, the more I like, I know when you're online and stuff and you have access to so much -

information and - more, like, especially like within relationships. Like online, like people can say things about you without you knowing, but you do know. And some [word missing] on MSN, you know, people will say things to you and you just don't want to go deeper within relationships or problems or whatever, so sometimes the more I get immersed in that I kind of feel like I don't want to be there any more, so I kind of retain (refrain) from going online or from talking to people on MSN or I block people depending on whatever the situation…

M - Can you say more about that?

Andrew - Well, it's like a lot of things. Like school work, one thing. I'm sitting in front of - the computer is right there, it's on - and MSN's there, and people start talking to me. Well, I get distracted. So I try to get away from it there. But I guess especially, like when friends, when you're having a fight with someone or something you know, and you're kind of like you're both not very sure about where you're at with this argument. And you go on, you just say, like, you know, one little thing leads to another and then you end up blocking each other or just, ... sometimes I just, you know - it's almost like you want to have things more simpler, less complex. Like, it's very complicated, the whole thing, but you can kind of pull back from it and make things easier for yourself.

M - So that works, when you block people? I mean, what happens when you see them again? Are these the same friends that you see at school?

Andrew - Ya, well, kind of. Usually depends. I don't try to block people who I know. There's always a way.

M - That's what I was just wondering, like you can remove yourself but at the same time if you see them again you're still in contact with them?

Andrew - I guess so it's like I always go on so frequently that I like, you know - if I can get away from that for awhile and just like…, because when you go online people can say like, 'Well let's hang out' or 'Let's do this' or 'Let's do that.' But if you're not online they can't, and they're probably not going to call you. A lot of people nowadays just don't like to call each other, I don't know. They like tend to just go online and set things up that way I think.

M - So how does that work? Is that like for something that is going to happen in half an hour, or is that something that is going to happen tomorrow?

Andrew - Anything. Like I've gone online, and it's like 'Let's go watch a movie in 20 minutes.' Well, live close and have access to a car. Or like, tomorrow let's go hang out and let's do this or that.

M - So are all of your friends online?

Andrew - A lot of them are. I think it's - I have moved a lot though, so that might be one thing, because I have friends from xxx. I moved from xxx like 4 or 5 years ago. I always want to keep in contact with them. I guess that's probably why I'm just so attached to the …

These excerpts show the diversity of use by youth and are a great introduction into the contexts, complexity, experiences and conceptualizations of ICT use. All excerpts give readers a sense of how MSN and cell phones are an integral and frequently used part of youth's daily lives. Ingrid sometimes leaves MSN on overnight. Andrew uses his cell phone all the time and "over-talks." Lisa uses MSN a lot, is big on cell phones and states it will be "bad" once text messaging isn't free anymore. MSN is a "big one" for Jill. Tanya is on the computer a lot and always uses MSN when she is on. Debbie has a cell phone that she sometimes uses and accesses the Internet probably every night.

There are many factors that influence use and access to information and communication technologies, which are too diverse to include in this work[45]. Factors mentioned by youth in the interviews include in no particular order: (a) economic resources or lack thereof e.g. to buy a new phone, to pay for minutes, download songs; (b) computer location in the home e.g., in personal bedroom, shared common space; (c)

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[45] Please see U.K. Children Go Online (2007) for details.

family contexts e.g. location of family members; (d) personal skills, e.g., typing skills; (e) peer groups e.g. group interests, peer use of technologies; and (f) external obligations and activities in relation to leisure time in the home e.g. lots of homework, part time job.

Within these use contexts, external limitations of use are already mentioned e.g. cost of cell phone minutes and money available to pay the bill, location of the computer in the home, personal ownership of a cell phone or computer as well as how use is influenced by external obligations e.g. length of time talking to friends.

Advantages of using ICT, and especially MSN, are also mentioned. For example: MSN allows you to talk to many people at once and leaves the phone line open, MSN allows you to be available for people 24/7, the Internet allows you to access interesting reading materials and a cell phone is portable and functions well as external memory. The cell phone seems primarily conceptualized by the girls as a safety device. Andrew points out that he really is connected through it and enjoys taking pictures with it. Issues perceived with use include: never getting anything done, being available when people need you, having to stop using a free service and not having phone numbers programmed into the work phone. All these points will be discussed in more depth in the following sections.

What surprised me in these initial interview stages was that the simple question "What technologies do you use?", that I had intended as part of breaking the ice, so quickly sparked inclusion of issues. I interpret this as meaning that the question of use very strongly relates to how ICT matters in youth's lives. As participants talked about their use of ICT, with the primary focus on MSN and Cell Phone use, and how it

mattered to them, three themes of mattering emerged from the data: *fun*, *convenience* and

connections. I discuss these in the following chapter.

Chapter XI - How ICT Matter to Youth

The three themes *fun, convenience* and *connections* emerged from interview analysis regarding the first research question: how do ICT matter to youth? They are presented separately yet they are definitely linked, e.g. what is fun is often convenient and a connection can be convenient as well as fun.

Fun

The first emergent theme is *fun*. Andrew shares a cool experience:

> Andrew - I guess, well I think one thing that was pretty cool was my friend - see, well I lived in Quebec and I moved here, and at the same time my friend, a good friend of mine, she moved to France. So it's like Wow! She's all the way across the world. But she came online; like 'cause she's not - she doesn't usually go online. But one day she came online and she's at her friend's house and her friend has like a web cam and she had a microphone, so we were just like, talking with each other. Which is pretty cool. From all the way across the world.
>
> M - What was that like?
>
> Andrew - It was cool. It was neat, like finding out how she was doing and how I was doing. And then we just ended like, not really like talking, like, How are you! How's your mom! It's just kind of like laughing and telling jokes and talking about fun things. [76-84]

In this quote, Andrew describes how he and his friend spontaneously hang out and have fun. They laugh and tell jokes and talk about fun things. This is an excellent example of how offline youth activities are extended into technologically-mediated spaces. Within this theme of fun, two main categories emerged in what ways ICT use was fun: ICT afforded entertainment and ICT was experienced as a new toy.

Entertainment. I asked Andrew why he reads blogs and he responded: "I guess it's entertaining. Why else would you be on?" [179]. The notion of entertainment, the use of ICT as mediating leisure activities, is reflected throughout our interviews and is expressed through different activities by different youth dependent on their personal interests. Debbie likes to read specific stories online and says: "It's just another thing, kind of. To do. It's not really necessary, but it's fun" [127]. And Lisa points out with enthusiasm in her voice how "it's just really good to talk to people" [095]. Whether it's listening to or downloading music, posting or looking at pictures, chatting with others, reading or writing blogs, engaging in Internet-mediated activities is primarily considered to be fun and entertaining.

In the context of an individualized, leisure culture, Livingstone (2002) suggests that ICT-mediated activities are not necessarily a primary activity choice, but are engaged in as an important means of preventing boredom. She suggests that parents today remember media in their childhood as only playing an occasional role in their lives, whereas children and young people now experience media as being central to their conceptions of leisure and home. She points out that "rather than sharing that very adult anxiety of wasting time, they express their greatest fear, implicitly, as that of boredom" (p.99). The Internet, cell phone and MSN with their capabilities of multiple, instantaneous connections to people and sites of personal interest, afford multiple ways of keeping youths entertained and, as such, matter in their lives.

A new toy. In addition to ICT affording entertainment, the hardware used can be experienced as a toy. Only Andrew expresses the notion of ICT as toy. The other participants do not articulate this notion, but do implicitly acknowledge it. It remains

unclear to me what factors such as gender played a role and influenced this difference

between participants.   Andrew briefly shows his excitement related to a feature of his

cell phone: its ability to take pictures, a relatively new feature on the cell phone market:

> M - Your cell is like the regular cell phone, or is it with
> pictures…?
>
> Andrew - It's a camera phone actually. It takes pictures. I took that
> picture in my background [of the phone screen].
>
> M - What street is it?
>
> Andrew - It's on Johnson.
>
> M - So you use that quite frequently too, that feature?
>
> Andrew – U-huh. It's fun; it's like going around taking pictures.
> Ya. It's pretty cool. [22-32]

Not only is the technologically-mediated activity of taking pictures

conceptualized as entertainment, but the technological device itself, the camera phone, is

considered as an entertaining toy. The toy is the hardware that mediates a variety of

activities. In this case, the activity itself of taking photos doesn't seem to be what engages

Andrew. He did not buy a camera to take pictures. But now that this technological feature

has become available in a cell phone, Andrew enjoys taking pictures within these new

parameters of mobility and easy portability.

In the CHISEL lab, when a new technological device arrives such as an electronic

"Tabletop Display"[46] that is designed to support group collaboration while using an

interactive tabletop, it has to be "played with" in order to become familiar with it.

Excitement of the new possibilities of presentation and interaction is palpable in

discussion and exploration. It is interesting to note, however, that time is not always

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[46] See http://www.merl.com/projects/DiamondTouch for an example image of a Tabletop Display.

available to actually engage in too much "play." Ease of use and how the device fits into

daily activities play a large role as to whether the technology continues to be used or

disappears on the margins of the lab. Rogers' (2003) notions of relative advantage and

compatibility can be seen in how decisions about use are made.

In the case of both Andrew and CHISEL, ICT are used as a toy or tool to engage

in new and different forms of interaction, leading to initial feelings that they are exciting

and fun.

Convenience

The second emergent theme is *convenience*. Ingrid used the word "convenient"

seven times in our interview in various contexts:

> In the morning I just sort of turn the monitor on to see if anyone messaged
> me or not. But usually I don't do a lot in the morning. I just have it on.
> Just in case if someone needs to contact me then it's there. It's just
> convenient, in a way [40].

> One thing is research projects. It makes it a lot easier than having to go to
> the library and drag 20 pounds of books home. It's a lot more convenient,
> because it's right in your own house. Like emails and stuff, it's a lot faster
> than sending letters. [108]

> Ya, that's why the internet is so much more convenient. 'Cause it's right
> in your house. And you click something, you type in a sentence, and the
> information is right there. So at the library you have to look for the books
> too [527].

> If your relatives live on the other side of the world, then they get it
> instantly - so it's convenient" [108]. Regarding her use of web cam's she
> says: "It's convenient for me. 'Cause my dad doesn't live with us, and he
> lives in Australia" [621].

> Accessing music over the Internet saves money and is 'more convenient.'
> [568].

> When I asked Ingrid about a 'best' experience on the Internet, she
> responded: "I don't know. It's just convenient." [587]

Regarding the development of technology in the future, she says that she thinks it just going to get better: "Easier. More convenient" [629].

For Ingrid, the notion of convenience is the dominant conceptualization of why ICT use matters in her life. Being available to friends, not being too physically stressed, having quick access to information and cheap music, engaging with her father are issues that matter to Ingrid. The Internet affords her an easy and convenient way to do so. Wikipedia (2007c) defines convenience as the following:

> A convenience is a luxury that is intended to save a consumer time or frustration. A convenience store at a petrol station, for example, sells items that have nothing to do with gasoline/petrol, but it saves the consumer from having to go to a grocery store. "Convenience" is a very relative term and its meaning tends to change over time. What was once a convenience (eg. an automobile) is today regarded as a normal part of life. Likewise today's luxuries may be perceived in the same way in the future.

This conceptualization can be seen in Ingrid's comments.

Speed, ease and efficiency. Jill also talks about convenience, expressing it through the terms "faster, efficient and easy." In the following quote she talks about why she uses MSN:

> Jill - It's a way of getting a hold of people easily. Like doing a bunch of things at once, instead of spending all this time calling so many people and all that time ---- It's just faster, efficient and easy. It's just as good as using a phone half the time - just easier. Especially if your parents are on the phone or something like that, or your parents really need to use the phone to call your grandma or something like that, and they'll talk for like 2 hours. And yadda yadda yadda [word missing] And so it's another way of getting a hold of people really easy, rather than using the phone. [201]

For Jill, using MSN means that she can get a hold of people easily and do a "bunch of things at once." She can engage simultaneously with people instead of within a linear progression. It's another way of doing things for her, which saves her time and

negotiations with her parents. Her friends' status, as represented on the MSN buddy list,

provide her with a visual indication of their physical presence at a computer[47] and again

save time and effort in making connections.

Immediate, personal communication. Debbie experiences the cell phone as

convenient in the following situation:

> Debbie- I couldn't - like I went to a concert last night and when it's
> over I called my mom on my cell - or my dad on my cell phone
> said 'can you come pick us up from the concert?' And if I hadn't
> had had it, I don't - I guess I would have had to use a pay phone or
> something. 'Cause I don't know how else - 'cause I didn't know
> when the concert was going to end or anything. So, you just kind
> of have to - and you…
>
> M - Is that part of the freedom that you mean too? Like in terms of
> not having to have a specific, like ten past ten or something like
> that.
>
> Debbie - Ya. Exactly. And it kind of gives you freedom, but it also
> gives you freedom in a sense that you can go places and then call
> for a ride or whatever instead of having to like, prearrange a ride.
> [263-268]

Notions of convenience and freedom are linked together in her remarks. Personal

access to a cell phone facilitates her spontaneous communication with her parents,

eliminating the need for her to plan for a ride in advance. As a consequence, it loosens

the constraints she feels when she is dependent on her parents for transportation purposes.

Debbie appreciates the mobility, flexibility and spontaneity personal cell phone

ownership affords her.

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[47] This assumes that the person uses their virtual presentation online as giving accurate information about their whereabouts. One youth in the focus group talked about how their friends would even put information online such as "watching a video" or "in the shower". At the same time, an individual in the CHISEL group commented that virtual representation through an online buddy list icon, doesn't necessarily mean anything anymore because people use it in so many different ways that nothing is reliable anymore. Then again, the previous teen, also mentioned, that you get to know the individual and their habits of using the representation, and then can more accurately assess, what the representation "really" means.

External memory. Ingrid and Tanya offer further points of convenience of ICT:

> Ingrid - Like, if I go out and I forget my cell phone, then, 'cause I
> don't memorize phone numbers, like I'm not the type that can. I
> don't keep little slips of paper. So without a cell phone I'm
> basically kind of by myself and I can't call anyone. It's like, if
> there's like a stalker or something, then I … Another thing is,
> there's a clock on a cell phone, and I don't wear watches. So that's
> always good.
>
> Tanya - I rely on my iPod for my clock. [60-62]

Being able to use ICT as external memory for phone numbers and time display is considered convenient and useful.[48] It is interesting to note how in Ingrid's story the experience of carrying a cell phone with external memory is linked to her experiences of safety and her experiences of self. In Ingrid's case, the cell phone affords connectivity as well as external memory and she links it closely to managing daily tasks and experiences of self. She feels a loss of connectivity when she forgets to take the cell phone with her and notes that she is "kind of by myself" when not able to connect. This will be discussed further in Chapter XIV.

In addition to the cell phone in mobile contexts, MSN presents itself as a computer-based external memory aide. In this form, the external memory does not remember information for you, but it functions as a trigger for Tanya to access her own memory.

> Tanya – … and if you're on MSN and there's other people on and
> you don't even realize you want to talk to them, but then they're on
> and you're, Oh! Right I have to say something, or I have a
> question. You're doing homework on the computer and someone

---

[48] In my high school years in the late 1970's and early 1980's the necessity, advantages and disadvantages of the calculator were highly debated and I recall my mother worrying about what would happen to humans if they had to rely on technology to perform mathematical calculations *without* a calculator. What if electricity failed or batteries were not available? The loss of human skills to perform these tasks troubled her.

> in your class signs on and you can ask them a question about what you don't know. [110]

Tanya points out that this is beneficial because it reminds her to make connections. Looking at the answers of Ingrid, Jill, Debbie and Tanya, the notion of convenience expresses how ICT use fits well into their daily lives and speaks to reasons why these ICT were adopted.

Permeated and shifted boundaries

Howard (2004) calls for paying attention to the boundaries among individual and technologies. Ito & Okabe (2005) see mobile phones as undermining

> definitions of social situations, but they also define new technosocial situations and new boundaries of identity and place. … Mobile phones create new kinds of bounded places that merge the infrastructures of geography and technology, as well as technosocial practices that merge technical standards and social norms. (p.260)

All of youth's quotes above can be interpreted in regard to experiences of temporal, spatial and relational boundary shifts. Ingrid's responses, for example, illustrate how she experiences a sense of convenience when boundaries of time and space have shifted and are considered faster and closer. For her, research conducted from home over the Internet instead of being conducted in the faraway library, is faster and easier because she does not need to physically go to the library anymore.

Use of MSN changes the significance of previous spatial and relational boundaries of home and friends. Relations can be continued from home with multiple friends even if youth are not located in the same space. Relational shifts in boundaries can also be seen in parent-child interaction. For example, Jill

remarks that using MSN is easier than having to negotiate phone use with her

parents. As Clark (2005) also points out, MSN use at home gives teens the

opportunity to stay in contact with their friends from their home in ways which

are also acceptable to their parents.

In summary, youth find ICT use convenient, when they fit and facilitate tasks that

are important to them. It becomes apparent that ICT matter to youth, when ICT use is

experienced as changing boundaries and affording easier, faster and more efficient ways

of conducting activities or engaging in relations. The concept of boundaries is an

interesting one to further explore to understand changes in relations between parents and

their children, for example, how ICT are embedded in changing boundaries of

adolescence, of control and of peer relations.

Connections

The first theme *fun* highlights personal preferences and contexts of individual

youth; the second theme c*onvenience* highlights changes in boundaries through the

development of hardware and software capabilities in relation to youth's contexts. The

third theme c*onnections* emphasizes youth's positions within online and offline networks.

For this section it is important to define the terminology used to articulate the

many kinds of connections. The terms *connection and link* I use to invoke the image of a

connection between two or more points e.g. peer to peer, person to information. The

term *relation* I use to identify human to human connections. The term *network* I apply to

describing multiple points that are multiply connected to each other, including

meaningful and not so meaningful connections. The term *relationship* I use for relations

that are perceived as intimate, such as between parents and youth or youth and close

friends.

Relational online and offline networks. Keeping in touch with people is important

to youth. Here are some examples:

> Tanya - Like it's a good way to keep in touch with people because,
> like I have a friend who I went to basketball camp with. And she
> was [text missing] so I never see her. But then we got each other
> on MSN so we kept talking to each other. And then we went to
> Harry Potter on the weekend and we hung out and everything. So
> now we hang out. But if we hadn't got our e-mails then we would
> have just been - we would have just seen each other at basketball
> games I think. So it's a good way to keep in touch. [589]
>
> Ingrid - Same with relatives overseas. It's not really often that you
> would just call them to see how they are. [585-591]
>
> Jill - I mostly just talk to people [on MSN] just to stay in touch and
> stuff, because I don't see them anymore. And I just don't talk to
> them on the phone or anything. [131]
>
> Lisa - Just staying in contact with people. Like if you ever see
> them again, then you know them, because you talked to them on
> MSN. [221]
>
> M - So are all of your friends online?
> Andrew - A lot of them are. I think it's - I have moved a lot
> though, so that might be one thing, because I have friends from
> eastern Canada. I moved from there like four or five years ago. I
> always want to keep in contact with them. I guess that's probably
> why I'm just so attached to the … [66-68]
>
> M - Can you imagine somebody taking them away from you?
> Being without them?
> Debbie - Yes. I can. I don't use my cell phone that often and I can
> go without keeping in touch - like talking to my friends on MSN at
> night. Like I don't need to do it. It's just I do it because I can.
> [153-155]

Andrew emphasizes that it is important for him to maintain his connections to old

friends in this past hometown and that's why he enjoys using MSN. Ingrid stays in touch

with her Dad overseas. Jill, Tanya and Lisa like to feel that they are still in touch with

individuals they have previously met, but currently hardly see. Only Debbie presents a

different perspective. For her, keeping in touch seems to have an optional quality, she

does it because she can. Keeping in touch through MSN does not seem to have the same

relevance in her life as it does for the other five youth. It is interesting to note that

Debbie is also the participant who has the fewest number of people on MSN, uses it least

frequently, and defines herself and her friends as not very "technosavvy." What could be

interpreted here is Clark's (2005) observation that "[ICT use] practices grow out of and

are intimately related to the demands of society and of life as these teens experience it

within their particular peer-oriented contexts" (p.204). Because Debbie's friends do not

use MSN frequently, Debbie also does not feel the need to engage in MSN-related

activities frequently.

Grinter and Palen (2002) demonstrate a possible effect of not being on MSN.

Participants in their study reported

> … being annoyed by IM non-users and complained of the
>
> inconvenience and additional work required to contact them.
>
> Moreover, non-users' lack of IM presence rendered them even
>
> somewhat invisible, or at least missing-in-action: one participant
>
> (P6) complained about not feeling like she knew where her friends
>
> were. Indeed, some participants felt that maintaining relationships
>
> with IM non-users was more difficult than with IM users. (p.23)

Jill introduces the notion of "keeping in touch without really talking to them"

[311]. She elaborates:

> Jill - Just [word missing] interested, and stuff. I love looking at people's profiles and stuff like that. I'd be like, what they have on there, what kind of stuff they like to do. Pictures. I love pictures. I love looking at people's funny pictures and stuff like that, and just looking around and just kind of browsing, just absorbing everybody. I'm like, what they like to do, what they don't like to do, you know.
>
> M - So you feel you're getting to know lots of different kinds of people and how they are…
>
> Jill - … what they like better. No, say, like, they really, really don't like skiing and they hate people who talk about skiing, or something like that. You know, oh well, never talk about skiing around that person or something like that. You get an idea of what to talk about and what not to talk about. And ya. [315-319]

Reading other people's blogs and being part of social networking sites are ways of keeping in touch without having to engage in direct contact. In comparison to the MSN buddy list, blogs are able to hold rich audio and visual information about the individual. De Kerckhove and Viseu (2003) present a similar idea in their concept of "all-at-onceness." Like getting to know somebody within their home through their decorating style and objects, the virtual environment allows a sense of the person through their representations on a blog, social networking site and MSN. Whereas in a home visit, an individual has to be physically present, online representations do not require physical contact among two individuals. Many different people, therefore, can be absorbed in a smaller amount of time.

Although there are many people represented through various forms of ICT, they will be ascribed different levels of importance. Tanya and Debbie describe the meaning of friends on MSN.

> M - So it helps you keep in touch. That's one thing, sort of with people who don't live right here?

> Tanya - A lot of the people on my MSN I don't have their phone numbers. Because I'm not really that good friends with them. I just have them on MSN.
>
> M - How many people do you guys have on MSN?
>
> Ingrid - On my old [word missing] it's jammed. So it's about like 250. And I have to delete people every week, because I kept getting new people. So about 300 people. And then now it's like 150.
>
> Tanya - I'm like 80. But a lot of them are old e-mails. People who [word missing] Or they're people I don't talk to ever. They're just there. [109-126]

There is a classification of friends that is apparent here, as Tanya says that for a lot of the people on MSN she doesn't have phone numbers, possibly implying that she only has the phone numbers of meaningful friends. People are "just there" or are just "had" on MSN, they are MSN present and yet often physically absent and meaningless in youth's lives. MSN's buddy list presents a representation of all members of the youth's social network who use MSN, whether currently actively in relation with the youth or not. MSN matters to Ingrid and Tanya because it maintains connections into the past and present with minimal effort.

The number of online contacts has been discussed as a status symbol by Thiel (2005). Linking the notion of status to the above statements about the meaning of people on MSN, status would mean having a wide network of relations. The quality of relations, then, is not necessarily important to status.

Ling & Yttri (2002) also relate the number of contact entries in Norwegian Teens' cell phone directories to teen popularity. The type of relation is not important but it is important that I *could* connect immediately and they *could* contact me. What is congruent with MSN is that mobile technologies matter to youth because they afford the

opportunity to get in touch with past peers *in case* they need to, in case they are bored and/or their life circumstances change. What has become important in teen lives is *knowing that you could connect* to people and information and turn a passive presence into an active relation at any time.

Extension of relationships. MSN, cell phones and e-mail enable visibility and mapping of strong and weak ties in social networks (Boase, Horrigan, Wellman, & Rainie, 2006; Bryant, Sanders-Jackson & Smallwood, 2006). Strong relational ties can be strengthened, when the relationship is experienced as extended and / or more complex because more forms of ICT-mediated communication are used and more stories and presentations of self are heard. For example, Debbie explains how MSN conversations in the evening extend her relationship with her friend:

> Debbie - I think that's the main thing. You develop - like, my friend and I - like, she'll say something funny and then it'll be like a joke the next day. And then other people don't understand it. It's kind of like an inside joke. Ya, for sure. It is an inside joke!
>
> M - So, that's the main kind of thing? Do you notice any difference in feelings about it? Like, sort of being online and talking to them and then having an inside joke. Does that bring up any emotions, or…?
>
> Debbie - I kind of like the fact that we have inside jokes. Just because it's something that only she and I have. It's not [word missing] for everybody. Just she and I think that's probably the biggest thing. [81-87]

Developing an inside joke on MSN and later sharing it in a different environment is one way of continuing a relationship. Within contexts of youths' lives, the privacy of the conversation held from the bedroom, as compared to school peer contexts, may also provide contextual differences influencing conversation contents. As Clark (2005) also

points out, youth sometimes hide behind the computer and talk about issues online that they don't feel comfortable addressing with their friends in person. Ingrid and Andrew present further examples of relationship extensions by connecting through a webcam with a relative abroad and talking to a friend who has moved to a different continent. Tanya, in the initial quotes, presents an example of how a weak tie is activated and turned into a closer relation by contacting and starting to personally hang out with an old friend after reconnecting on MSN.

What ICT provide in the above examples are multiple ways of extending relations that previously would have taken more effort to continue given spatial and temporal boundaries. Whether this extension enriches a relation or not may be linked to content and meaning of the conversation, regardless what ICT are used. Frequency may also be associated with enrichment, if the received interprets a message, meaningful or pointless, as a meta-message: "I am trying to communicate with you." (Kitada as cited in Matsuda, 2005).

In summary, participants have described different forms of keeping in touch and connecting with others. MSN lists present a combination of meaningful and meaningless people connections, experienced as being part of a people network. On a larger scale than previous generations (I only had about 15 pen pals and that was considered a lot at that time) and in a quicker time frame (I had to wait at least five days for a national letter turnaround and 10 days for international letter turnaround) young people are able to connect to people and information networks. A foster mother told me the story of a youth who came to live with her and spent many of her evenings online. She pointed out that the Internet and MSN were important to this youth, because during her moves through

several different foster homes, it provided her with a sense of continuity in her life. Being able to connect, being able to keep in touch mattered to her.

As can be seen above, cell phones and MSN afford young people the opportunity to maintain connections and permeate previous temporal and spatial boundaries. It often remains invisible, however, that these permeated boundaries still are embedded within economic, political and technical contexts, such as the choice of software, the ability to purchase ICT or national Internet policies.

What is becoming apparent is that youth are located within multiple networks of people and relations, extending and overlapping with traditional local communities of school, family and peers. The buddy lists can be seen as visual representations assisting youth in managing and navigating these networks. Put in other ways, the buddy lists facilitate youth's engagement and participation in more complex environments built on networked organizational structures. In the following chapter, I link these themes to processes of adolescent development.

Chapter XII - Processes of Adolescent Development

As Steinberg (2005) states, the "five sets of developmental issues that are paramount during adolescence are: identity, autonomy, intimacy, sexuality and achievement" (p.12). ICT matter to youth because they afford them technologically-mediated forms through which they engage in developmentally appropriate actions. This can be, for example, by participating in virtual environments, playing multi-player online games, communicating through MSN with classmates, checking out other people through social networking sites, doing homework collaboratively or downloading music. All five sets of issues can be seen at play in interactions through MSN and the Internet, albeit in different parameters and in different forms than known from offline communities (Maczewski, Storey, & Hoskins, 2003). Brief examples that focus on how ICT can positively affect youth's developments will be demonstrated below.

Identity

Identity is defined as "the psychosocial domain concerning feelings and thoughts about the self." (Steinberg, 2005, p.G4)   Andrew presents an excellent example of reflecting and expressing his identity when talking about his blog. In an email follow up, he presented the following:

> From: *Mechthild Maczewski <mecht@uvic.ca>*
> To: *"Andrew"*
> Subject: *one clarification*
> Date: *Mon, 21 Nov 2005 14:45:04 -0800*
>
> >hi Andrew,
> >
> >thanks again for a great interview on Saturday, hope you had some
> >fun as well! I was just listening to it, and wanted to follow up on
> >one thought of yours. when we talked about being online and what it

>gives you, you said the following:
>
>Be on it, ahm, … its sort of like, you're online and you can just,
>you can talk to people, yeah, like you're connected but not like
>"I'm connected to a computer", but I'm connected to something else,
>that I can't put my finger on what that something else is, but
>you're connected to your friends, you're connected to thoughts, to
>ideas to maybe it's just like being stimulated somehow, rather than
>not…//
>
>I was especially interested in that thought of "i'm connected to
>something else, /that I can't put my finger on what that something
>else is /..." - you're really good with metaphors and images.... do
>you think you could clarify this by describing it in a metaphor,
>poem, picture or something of that sort? that would be great!
>
>thanks,
>mechthild

hey mechthild, here's what i can think of based on that thought,

When one reacts to msn conversations or blog comments, i believe they're

connecting or linking their inner-self/voice with the people on the other

side of the convo/comment.

In a sea of msn convo's, internet sites and blogs, the fishermen (the

computer user) casts his line to catch fish-be it gossip, info, entertainment

etc. What the fishermen doesn't know is that he's actually catching his

inner self on the end of his line-not fish. Being immersed in this cyber

ocean brings up ones true self, and thus people connect to it.

As people react to what's being said, shown or done online, they become

more in tune with themselves and begin to know what they feel, want,

need etc. I believe people bring out their subconscious self this way. It's

like traveling. people go for various reasons- entertainment, excitement,

change. there's a saying "go traveling and find yourself" perhaps being

online is just a way one can mentally travel and find themselves along the

way?

-Hope that made sense!

Andrew

By posting on his blog and learning how to express himself and dealing with the comments of others on his posting, he demonstrates how he manages the presentation of self within these contexts. When reading other friends' blogs he demonstrates how he merges their online and offline presentations of self by linking them together to more fully contextualize what they are expressing.

Autonomy

Autonomy is defined as "the psychosocial domain concerning the development and expression of independence" (Steinberg, 2005, p.G1) ICT assist in mediating activities that afford youth the experience of independence. Debbie presents one example of the interplay of cell phone use and the experience of independence, as she is allowed to go places with a cell phone where she was not able to go before. Lisa talks about how she feels more unsafe when she forgets her cell phone. By affording direct contact between parents and adolescents, use of the cell phone affords young people a greater sense of independence through mobility. There is an interesting contradiction in these dynamics, because as young people gain more independence from their parents and get a "longer leash" if they carry a cell phone, they can be more supervised at the same time. Furthermore, youth seem to simultaneously become more dependent on a technologically- mediated sense of safety and less trusting of their bodily senses. What factors contribute to a technologically-mediated sense of safety and how are they experienced as enhancing and/or reversing a bodily sense of safety is an interesting questions to explore further but beyond the scope of this study.

Autonomy is further experienced, when youth think about online spaces as free or neutral in which they can express views that they can't express in offline contexts (Chu,

1997; Maczewski, 1999; Thiel, 2005). For example, in the context of dating, Clark (1998) found that teens considered online dating to be of less risk than in person-to-person interactions. Chat rooms, she theorizes, could be approached as uncontextualized spaces from the local environments, thus leaving participants with less risk than when conducting actions in their local communities. At the same time, it seems that "there is evidence of much more that is socially reproduced into the chat rooms from the environment of 'real life' than that is subverted" (Clark, 1998, p.159-183). These are some examples of how use of ICT further afford youth a space removed from parental supervision in which to explore their identities and to gain a sense of independence.

Intimacy

Intimacy is defined as "the psychosocial domain concerning the formation, maintenance, and termination of close relationships." (Steinberg, 2005, p.G4) Ito and Okabe (2005) note that intimate spaces of young couples and peers have become ubiquitous:

> Now, widespread mobile e-mail and other online communication tools lead to these intimate spheres being even more pervasively present; mobile text and visual communication can colonize even communal places where telephony would be frowned upon (public transportation, classrooms, restaurants). The micro coordination between family members and the ubiquitous spaces of intimacy between young couples and peers are the most evocative of these new dimensions of always-on intimate connection. (p.14)

In Canada mobile text messaging is not as widely adopted, but within the contexts of MSN and cell phone use spaces of existing intimacy have also at least become extended. Youth in our interviews alluded to friends breaking up through ICT. At the same time Valkenburg, Schouten, & Peter (2005) find that ICT mediated interactions enable formation of social relationships. This latter concept can be linked to the idea of an "intimate stranger" (Tomita, 2005), in which intimate discussions are held with people not known in offline lives. Kasesniemi and Rautiainen (2002) present an example of intimacy creation by adolescents demonstrating trust in relationships, by allowing a friend to read their text messages. Multiple forms of intimacy expression can be seen through ICT use in adolescents' life contexts.

Sexuality

Sexuality is defined as "the psychosocial domain concerning the development and expression of sexual feelings." (Steinberg, 2005, p.G7) We did not address the topic of sexuality in our interviews, but as Thiel (2005) presents, online conversations are used to discuss sexuality. As sexuality issues are a topic that are often considered difficult among parents and adolescents, Internet-mediated relations or spaces provide a different venue in which a youth may feel more comfortable addressing sensitive topics.

Achievement

Achievement is defined as "the psychosocial domain concerning behaviours and feelings in evaluative situations." (Steinberg, 2005, p.G1) Andrew mentioned how he used the Internet to be in touch with a scientific community he belongs to locally. He hoped connections to this group would help him in his career aspirations. All youth

repeatedly pointed out how MSN conversations were considered helpful in completing homework and research was consistently conducted online. Online interactions were definitely considered useful in complementing offline responsibilities and engagements.

In summary, what is happening here is that these youth are using ICT as an additional form of engaging in psychosocial processes considered essential to adolescent development. Youth are using ICT to extend their choices of interactions, including completely virtual interactions as well as merged interactions. These interactions have in common that they require a readjusting of relational boundaries, e.g. parental and adolescent, and peer and stranger. How these new relational forms and relations will evolve and how their meaning will inform processes of adolescent development remains to be seen.

Chapter XIII - How Youth Experience ICT Use

What struck me when reading the transcripts was the emotional responses that youth expressed while engaged in MSN and cell phone use. Patterns of emotional experiences emerged when using the tetrad to think about emotional experience. Because positive and negative experiences were connected with the same activity it became clear that an activity in itself is neither good nor bad, but that emotional responses can range from end to end on an emotional continuum. The two activities I chose that present these emotional continua in specific contexts are: receiving and sending messages and posting information online.

Receiving and Sending Messages

The activity of receiving and sending messages, as previously shown, is enjoyed by most participants. In our interviews, participants also expressed stress and anxiety associated with this activity. Using the tetrad, the analysis question became: What emotions does sending and receiving messages through MSN and cell phones extend and reverse?

Extends	Reverses
MSN and cell phones extend feelings of happiness when the individual is able to send and receive an appropriate amount of messages within appropriate contexts	MSN and cell phones reverse feelings of happiness into embarrassment, annoyance, anxiety, stress and being overwhelmed when too many or inappropriate messages are being sent in inappropriate contexts
Obsolesces	Retrieves
Not addressed	Not addressed

Figure 7. Emotions Extended and Reversed when Sending and Receiving Messages

Happy and embarrassing. Ingrid and Tanya present examples of incidents of being contacted in the movie theatre.

> Ingrid - Ya, just on Sunday actually. I was in Harry Potter with my friend, and he got a text message and he has a little blinking antenna too, so it's like this bright blue thing starts… and he's like, Oh crap! So he's like hiding it. I was trying to reply, but when I was texting it makes that clicking noise and that's really annoying.
>
> Tanya - I hate it when peoples cell phones go off and they pick them up and start talking to them.
>
> Ingrid - My mom called…
>
> Tanya - …this is like a long time ago, - and your cell phone rang and you like cover your phone with your coat…
>
> Ingrid - I remember that.
>
> Tanya - And it like rang again, and I was like, Oh my God. Some people actually leave and then I don't really mind as much. But if people who like stay there, they're like talking on their cell phone and you're like, Be quiet!
>
> Ingrid - Usually I leave - but there wasn't that many people when [word missing] So I just kind of threw my jacket up and "Helloooo?"
>
> Tanya - The theatre's like empty.
>
> Ingrid - It's just like - 'Shut up!'
>
> Tanya - I didn't really care. I was just trying to bug her.

What cell phone owner hasn't had their phone ring at the most inopportune time, bringing with it a rush of embarrassment, a rush to turn off the phone or at least to smother its ring tone? The ringing and blinking of the cell phone in the theatre was experienced as embarrassing by both youth. The other people in the room are feeling annoyed, feelings turned into action by glaring.

This feeling of embarrassment could be attributed to the process of incomplete integration of new media into existing environments. A conflict of group-based and network-based structures can be seen, when both organizational structures are present and collide. Acceptable ways of using ICT within bounded community contexts are still being negotiated. While it has become more socially acceptable for youth to experience a seemingly unlimited connectivity in their own free time in personal locations, in shared bounded locations, such as a school classroom, network connectivity that interrupts others is not considered acceptable. Although outside connections influence individuals in the class, connections inside a classroom are traditionally expected to be confined to classmates and teacher. The classroom community does not tangibly, audibly or visually permeate classroom walls. Recognizing these different constraints of this group setting and being aware that texting somebody outside of class is not generally approved of sets up a feeling of embarrassment when one continues to engage in ICT-mediated networks. Peers enforce this traditional structure by giving negative feedback through glaring. In these contexts the usual positive emotions of receiving a message[49] are negated through classroom contexts.

I also presented a comic of youth text messaging each other in a movie theatre for youth to respond to. In the "Zits" comic, teenager Jeremy is sitting in a movie theatre with other teens who are texting each other while watching the movie. In the comic, text messages contained the content of e.g. "who is that guy sitting in front of you?" and "could I have some popcorn?" Debbie responded in the following way.

---

[49] Note passing and whispering could possibly be conceptualized as print and oral forms of continued connectivity.

> Debbie - Ya. Oh ya! Like, it would just be - like you would be
> multi-tasking but not. Because you're watching a movie, but
> you're also doing something else. So you could miss the movie and
> I don't get why you would have to text message while you're
> watching a movie. But obviously you do. [227]

All interviewed youth expressed a certain wonder about why it was necessary to text someone in a movie, but at the same time several youth had texted somebody or been called by somebody as well. The theatre presents another example of an institutional structure, in which traditionally only neighbouring people would have whispered to each other during the movie. Now a network of people can be "whispering" with each other. A networked whisper could be experienced as enriching (for the person who wants to know who is sitting in front of you) but at the same time (possibly) disturbing for the person who is supposed to answer this question. How this activity is experienced depends on, for example, whether the individuals are paying attention to the movie or not and what their relation to the sender of the message is. What can be seen in these communications is a continuous negotiation between attention and distraction, focus and interruption. Even before entering the theatre, the user has to decide whether to be available or not. The above situations also represent examples of spatial and temporal boundary permeations.

Stimulating and overwhelming. Tanya and Ingrid further presented examples of how stressful and overwhelming receiving too many messages on MSN can be.

> Tanya - It [MSN] can be overwhelming if 50 people are talking to
> you at once …. And they all keep sending you messages and
> you're trying to answer them but you can't and they keep sending
> and sending trying to say something, but then it's like, ahhhhh!

> Ingrid - Like one thing that happened to me one time was, I had 12
> messages at once. And they were all asking me questions. And it's

not just something I could be like, Oh, I'm doing fine thanks. I just can't give them one … answers. And there's like 12 of them all blinking at the bottom of my toolbar. So I'm like, `k, sometimes it's just really stressful. So you're like, OK, stop talking to me, right?

Tanya - And like the noise it makes when people talk. It's like stop doing this! It's like flashing in your face.

Ingrid - I hate the flashing at the bottom. But like most of time, it makes me happy. Because I get to talk to my friends, sort of thing. [170-178]

Whereas Ingrid points out that receiving messages usually makes her happy, when there are too many messages or they require too much effort for her to address all at once, it becomes overwhelming. Expressions of "OK, stop talking to me!" or "it's like, ahhhhh!" signify a degree of anxiety or stress, when there are too many incoming messages. There is a threshold tangible in these situations, in which youth could not multi-task anymore and connectivity induced a stressed response.

Andrew also talks about being overwhelmed in the context of receiving too much information:

M - Do you think there is any sort of negative thing attached to this? Like this whole connection, like the talking to…

Andrew - Overwhelming. Just overwhelming information that normally, that like maybe 10 years ago you wouldn't , if - someone who's in the same situation, but instead of them using MSN or whatever, or blogs, they just wrote in their own little journal, and they called their friends on their phone or just you know went physically to them.

M - More one-on-one.

Andrew - Ya. There'd be a big difference. Nowadays people just have - it's like you have access to more than just what's there. There's like, how people are feeling about this and that. Whereas back then you'd kind of have to guess. You'd just have to…but you could learn, you know…..and I think there might be a little bit

of connection with TV and pop culture and media and how media portrays how things should go, and people kind of form their logic on that too. And MSN definitely makes it concrete.

M - So overwhelming would be one thing.

Andrew - Overwhelming, just like - almost like you don't want to know. It's like, OK, I didn't really want to know that! [386-396]

Although being connected to people and information is experienced as positive, at times this same connectivity brings about knowing information that one really didn't need or want to know about. Filtering through this information and coping with these challenging situations becomes a skill that needs to be learned by the individual.

Sharing Information Online

Really good and weird / creepy. Lisa and Jill share their thoughts about engaging in posting information online.

Lisa - I was going to say, sometimes it's sort of weird though to have pages, like - there's this one thing. … It's just like a page where you can do stuff, like pictures of you, your friends or whatever. And you can just write stuff about yourself. You usually - it's hard to find people. 'Cause you have to know their user name. But, I don't know, it's sort of creepy 'cause sometimes people just look at yours or they send you messages or whatever. And if you know the person's name and their school, it's really easy to find them. Like, someone came to meet my friend one time at her school, and she tried to look away really quickly, because she didn't want to meet them. That's 'cause she didn't know who he was.

Jill - Sometimes it's weird. But sometimes it's really good. Trying to find new friends or whatever. [321-323]

As public digital documentation allows insights and knowledge of other people through their postings online, once information is "out there" it is theoretically possible

for anybody to access it. Debbie explains how this tension affects her Internet and MSN use:

> Debbie - I think I'd be a little bit less sharing on the Internet. Just in case somebody was standing reading it or they didn't close their MSN and somebody went on it. Or you could be telling somebody completely different and that could be really awkward. [175]

In this example, she highlights the possibility of talking to people she doesn't know when she was under the impression of talking to a known, trusted individual. This can perhaps be understood in physical contexts of greeting somebody warmly, when it turns out to be somebody who just looks like a friend. Because computers are often shared in the home, in the case of MSN, who you are interacting with behind the screen name is not visible so it could be a friend's parent or sibling. Recognizing this, based on textual and habitual cues, becomes an important skill to avoid engaging in embarrassing or harmful communication.

Certain software, such as MySpace (2007), enables the user to restrict viewing of their page to authorized individuals, friends or community members. However, even within such specified electronic communities, because digital information can easily be copied and distributed, in order for no abuse of information and relation to occur, a high level of trust among people in networks needs to be assumed. As Jill says, meeting people who one doesn't know can also be interesting. In this example again, the relational contexts and use of information online need to be negotiated: personally, socially, technologically, and, to prevent misuse and abuse within relations, through legislation and policies.

The current debate over Internet use for teens emphasizes controlling and monitoring teen use or limiting Internet use to specific contexts. This can be seen as the

online version of limiting teens' access to public spaces. A more differentiated analysis

taking into account, for instance, the affordances of new technologies, their network

dynamics and reflecting on teens' position within society would be beneficial in order to

provide youth with more complex use.

Ingrid also mentioned feelings of violation in two different contexts:

> Ingrid - For example, I had one of my friends just blog - it was just
> kind of like a daily blog for him too, but instead, like a lot of stuff
> that happened to me. And it's like more on a personal level. It's
> kind of like his blog about me that day. So, when some of our
> friends read it, and they'll like message me, and I'll be like 'How
> do you know that?' And it just in a way, invades you, invades your
> privacy and stuff. But, ya. So in a way, it's like a bad thing. But
> you can't really do anything about it. [272]

Ingrid's example highlights how relational trust can be misused in ways that she

reflects on as an invasion of her privacy. In this case, Ingrid did not voluntary post

information on her blog, but her boyfriend did so without her knowing. Whereas this kind

of activity can be seen among physical groups of teens as well, e.g. gossiping, posting on

a blog has a different quality in that it can reach a larger network of people in less time.

Deziel (2006), a first year U.S. university student, comments that in her social

networking community, Facebook[50], she can virtually stalk her ex boyfriend and see how

many new girls' names he has added to his site. As Andrew had pointed out, we can see

and know now what we might have previously just guessed without software programs.

The activity of sharing information online through posting on a blog or sending

personal information through MSN is popular among youth. In our interviews

participants expressed tensions between e.g. enjoying interacting with new people online

and being wary of who they were interacting with. Using the tetrad, the analysis question

---

[50] See http://www.facebook.com

became: What emotions does sharing information online through blogs and MSN extend and reverse?

Extends	Reverses
MSN and blogs extend feelings of connectedness when information is shared honestly and trustingly in equal relations	MSN and blogs reverse feelings of connectedness to feelings of weird, creepy, intrusion and violation when information shared is abused, taken out of context or acted upon inappropriately
Obsolesces	Retrieves
Not addressed	Not addressed

Figure 8. Emotions Extended and Reversed when Sharing Information Online

The above examples demonstrate how ICT use is experienced and how these experiences are located in relational, technological and institutional structures. These emotions emerge as a result of the combination of new technological features, technologically-mediated issues of trust and privacy, shifted boundaries and relational issues. Whereas the previous emotions emerged from situated use of technologies, the following boundary struggles are experienced within associated processes of navigating oneself through the multiplicity of online and offline relations that MSN and the Internet afford.

Boundary Struggles

Attention and distraction. Andrew says: "I'm always on MSN. I hate it sometimes though, especially 'cause like when I'm trying to do homework. I just get so distracted" [44]. Tanya and Ingrid observe:

Tanya - And if you're on MSN and you're talking to a lot of people, different people, you're not really in the conversation as much as if you're in person. You're kind of distracted with your other conversations. So you're not really paying attention. They're telling a story, like Oh ya, and then you go off and talk to someone else. [348]

Ingrid - So you can be like, Oh, well I'm really tired and I can just talk to you here, right. Because if you're on the phone you have to respond quickly. Actually, like I should pay attention. [402-404]

Tanya - Ya, pay attention. You can't go back and be like, oh what did she just say? 'Cause it's like, Oh, what? And they're like have you been listening to me? No. [402-404]

Although youth report really enjoying MSN, it does provide challenges for them when it comes to coping with incoming messages, paying adequate attention to all tasks and relations engaged in. The phone call presents challenges because it is not as easy to hide not having been attentive and is experienced as more embarrassing by Tanya.

Wallis (2006) describes how deftly teens move from one medium to the next and simultaneously engage in a variety of tasks. Clark (2005) points out that many teens take pride in their ability to multi-task. In our conversations youth express the same sentiments, however, when probed more in-depth, they also express recognition of the challenges of multi-engaging. They recognize that equal attention cannot be paid to every activity and, when it becomes too much, anxiety is experienced. Engaging in multiple conversations and tasks requires constant relational and task negotiations from the youth.

To explore, how a youth would feel when not receiving full attention, I presented youth with the scenario of being with a friend whose cell phone rings and their friend answers it. How would they feel? Andrew responded in the following way:

> Andrew - Well if it's just like, especially if it's just like I'm with a friend and their friend calls them and they just sort of like ignore me. It's almost as if I'm with my friend and then the friend's friend comes along and they both just leave. Sort of the same thing. But you're still - or you follow them. Like they walk away and you kind of following your way until the other friend leaves. Like, you're there, but really you're not. So I guess that's when I hate that. But if it's like, 'I have an important call now' Like my work's calling me, or it's an emergency. That's acceptable, that's fine. [299]

Andrew experiences the interruption in different ways depending on the meaning of the call. When a friend's attention is drawn toward another friend through the cell phone, he feels invisible and hates it. When a friend's attention is drawn away from him because his friend is needed for an emergency, he considers the resulting lack of attention to be okay. In the cell phone scenario, with both friends present, the person from whom attention is withdrawn can see reasons why a delay in their communication and diminished attention occurs and will respond accordingly. In the MSN scenario, one person may be left waiting for the other person to respond, left to guess what the reasons are for the delay in, or end to, communication.

What hasn't been addressed so far is how ICT features can assist individuals in managing emotional responses. Some already existing technological features to reduce feeling of frustration, for example, are spam filter that automatically filter out overtly offensive messages or firewalls that minimize illegitimate access to a computer. MSN's blocking feature, that enables users to not receive messages from another user, is a further example. However, as Ingrid mentioned, a program called MSN Plus now exists that let's the blocked user see who is blocking your message. When will there be a program that prevents MSN Plus users from knowing who has blocked them?

Whereas MSN software makes certain aspects of communication more visible, it also hides previously visible aspects of communications. Whereas reduced visual and audio clues within technologically-mediated conversations can facilitate sensitive or difficult conversations, they may also turn friendly conversations into hurt feelings if a sense of delay or ignorance is experienced. The experienced visibility or invisibility of one's positioning in peer networks may be felt in positive and hurtful ways, revealing relational dynamics as well as different levels of inclusion and exclusion in peer networks. This leaves youth open to feeling empowered or vulnerable.

Empowerment and vulnerability. Jill gives another example of this:

> Jill - Also, I know some people I've heard use it to break up with people or something like that. I've heard, like some people have had that happen to them. And it's sort of like, it's so pathetic, that they can't talk to me in person or something like that. And I'm like, if you think about it, it kind of is. They're just too afraid to talk to you. It's kind of weird. It's kind of like a really mean way of saying I don't want to be with you, or something like that. I never had that happen to me, but….probably wouldn't feel so good. It'd be like, get this e-mail 'I don't want to see you anymore. I just don't like you. Bye!' And you can't respond right away, and who knows if they're going to respond to you and you e-mail them back or something like that, and I don't know, then it would just be awkward when you see them next. Not even say at all. [265]

Ignoring a friend by talking on the cell phone to another friend or not responding to a person's instant message are two examples of negotiating relations and setting boundaries. In Jill's example, she imagines being hindered by her ex-boyfriend's non-responsiveness in discussing reasons for his breaking up with her. It may be easier for the imagined boyfriend to break up with her by hiding behind the technology but for her, depending on his response, it would be harder to come to terms with the breakup.

Jill's example illustrates how the concept of *instant* messaging is not necessarily instant but continuously negotiated between individuals within relational contexts. If one person breaks an agreement unilaterally, the other person may feel frustrated and powerless. One way of trying to continue communication is to try a different type of ICT. The following comic demonstrates the difficulties with non-responsiveness.
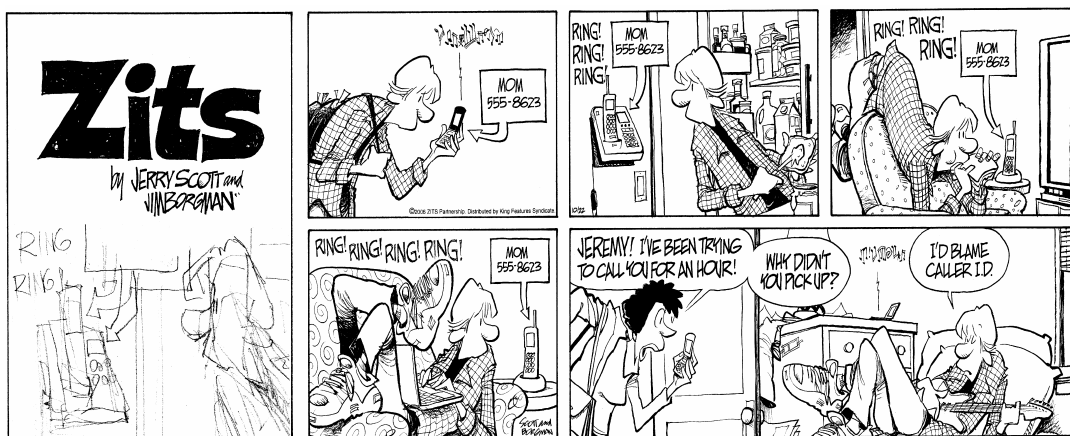
Illustration 9. Zits © Zits Partnership, King Features Syndicate

The comic of Jeremy and his mother demonstrates how the notion of ubiquitous connectivity is linked to relational positioning as well as technological features. Within this balance, relational issues of trust and mistrust, parent and teenager, as well as power are hidden. ICT afford different types of boundaries that differ as to how useful or hindering they are considered. Whereas Jeremy finds the caller ID useful in avoiding his mother, his mother is frustrated by Jeremy's lack of response.

Constant Connectivity?

The above examples deconstruct the myth of equal ubiquitous connectivity and make visible the usually invisible relational, technological and power contexts within which connectivity is located. The last thoughts on this come from my experiences as an interdisciplinary student within Computer Science and Child and Youth Care late 2005.

> I am thinking that whether you find technology disruptive or assistive depends heavily on where you are located. Your location in networks will determine how you assess the technologies being used.
>
> When I sit in Susan's office and my cell phone buzzes in my pocket, it brings a conflict of interest with it. Susan has remarked that she still hates being in a place with a cell phone in public. For me, this has changed, since I have had kids. Having a cell phone implies for me being connected and available for questions regarding kids quite immediately and thus having a cell phone is okay. When talking to Susan about this she remarks: I raised many kids without a cell phone. The discrepancies in experiences are visible, and greatly influence me whether I will look at my buzzing phone or not.
>
> In Peter's office, I still think that looking at it and answering it are interruptions, but if I am expecting an important phone call, I will only slightly hesitate before responding to the phone. He carries a cell phone, he has kids too and does at times answer it in my presence. The first time I actually answered my phone in his presence I blushed, because I was talking to a person I cared about on the phone in front of him.
>
> His location and Susan's location in their offices, my being a guest in these situations and Peter's and Susan's relation to ICT are interesting notions here that influence the kind of network I presume myself to be in and how acceptable it is to answer a phone call.

It struck me at that time, when my ownership of a cell phone was new, how located my practices of use are interconnected to location of use, embedded in relational contexts, as well as power relations within those relational contexts. How these play out, and whether norms will be established as to where and with whom it is okay to answer personal phone calls, will be interesting to watch. The establishment of cell phone free

zones is an example of a policy reaction. Youth point to thresholds of use, but how these hold, as ICT and individuals evolve, remains to be seen.

As ICT become smaller and more portable, a sense of connectivity is not only experienced through the computer, but increasingly while being a nomad or in public places, such as cafés. ICT become increasingly embedded in all aspects of daily lives. The connected individual has to constantly decide when to connect, be connected, disconnect and to navigate and negotiate emotional responses to being connected. Emotional responses illustrate that youth are relationally involved with their ICT and through their ICT with others. In the following chapter, I present examples of how youth conceptualize their relations to ICT in their daily lives.

Chapter XIV - How Youth Conceptualize Self-ICT Relations

Conceptualizations of Self-ICT Relations in Daily Lives

This section presents conceptualizations of ICT in daily lives from youth

interviews and focus groups. It is designed to sketch a picture of the many different ways

in which ICT can be conceptualized.

On the computer. I asked Debbie to give an example of what her day looks like

and how ICT play a role in it. She responded in the following way:

> Debbie - I'd come home from school and then I usually have a
> soccer practice or field hockey practice or exercise class, stuff like
> that. So then, come home, eat dinner, do some homework. And
> then I'd either come down here and go on the computer for an hour
> or watch TV or talk to my friends, stuff like that. [51]

Debbie conceptualizes the computer as an activity that she engages in,

comparable to watching TV or talking to friends. Asked how Debbie would describe the

place of ICT in her life, she responds:

> Debbie - I'd say it's kind of … Just kind of a way to keep in touch
> without really having to be there, or something. Like, you, how do
> you say? It's just a different part of your life, kind of. It's
> completely different than being at school, 'cause you're at home
> and you can just - or walking down the road on your cell phone, or
> whatever. It's just (pause) It's just another thing, kind of. To do.
> It's not really necessary, but it's fun. [127]

Debbie conceptualizes the Internet, cell phones and MSN as a different part of her

life. She thinks of the computer as a tool and as a place that affords fun, convenience and

connections while being at home.

A tool and a crutch. In the following example, Andrew also conceptualizes ICT as a tool and possibly a crutch.

> Andrew - Dependent on it, ya. I just see it as a tool. Don't depend
> on it, don't make it [word missing]. It's almost like a crutch
> maybe. Some people who are really dependent on it can use it to
> hobble on. But I don't like that whole thing of using it as a crutch,
> and falling back on it. But I think a lot of people do.
> Even people who don't use it that often, maybe like, say they have
> a really bad - they try to make friends. Someone who's a social
> reject, they try to have friends, but physically in the real world. But
> then say, that doesn't work, so then they probably fall back on,
> 'Well at least I have friends online or online I can be someone
> else'. Something like that. [401]

Andrew describes his relation to ICT as that of using a tool. He doesn't think that he depends on it. As he demonstrates later in the interview, he feels quite in control of his ICT use and demonstrates his conscious choice of use or non-use. In comparison to his own patterns of ICT use, he presents a fictitious example of somebody who is dependent on ICT use for social interactions because he is unable to make friends "in the real world." This person is conceptualized as not having a choice of use or non-use of ICT. Andrew relates online and offline lives by situating online friends as better than having no friends at all. ICT-mediated relations are something to "fall back on", something that come into focus when the offline world doesn't provide friendships.

You're immersed and it's central. In addition to conceptualizing ICT as a tool, he conceptualizes self-ICT relations through the concept of immersion.

> Andrew - I mean, it's like, just what, I guess, what I'm used to,
> you know. It's weird. 'Cause I can remember when I was a kid, I
> lived in Europe. And I look at pictures and it's like, it's obviously
> it's like there's no, like, technology connections, that I can see
> clearly back then. It's just - Like I can, like kind of - but I don't
> remember not having technology. That's the difference I think.
> Because when you're young you don't - you're a kid, you're just

>like wheeee whatever, but as you grow up you're like, you start to
>notice the world around you. At the same time you're like
>immersed in technology so then, I don't know… [146]

In the above comment, Andrew links his age, technological developments and

local contexts. Photographs of his childhood in Europe document that no technology was

present. Now, he says, he does not remember ever *not* having technology. His thoughts

demonstrate the complexity of self-ICT relations and the difficulties of articulating these

relations. Sounding somewhat on the outside he observes that "you" are immersed in

technology. At another time in the interview he positions technology as central.

>Andrew - It's almost like it's central. I don't like that word, but it's
>sort of true. I just see it more as a tool of like, communicating and
>entertainment and anything else you know. But, it's always there,
>but it is in a way very central. It's just like everything kind of
>orbits around it, kind of a thing. [287]

Andrew, however, doesn't feel comfortable using the word central, it doesn't

quite express what he is trying to articulate. Possibly Andrew is unconsciously aware

that this conceptualization conflicts with his sense of control and choice of use.

Andrew's conceptualizations make visible how pervasive and ubiquitous technologies

and technologically-mediated interactions have become to him.

>*We're wrapped.* In the following example, my question to the focus group

presents the difficulties of articulating self-ICT relations in daily lives.

>M - So this is a hard one to get at, but what I'm interested in too,
>that sense of when you, a lot of you have said that you sit in your
>rooms, right, with all of these technologies. Can you describe a
>little bit about, like what you think or how you feel when you're
>there? Like, it's something that I have a hard time even phrasing as
>a question. Some people describe it as like, being webbed, you
>describe it as normal, not sure how to get at this …
>
>Colin - You're wrapped. [Youth Focus Group]

Colin, a 15 year old focus group member, quickly responded with "you're wrapped." It's a short comment but an excellent metaphor to reflect on self-ICT relations. Wrapped implies that there is a total surround and that all senses of the self are influenced by technology. In both Colin's and Andrew's conceptualizations they locate ICT as more visible than the self. In Colin's conceptualization, the self becomes invisible because it is surrounded by technology. To unwrap yourself could mean to discover the self as not seen before. In Andrew's conceptualization, technology becomes the focal point as all interactions orbit around it. De Kerchove suggests that humans are becoming organic cores or extensions of sophisticated machines (1997). Both ways are illustrated by the comments of Andrew and Colin.

What becomes visible through youth comments are the complex connections of self and ICT in daily lives. Their conceptualizations seem to suggest that instead of technology being external to the self, self-ICT relations are much closer and mutually constituted. Self-ICT relations implicit in the above conceptualizations of youth have been theorized by Markham (1998) and Star and Ruhleder (1996).

ICT as Tool, Place, and Way of Being

In the context of a text-mediated virtual environment, Markham (1998) finds three themes of how her participants experience and conceptualize technology: as a tool, a place or a way of being. Her analysis links research participants' conceptualizations of the technology to their patterns and experiences of use. For example, users for whom the Internet is primarily a tool describe the "technology as a communication medium, a conduit that transmits information from one place to another, a means of keeping in touch

with friends in faraway places – or of avoiding face-to-face context with the people just upstairs" (p.86). Users who talk about cyberspace as "a place they can go to meet and talk with others" (p.86) conceptualize online worlds as meaningful places. Users who "focus on the expression of self and other through the text" (p.86) are experiencing online participation as "a way of being" (p.86). Markham points out that her participants, whose conceptualizations of technology point towards a "way of being," have integrated online communication into their lives to a higher degree than those conceptualizing ICT as a tool or place. Markham further points out that the metaphors of tool, place and ways of being are often used simultaneously, illustrating how complex relations are.

Debbie's conceptualization links to what Markham conceptualizes as a tool and place. As in Markham's interviews, all youth participants in my interviews conceptualized ICT as a tool. Andrew's and Colin's conceptualizations of ICT as more strongly connected links to Markham's conceptualizations of ICT as a way of being. In other words, one might theorize that instead of seeing ICT as more separate from themselves as clearly as other tools, such as a coffee cup or a hammer, ICT are being conceptualized and experienced as indivisible parts of culture and society, self and identity.

ICT as Infrastructure

Star and Ruhleder (1996) add the notion of technology as infrastructure to emphasize relational processes and to de-emphasize "simply causal factors in the development of [informational] systems" (p.3). A technological system can be understood through the conceptualization as infrastructure. The authors describe the characteristics of technology as infrastructure when it has the following characteristics:

1. Embeddedness;[51]
2. Transparency;[52]
3. Reach or scope;
4. Learned as part of membership;
5. Links with conventions of practice;
6. Embodiment of standards;
7. Built on an installed base; and
8. Becomes visible on breakdown.[53]

The notion of embeddedness, transparency and visibility on breakdown become especially noticeable in the comments of youth when asked how they would feel if ICT were taken away from them.

Changes in Self-ICT Relations

How connected relations of self and ICT were perceived to be, became even more apparent when youth were asked to imagine ICT being taken away from them.

It's not the end of the world. Debbie responded in the following way:

> Debbie - Yes. I can. I don't use my cell phone that often and I can go without keeping in touch - like talking to my friends on MSN at night. Like I don't need to do it. It's just I do it because I can.
>
> M - So, if the computer's down for a week or two….
>
> Debbie - I don't enjoy it, but I can - it's fine. It's not the end of the world. [153-159]

She points out, quite neutrally, that it would be okay if ICT were not there. Asked if she feels differently when she is connected or disconnected she responds in the following way.

---

[51] Infrastructure is "sunk into", inside of, other structures, social arrangements and technologies.

[52] Infrastructure is transparent to use, in the sense that it does not have to be reinvented each time or assembled for each task, but invisibly supports those tasks.

[53] The normally invisible quality of working infrastructure becomes visible when it breaks; the server is down, the bridge washes out, there is a power blackout.

> Debbie – I don't think so. 'Cause my cell phone's in my jacket. And when I have my jacket I have my cell phone. But it's not that I act differently when I have my jacket on. It's just with me. It's not a huge deal for me. It's just there. [392]

In comparison to the other participants, this suggests a less important place of ICT in her life. The other participants reacted much more strongly about how ICT loss would affect them.

Kind of in shock. Andrew states the following:

> Andrew - Well it's just like anything. If you go cold turkey, you're kind of in shock. You wouldn't be able to call for rides, you wouldn't be able to talk to people randomly. You'd have to call them. And that would be hard for me, I don't like using the house phone.
>
> M - You see, that's [word missing] concrete situation. Let's say the computer's down, the server's down. 48 hours. How does that…
>
> Andrew - That's OK. I can go a week without.
>
> M - A week?
>
> Andrew - Ya. That's it! [laugh] I mean, I went to Mexico without.but then I was busy…
>
> M - So what happens after that week?
>
> Andrew - Um. Then I try to find other computers. Well, it's 'cause, like routine and habits you know. You can't - when you break a habit, it's hard. So, I guess you try to fall back on something else or you kind of fall back on it. [367-380]

Andrew describes how temporary lack of access is okay but if continuous, he would try to regain the lost infrastructure. Again, he conceptualizes ICT as something to fall back on because this is how he knows how to be. Furthermore, he relates how lack of ICT is mediated through the experience of alternate activities during the time of loss. "I

was busy" could be interpreted as meaning that ICT as infrastructure and tools were
replaced by other forms of being which did not require use of ICT.

Can't stand not being on. Jill explains that it was hard for her to not be allowed to
go on the computer and that she can't stand not being on:

> Jill - I wasn't allowed to go on the computer for two months, and it
> was hard for me. I really like being on because I can't stand not
> being on. I just really wanted to talk to someone, or download
> pictures onto there. And it's hard not to be on it. And now that I'm
> back, I'm on it everyday. More than once. Like all the time. After
> awhile you kind of get used to not being on. You don't really care
> as much. You start using the phone a lot more, but at the same time
> you really miss it. You really wish you could be doing this. But
> you can't. [335]

Although she states that she could "kind of get used to not being on", she
prefers using the Internet. ICT are embedded in her life as part of relations and
activities.

Ingrid and Tanya comment the following:

> Tanya - It's a lot more work.

> Ingrid - It's 'cuz we're so dependent on it. It's hard to go back to
> something that's so not… like, beneficial to you [523].

What Tanya and Ingrid highlight is how beneficial they perceive ICT to be in
their lives. Tanya points out the practical implications of loss of ICT use. Ingrid links
the notion of dependency to her self-ICT relations, indicating how she positions herself
toward ICT. This can also be seen in her following comment.

Feel empty without it. In the contexts of cell phone use, Ingrid expressed the
following:

> Ingrid - I have a cell phone. I've had one for 3-4 years now. I like it. I've had it for such a long time I feel empty without it. Sometimes I go out and I forget it and I feel I'm not connected in any way. And it just scares me because I can't call anyone. [56]

Within our interviews, Ingrid expressed the most connected relation of self and ICT, stating that without her cell phone she feels empty and scared. She initially describes a loss of agency because she feels that she isn't able to contact anyone without her cell phone. For Ingrid, non-ICT mediated ways of being are initially invisible when ICT are lost. In contrast, Debbie expressed how her cell phone lives in her jacket pocket, but she doesn't feel different whether her cell phone is there or not.

A Networked Perspective

Youth as navigators and negotiators. To conclude this section on research interpretations, the following diagram presents an overview of the research themes of mattering, emotional patterns and Self-ICT conceptualizations emergent from youth interviews. Youth navigate and negotiate their ICT use within relational online and offline, self-ICT networks. This circle of youth's ICT use illustrates the different components that youth navigate and negotiate, developmentally, emotionally and conceptually.
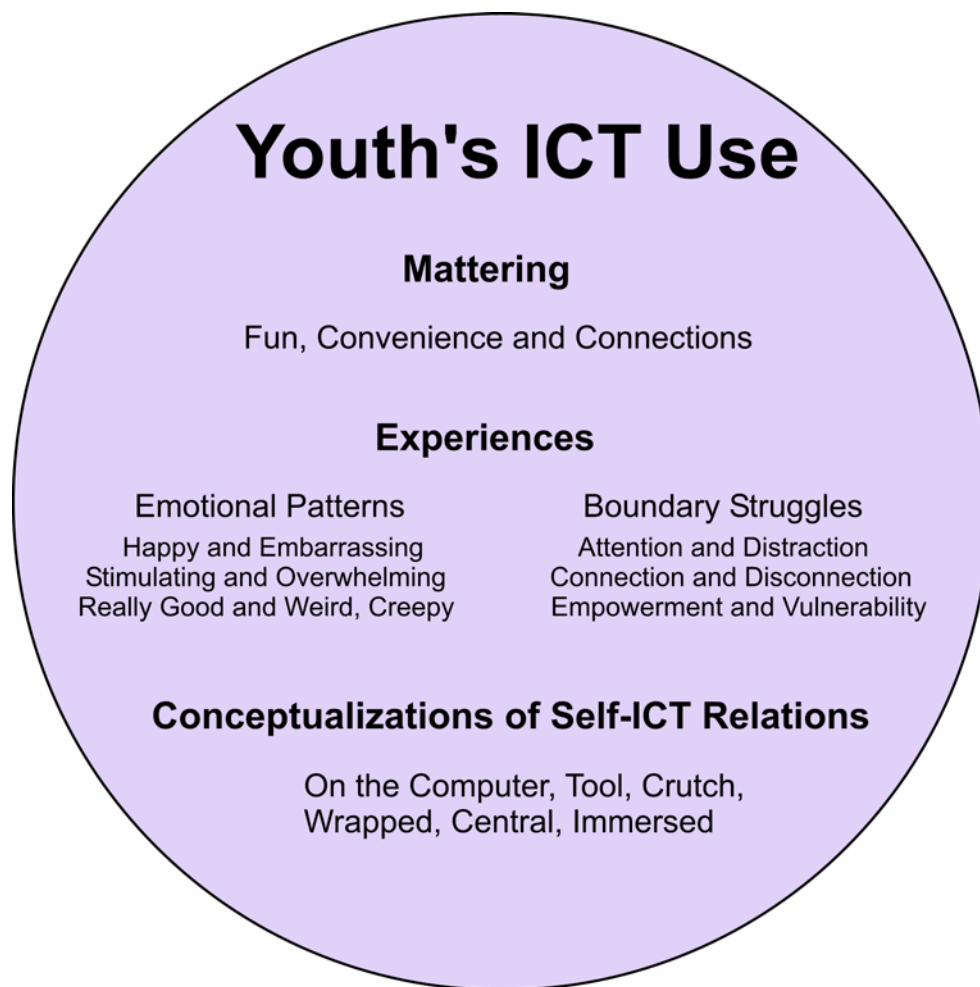
Figure 9. Youth's ICT Use: Summary of Emergent Themes of Mattering,

Emotional Patterns and Self-ICT Conceptualizations

Simultaneously, youth's ICT use is situated in adolescent, societal and technological developments. This situates youth as a navigating and negotiating nexus that emerges within larger contexts. It is further important to remember the many contexts that have not been included in this diagram, such as economic and political contexts, but could be added as further nodes in the network or contexts.

Emergent ICT Use. The diagram below zooms out from the circle above and makes visible some of the contextual developments to which youth's use of ICT is

located. I conceptualize the individual youth and their ICT use as the nexus, in which

online and offline networked relations are navigated and negotiated and from which

youth's experiences of use emerge. The two diagrams together illustrate how unique, yet

with similar patterns, youth's use of ICT can be understood. The arrows connecting all

circles to each other indicate how interconnected adolescent, social and technological
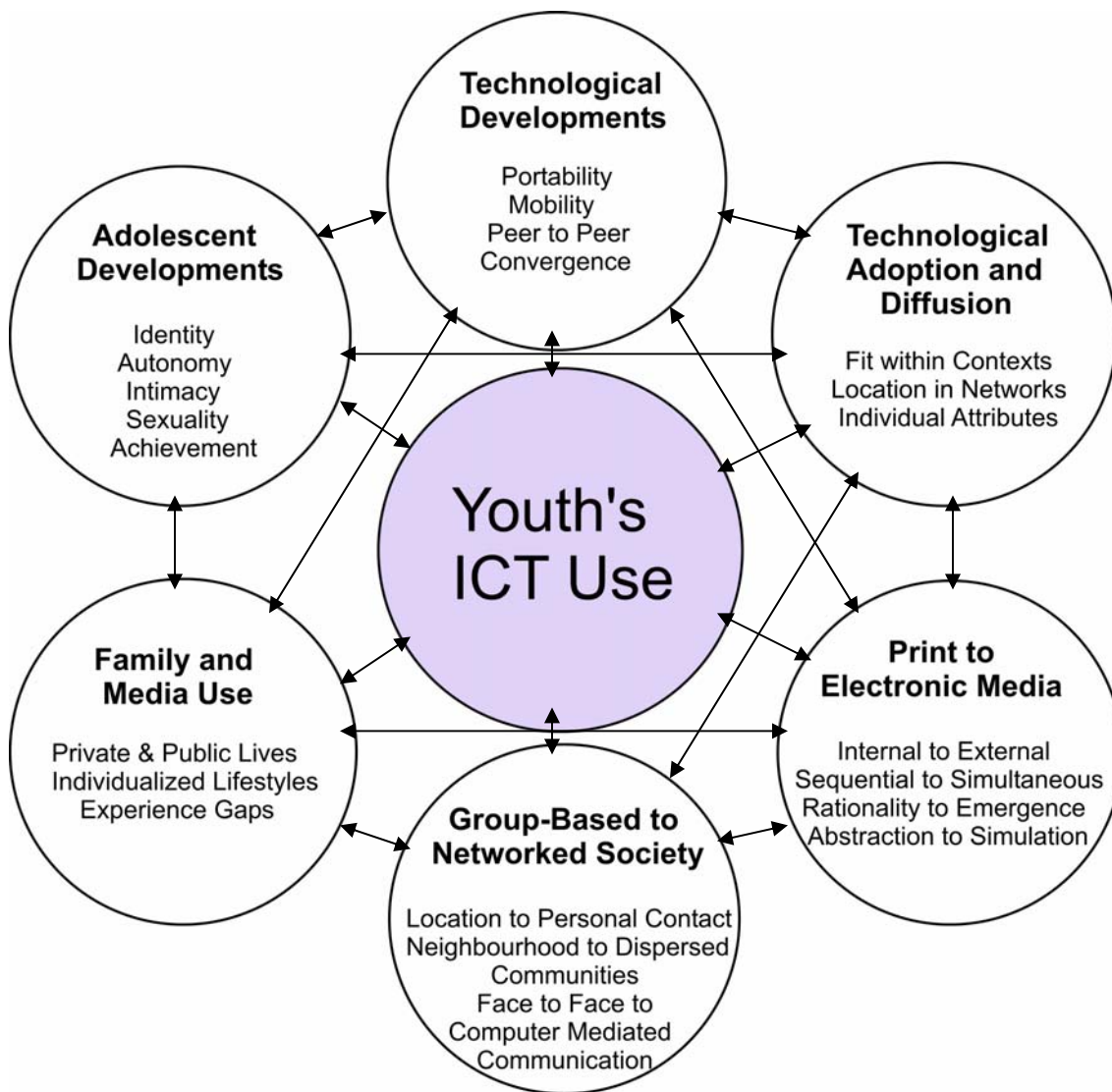
dynamics are.

Figure 10.   A Networked Perspective: Emergent ICT Use

Chapter XV - Conceptualizations of Self-ICT Relations in Networks

Contextual, Indivisible Self-ICT Relations

Youth expressed very different degrees of connection of self-ICT relations in our interviews. Their experiences of ICT loss were related to how strong they felt ICT connected to their sense of self. De Kerckhove (1997) posits that: "we might reasonably expect a connected sensibility, a new psychology, to emerge from the number and speed of network connections …" (p.xxxi). A connected sensibility becomes visible when youth describe ICT being experienced and conceptualized as embedded in daily lives. In a society in which many youth frequently use Internet, MSN and cell phones, I would suggest that even youth who do *not* use ICT frequently are defined by self-ICT relations through their lack of ICT use.

In an overview of theories of self and identity, Baumeister (1987) articulates how concepts of self and identity are linked to specific psychological, socio-cultural and historical developments. But where are the linkages to technological developments? Where technology is specifically addressed in relation to self is, for example, within contexts of technologically-mediated interactions. Hillis (1999) illustrates the interplay of sense of self and technology within virtual reality environments. He understands the self as emergent from language use and argues that a sense of self can be partially gained from the use of textual and visual, electronically-mediated technologies. Turkle (1995) suggests that individuals engage in rapid cycling through multiple selves and posits that her encounters with characters online have put her "in a new relationship with my own identity" (p.15). She emphasizes the extended awareness of self through technologically-mediated means.

As ICT develop and the individual is increasingly located in personalized and networked organizational structures, questions arise as to how self-ICT relations can be further understood. I present two examples of conceptualizations of self-ICT relations in networked structures in the following section.

Person as Portal / Switchboard

Wellman et al. (2003) state that technological affordances of personalization, portability and ubiquitous connectivity have produced societal conditions in which "each person becomes a switchboard between ties and networks. They remain connected, but as individuals available for contact anywhere and at anytime, instead of being rooted in home, café and workplace." In addition to the above, Miyata, Boase, Wellman, and Ikeda (2005) conceptualize the person as a portal.

> The person has become the primary unit of connectivity, rather than the household, work unity, voluntary organization, or social group. Because connections are to people and not to places, the technology affords shifting of work and community ties from linking people-in-places to linking people anywhere. I alone am reachable wherever I am: at home, office highway, shopping center, hotel, or airport. Computer-supported communication is everywhere but is situated nowhere. The person has become the portal. (p.161)

The above conceptualizations of "person as portal" and "switchboard" highlight the shifts in community structures and link them to the rise of the networked individual. The authors emphasize technological affordances and the individual is seen as the unit

located at the centre of communication within social networks. In their

conceptualizations, the individual is positioned seemingly independent of context,

everywhere but nowhere, as an information processor who directs and processes multiple

inputs and outputs. The relations between individuals and ICT that I envision through

such a metaphor seem automated, sterile and void of meaning. The concept of

individuals at the centre of communication networks is also presented by Clark (2005) in

the contexts of teenage girls.

>   *Youth at the centre of their social networks*. Clark (2005) suggests that
>
>   we are witnessing a rise in wider, geographically located social
>
>   networks that are characterized by immediate, possibly intimate
>
>   connection with others and that vary in intensity not by one's
>
>   association with a particular social subculture or even particular
>
>   social group.… we see the emergence of a much more individually
>
>   organized social network, one that is organized around concerns
>
>   about how one is able to present oneself in relation to what one
>
>   perceives as the desired image for different peers. Young people
>
>   move freely among different communication forms in pursuit of
>
>   the maintenance of their social network and the sense of self that it
>
>   bestows on them (Drotner, 2000 as cited in Clark). (p.218)

Similar to Wellman et al. (2003), Clark positions youth at the centre of social

networks and as easily moving through different communication forms. Although ICT

still are not contextualized, Clark contextualizes girls' ICT use and their sense of self

within their peer and family contexts.

What my research has added to the above conceptualization is emphasis on how youth continuously negotiate multiple incoming and outgoing narratives of self through emotional responses and boundary struggles. If the meaning and experience of the relation is not shared by individuals, one or the other may resist contact. Ubiquitous connectivity remains a theoretical possibility embedded in mutually negotiated relations between the person being contacted and the person contacting, within contextualized technological infrastructure. I present a further conceptualization of Self-ICT relations in networks below.

Proprioceptive Self-ICT Relations

De Kerckhove (1995) suggests that

> Our proprioceptive appreciation of reality involves the whole body
> and all the senses. Its point of reference is neither representation
> nor pure vision. The way I relate to the world of instant and
> pervasive communication is from my point-of-being not from my
> point-of-view. There is only one place in which I am completely
> there, and that is within my own skin, even though that skin and its
> technologically assisted sensory extensions reach far beyond the
> immediate limits of vision, touch and hearing. My point-of-being
> is not exclusive but inclusive; it is not a perspective vision that
> frames reality, but rather, is a place defined by the precision and
> complexity of my connections with the world. (p.187)

De Kerckhove describes how intricately the body and ICT are connected by (a) ICT permeating the boundaries of the skin, and (b) the body being extended

through electronic visual, audio and sensory extensions. An example of this

sensory extension within youth's contexts would be an individual who is engaged

in online games. Their body is sitting in front of the computer screen, their

sensory experiences extended through ICT yet experienced within the body. In

these conditions of Self-ICT relations, de Kerckhove describes an individual's

perspective as shifting from a "point-of-view" to a "point-of-being" within

technological and social networks yet contained within the skin. His

conceptualization of self differs from Wellman et al.'s (2003) conceptualizations

by positioning the individual in closer, reciprocal relations to ICT, instead of at

the centre, and the point-of-being as emergent from the connections.

Relational Being

De Kerckhove's point-of-being is similar to Gergen's (1996) notion of relational

being, in which the self is positioned not as a core entity but as existing within relational

configurations. Gergen presents connections among societal, cultural and technological

changes which lead him to suggest that change in psychological conceptualization of self

is necessary to reflect these changes. He suggests a change that discontinues "presuming

a self at the centre of the social world to seeing relationships as the peduring reality of

which the self is an integral part" (p.7). In this dissertation, youth have contributed to

making visible the notion of a relational being by illustrating their situatedness within

online and offline relational networks as well as with ICT. To expand on Gergen's notion

of relational being, I suggest seeing a form of networked being. Youth's sense of self is

constructed and emerges within online and offline, at times technologically-mediated

relations, within networked organizational structures.

Continued ICT developments afford increasing channels and relations in networked structures. To assist in understanding the individual's location within complex networks visualization techniques are helpful.

Visualization of Relational Networks

Vizster[54] (Heer and Boyd, 2005) is an example of visualization software that assists understanding of an individual's location and connections within networks, in this case within the contexts of the social networking site Friendster. Illustration 10 presents an individually-centered model which shows Amanda (centre) and her connections.
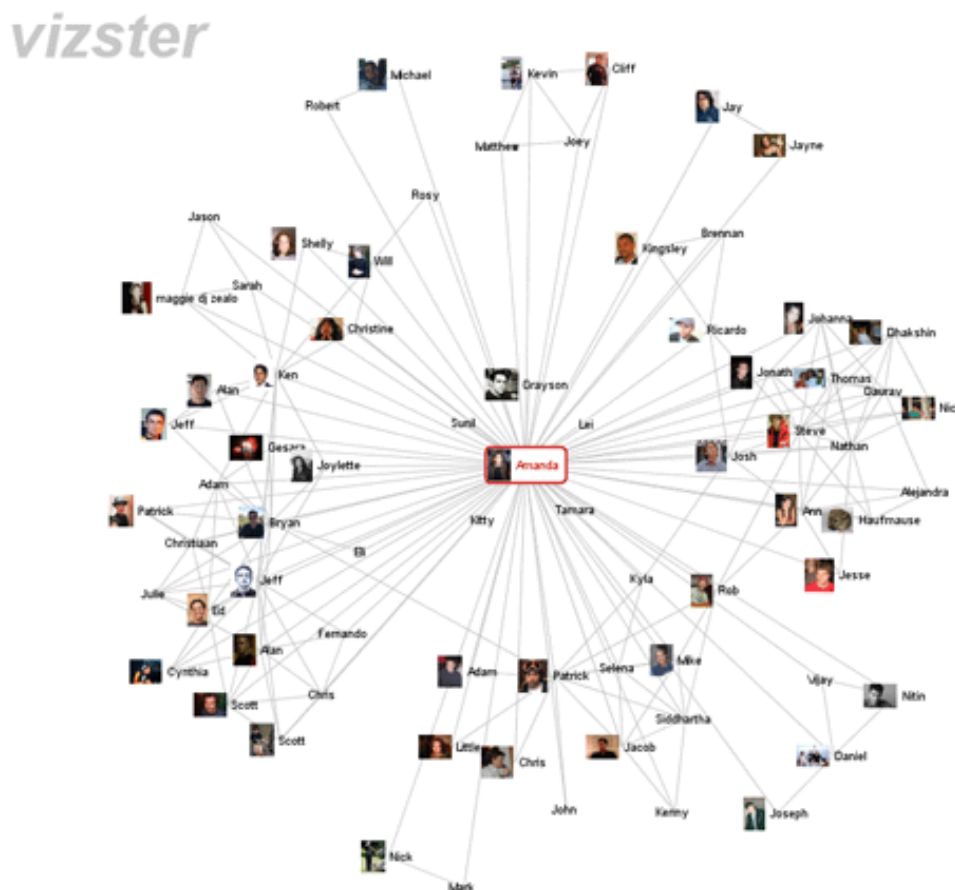
Illustration 10. Individually Centred Model of Connections in Friendster
From http://jheer.org/vizster/images/basic.pn

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[54] See http://jheer.org/vizster

The second visualization[55] of Amanda's connections builds on the above by situating individual connections in communities, such as university friends and relatives.

Illustration 11. Community-Based Model of Connections in Friendster
From http://jheer.org/vizster/images/community.gif

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[55] See http://jheer.org/vizster/images/basic.png

Vizster portrays who is connected in relation to Amanda. The visualization tool enables "exploration and analysis of online social networks, including both topological and pr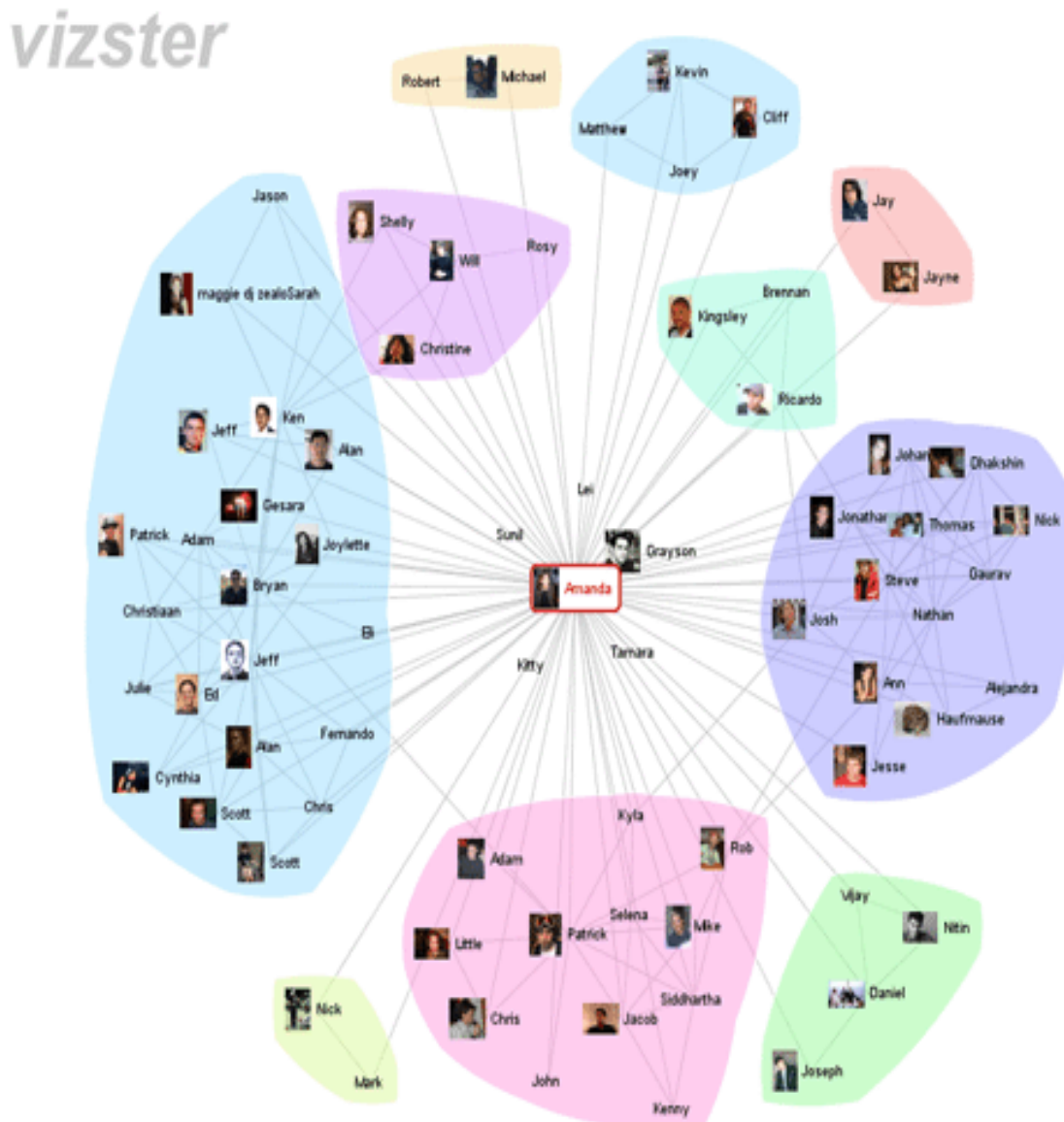ofile data" (n.p.) This visualization tool is a starting point in understanding her networked online relations as it presents how many connections she has, how many communities she is linked to and who her closest connections are. This kind of visualization of youth's networks would provide a visual image for youth to reflect on who they are connected to. It would provide an interesting starting point for discussion about relations, meaning in relations and what kind of needs are met by these relations. In addition to visualization of online networks, it would be interesting to visualize individuals' offline networks in comparison. This would provide youth, parents and educators insights into the youth's location within online and offline networks.

In current form, Vizster presents a snapshot of the self in relational networks. Information about specifically what kind of communication methods are used, what the meaning of the relation is and how frequently contact is established in a connection cannot be gained. A fluid visualization would provide further insight into an individual's activity within the networks. The following relations art by Capozzo (2006) visualizes movement in relations and provides a glimpse of how individuals may be thought of as travelling among their multiple connections. His art looks like a dynamic Friendster visualization and reflects how I could imagine visualizations assisting in understandings of processes of emergence.
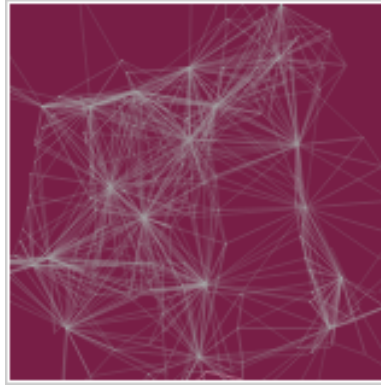
**Illustration 12. Static Image of Moving Model of Changing Connections.
From http://www.abstract-codex.net/relations/index.html**

Capozzo's art also links to de Kerchove's (1995) conceptualization, which

emphasizes awareness of bodily outlines as important to remain grounded in the

complexity and technologically-mediated extension of senses in networked data

flows. De Kerckhove suggests that "a proprioceptive appreciation for one's

point-of-being in networked data flow is among the conditions for retaining a

measure of physiological and psychological control over one's whereabouts in

electronic nomadism" (p.202). Translating de Kerckhove's thinking into the

contexts of youth's online and offline relational networks, a key psychological

component of human experience of a sense of location within self-ICT relations

may be linked to the appreciation of the whole body that continuously and

reflexively senses its shifting location.

On a textual level, the CHISEL Group is also developing ways of facilitating

navigation in complex environments through the insertion of tags into source code in

order to document coding practices for future reference (Storey, Cheng, Bull, & Rigby,

2006). I theorize that youth use technological programs such as MSN, blogs and social

networking sites to assist them in visualizing, navigating and negotiating the complex

relational environments in which they live their daily lives. For example, by documenting their lives publicly through blogs, youth are externalizing information previously conceptualized as within the body into a technological space and managing their relational connections by consciously representing themselves online. MSN is a further example, in that it could be conceptualized as an important tool for managing relational networks by being able to continue physically separated connections and to engage more frequently in meaningful relations.

Within increasingly indivisible ICT-Self relations and networked organizational structures and dynamics, how do youth articulate negotiating and navigating these relations? I provide some glimpses from research participants in the following section.

Chapter XVI - Negotiating and Navigating Self-ICT Relations

Emergence, Reflection and Skills

As Ingrid describes, when ICT-mediated networks and relations cannot be accessed, anxiety sets in. These tensions seem to arise as the individual learns to integrate new technologies into their daily lives, learns to use the tools and learns to be within offline and online spaces with their selves extended through the tool. Constant stimulation, adaptation and management of endless content and extensive relational networks are tasks that can be difficult to process. The networked individual constantly has to position her or himself within their visible and invisible relational and informational networks. Andrew describes how he coped with the challenges of writing a blog.

Blows you over and learn to control it. Andrew comments on his experience of learning to write a blog.

> Andrew - Ya, it was really interesting, 'cause, like, I just notice my first few posts were just like random things. And a whole lot of them, 'cause you're so like free expression. It's just like, kind of blows out of you, and there's no like editing really. It's all raw. But. I was reading and I just started to notice - 'cause before when things are happening - you type and you know that other people are going to be reading it, so then, I don't know, you always know someone else is going to….it's sort of why you're writing it, right? And then...it's sort of hard to explain. ----- thought earlier. And just like, I notice that I just sounded more mature or like more aware of what was going on around me. It's like, almost like before, there's like no control in it or like there's people just say things and I didn't know what to do. But now, I've come to learn, come to own this little world, or whatever, and I've gone a step above it and now I know I'm more in control of it and just like, I don't have to say this or that or I know what people are saying now. There's a difference. I can tell. I don't know what it is. [100]

In the beginning, his posts just blew out of him because of a sense of unlimited freedom. Now he sounds much more reflective of what he posts, how he writes it and is much more aware of what kind of comments he might receive in response to his posts. He demonstrates learning about his position in relational networks as he gains an understanding of who might read his posts and anticipates what kind of responses he may receive. Use of blog technology changes Andrew's position within old and new relations as he writes and reads different stories about himself and others, gaining an extended view of intricate relational interactions and learning to read between the lines of online and offline relations.

> Andrew - Something, ya. It's like, it's very like... I think everything on it, like on blogs and stuff is very superficial, but there is so many hidden things towards it, you know. If you just like read - if you really know someone and you like read their journal, it's kind of interesting being able to like pinpoint like, Oh, I know why they are saying that. I know what's going through their head. But then you can kind of laugh at like whatever persona they like giving out. Whatever image they're like, you know - whatever they're saying through their words. But you really know what's happening, like, well, sometimes. So. I don't know. Maybe it's like a way for people to like change themselves. I don't know. If they like - or maybe, like if they try to type out or give off like who they think they are but they're trying to find themselves somehow. I don't know. (laugh) I'm getting lost in my own thoughts, but hey, this is …. [227]

Andrew has developed the skill to reflect on what people post on their blogs and why they would post what they do. This is one example of merging online and offline identities. Andrew struck me as a very perceptive youth with good insight into human behaviour and it seemed that he was interested in why people do what they do. This interest may have made him reflect on his and others' writing more in-depth than other youth may engage in. The two factors

that Andrew describes as being relevant to feeling in control of his use are

awareness of his position as a blog writer within networks and his knowing

people offline in addition to their online presentation of self. What youth do not

engage in such a learning curve? An interesting question for future research

becomes what other forms of managing Self-ICT relations exist.

Andrew also gives an example of how he prevents MSN from becoming too

overwhelming.

> Andrew - 'Cause it's [people, information] always around you.
> But, it's like loud noise. If it's too much, if it's too overwhelming,
> you just sort of plug your ears and just stop for awhile and sort of
> recollect your thoughts maybe, and plunge back in. Then maybe
> the loud noise changes into, like, beautiful music. [135]

Andrew describes how he is able to disconnect and connect in ways that allow

him to negotiate and navigate networks of people and information without becoming

increasingly overwhelmed. The challenge of connecting and disconnecting was also

articulated by other research participants.

Connected on a larger level and being by yourself. Debbie presented the

following thoughts:

> M - Do you have any concerns about people being too connected
> to technology?
>
> Debbie - I think you should always have your space, kind of. Like
> not always have to be talking to somebody. I don't think you
> should have to depend on those people just to talk to you. But, I
> think it's also good to talk to people and be connected.
>
> M - So this space, to have your space, can you say some more
> about that?
>
> Debbie - Like, my friend in Halifax, she's [word missing] there's
> always someone at her house. Like, she has seven good friends,

and their boyfriends and all that kind of stuff. And it was just she never went to school by herself. Somebody always came and walked with her. Every morning. And it's just - I think I would find it really hard to always be with someone. I think you just need your space to think or relax or something. I don't know. That's just me though.

M - That's what I mean. So you think the space is important for you to think?

Debbie - I think you just need to figure some things out on your own.

M - So would you - say if you were constantly connected, do you think you would then resent that? Like, if people could always - would always know, like in some ways [word missing] mini situations that your parent can't call you and theoretically if you answer [word missing] pick up the phone, they can't always know where you are. Right? Like, if people were connected on a larger level, or even more so, do you think you would…

Debbie - I think you'd get where you would kind of - ya you would resent it. Just because you were never alone. Somebody was always able to contact you whether you wanted them to or not, basically. Like, you cannot answer your cell phone, but they can leave you a message on your cell phone or they could - I don't know, call you 13 times, or…I don't know. I would find it hard. [374-389]

Debbie raises the interesting issue of what gets lost when you are always connected, always busy with something and never alone. Kroker (2004) clearly articulates that "in the 21st century we both inhabit and are, in turn, inhabited by the electronic world as our primal identity. While we may sometimes wish to disconnect from technology, the world of electronic communication definitely appears to be unwilling to disconnect from us" (p.9). The following comic demonstrates that even if it is possible to disconnect from technology, individuals risk not being understood by others.

**Illustration 13. Baby Blues © Baby Blues Partnership, King Features Syndicate.
From Victoria Times Colonist, 2006, October 22, C8.**

A CHISEL focus group member also commented on the trade-off of being disconnected and connected:

> Eleanor - I think it's that quality versus quantity thing, it's human nature to acquire things, right, and it's like that with relationships, right, you know, you want to have all these friends and all these good connections with people, but the reality is you only have so many hours a day and technology mediates in some way these relationships, but at the same time it's not without the trade-off of having dinner with your family and the telephone rings, right - ahm (jokes: telemarketers) - yeah it might be, but it could be a friend who you haven't seen in six months, right and they know that they'll catch you at home at that time. It's a trade-off, you know, I don't know if we win or not … you know, I know when I go mountain climbing I don't have those connections, don't miss it right? So… [CHISEL Focus Group]

As societies and individuals embed technologies in their lives, *how much, when and what kind* of ICT use is acceptable is still emerging. Societal values and norms become visible as certain activities, such as gaming alone, are more likely to be condemned than playing games with others. Negotiation of boundaries is also seen as individuals construct new boundaries of, for instance, what is too much time spent using ICT and what are too many simultaneous connections. With sensibilities developing, that include being networked as a usual part of life, what kind of coping processes of connection and disconnection will emerge?

Tetrad Understanding of Self-ICT Relations

Again, the tetrad is useful to think about what gets extended and reversed in relation to self, when a new medium is introduced into society. Youth in our interviews illustrated that frequent use of MSN, Internet and cell phones is linked to experiences of self. Using the tetrad, the question can be posed in the following way: What experiences of self do MSN, Internet and cell phones extend and reverse? The tetrad below presents one example for each square of the tetrad.

Extension	*Reversal*
Self in relations	Self is threatened
Obsolescence	*Retrieval*
Self in isolation	Self in extended family networks

Figure 11. Tetrad Understanding of Self-ICT Relations

What the introduction of a new ICT affords in extension, e.g. a greater awareness of self and control over ICT use as illustrated by Andrew, in its reversal can lead to a

threat to self if an individual is not able to negotiate self-ICT relations e.g. by sharing too much information with individuals who are not known. Whereas invited connections are experienced as positive, uninvited, non-mutual permeation of physical boundaries become invasive and abusive. The technology, without its location in relational networks, cannot be blamed for joyful or harmful events.

In order to minimize harm to individuals or maximize learning, joy or other valued experiences, events themselves need to be deconstructed in consideration of online, offline technological features and affordances as well as the recognition of the individuals' location in networks. The following section presents questions to assist understanding youth's ICT use from a networked perspective.

A Networked Perspective: Understanding Youth's ICT Use

Guiding questions. When asked about my research results, two questions are posed frequently: "So, is the Internet good or bad for my child?" and "How do I know what to look out for when assessing my child's Internet use?" Unfortunately I have no definite answers. I do, however, suggest that *the answers emerge from looking at the child's location within online and offline relational networks*. I would even suggest comparing it to a parent's decision of what kind of activities, e.g. soccer and theatre, to enroll their child in. How do I assess whether an activity is good or bad for my child? Many of the same assessment questions apply: talking to my child, understanding their perspective, being aware of their interests, recognizing their peer networks, their family values, family dynamics, etc. What differs is that the Internet / ICT bring with them different forms of communication and interaction than in offline settings. Technological affordances need to be understood in combination with relational networks. As a start, I

suggest the following questions for understanding ICT use from an emergent networked

perspective based on the sites discussed in this dissertation. The questions are written for

a parent perspective but can be applied to all adult-child (youth) relations.

Table 10. Part I

Questions for Understanding and Assessing Youth's ICT Use

Site	Questions
Youth Adolescent Development	• What kind of activities is my child engaging in? • How do ICT-mediated activities matter to my child? • Are the activities appropriate to my child's developmental processes? • What kind of ICT is my child using? • Do online / offline activities complement each other? • Who is my child connecting with online? • How do ICT-mediated interactions fit into the contexts of my child's life? Are they providing critical emotional support? Are they methods to prevent boredom? • What developmental issues do ICT-mediated activities hinder and / or enhance?
Youth Relational Networks	• What kind of relational networks does my child have? • Are they primarily online networks? Offline networks? A mix of both? • Is my child excluded / included in offline / online networks? • What do the online relations mean to my child? • What do the offline relations mean to my child? • What kind of family relations does my child have? • What kind of peer relations does my child have? • How does my child experience ICT interactions? Would they rather be doing something else? Does my child have the option of doing something else?

Table 10. Questions for Understanding and Assessing Youth's ICT Use

Table 10. Part II

Questions for Understanding and Assessing Youth's ICT Use

Site	Questions
Youth Family Contexts	• What are the child's relations within the family? • How do we as a family use media? • What kind of family values as well as ICT values are held in the family? • What kind of relational processes does the family / parent value? What do parents want their children to learn in building relations with others? • What boundaries in the family and in my child's life have been moved due to the new medium? What kind of communication and interaction does it promote / hinder in the family? • How are these changes experienced by all? • How do family members deal with these changes? (e.g., reflective, threatened, fearful, supportive) • Does the child have a choice of participation? Is she / he an active participant in choosing her / his online / offline engagements? • How do my ICT experiences as a parent differ from those of my child? What bothers me about my child's use of ICT? Why is it an issue? What dynamics of interaction does it reflect? • Does my child talk to me about what she or he does online?
ICT	• What do I and my child understand about the ICT being used? What have our experiences been? • What kind of interactions does the technology afford? Do I and my child understand the differences? • What kind of technological skills do I and my child have? What kinds of skills do we need? • What kind of relational practices does the specific ICT encourage? How do I or my child experience them?

Table 10. Questions for Understanding and Assessing Youth's ICT Use

The number of the questions per section already indicates how little of assessing youth's ICT use is about the actual technology used. If the Internet / ICT are used to engage in harmful, abusive behaviour toward the child, such as sexual exploitation, I believe that many of the questions that are asked to determine offline abuse will be relevant as well. For example, how is my child's health? Is my child experiencing depression, anxiety or stress? Are ICT related to these experiences? Does he or she behave differently than before she or he started using ICT? Have they become withdrawn? Do they spend much of their spare time on their own with the computer? Are they showing signs of disengaging, e.g. dropping out of school, grades dropping?

As a parent, I am interested in making the best decision for my child and in protecting them from harm. Out of fear, and I do understand that fear, not letting my child use a specific technology is one approach to protect them. However, if I consider my child to be an active agent embedded in multiple developmental, social and family dynamics, I believe that empowering the child with the age-appropriate skills and guidance to critically navigate their paths in ICT mediated relational networks to be a preferable approach.

As an adult, my experience of adolescence may not easily map to my children's experiences. To better understand, I need to find ways from which to understand new media e.g. by trying it myself, talking to friends who use it or going online to find out information. I believe it to be important for parents and educators in general to engage our children in critical discussions of new ICT and the many forms of content and relations it affords. It remains important to check in with the child, not only in regard to online content and teaching technical skills, but as to how they are experiencing online

interactions and relations. How does my child cope within these online and offline networks? Media literacy needs to include relational and structural components, hidden dynamics of power, inclusion and exclusion of the Internet as well as learning to surf, find and evaluate information. Young people who frequently use ICT seem to be constantly stimulated, constantly adapting to these stimulations and navigating their way within these complexities. What social, psychological and technical skills do they need to cope with being a nexus? How can we as parents assist them in learning these skills?

When examining young people's ICT use, therefore, it is necessary to have an understanding of their emergent location within different forces. Individual developmental processes, why use matters to them, their location in peer networks online and offline, as well as their relations to family members, all have to be taken into account. What needs of the child are nurtured, what experiences are had and what is being avoided online as well as offline are pertinent areas to explore from a networked perspective in order to assist young people in using ICT to their advantage.

The suggested networked perspective and questions for assessing youth's ICT use are an example of practically applying insights that emerged from this research inquiry. Throughout this dissertation, I have emphasized youth's ICT use as emergent from multiple dynamics. I have positioned youth as actors who are able to navigate and negotiate complex online and offline relational networks as well as a nexus emergent from larger contexts of adolescent, societal and technological developments. I envision a *networked perspective* which encourages individuals to engage in understanding youth's ICT use as a complex and differentiated process.

However, inquiring into youth's ICT use has also surfaced this inquiry site as one where struggles and challenges of changing relational and technological boundaries within changing organizational structures can be seen. In addition to providing insights into questions such as how ICT matter to youth, this dissertation has raised many larger cultural questions that I will highlight in the concluding chapter.

Chapter XVII - Conclusions

Research Story

The story I have told in this dissertation is one of flow, shifting boundaries and the interconnectedness of adolescent, family, societal and technological change. It provides insights into how Internet, MSN and cell phones matter to youth, how they are experienced and conceptualized. Interpretations of youth interviews show how rapidly ICT are developing and how cultural attitudes and values are transforming in contexts of networked organizational structures. This dissertation also illustrates how research on the introduction of new information and communication technologies into society can be used to interrupt constant flow, in order to notice, become aware and reflect on occurring societal and cultural change.

My interviews with youth made apparent that young people extend their developmental processes into ICT-mediated spaces. They engage ICT as means to continue their developments of identity, autonomy, sexuality, intimacy and achievement. Youth use ICT to have fun, facilitate their tasks and manage their relations. Youth consider ICT to matter, when they afford experiences relevant within the contexts of their daily lives.

This extension of experiences by youth can be used to reflect on the value of online and offline experiences. When offline experiences have been extended through ICT-mediated experiences, questions surface as to what kinds of experiences we as a society want adolescents to have? What are the kinds of values and skills that we would like adolescents to acquire? What kind of constructions of adolescence and parent-child relations are currently in place and how are they being challenged?

In our interviews, youth expressed emotional responses to being engaged in ICT-mediated activities. Simultaneous feelings of stimulation and being overwhelmed, being happy and embarrassed when instant messaging were felt. I illustrated how boundaries of attention and distraction, empowerment and vulnerability were negotiated by youth. What emerged is that ICT-mediated interactions and possession of ICT themselves have become yet another site for the experiences of empowerment, vulnerability, inclusion and exclusion. As youth have illustrated, these go beyond issues of technological access. They involve being included and excluded in the social relations that ICT afford.

The emotional responses by youth to being engaged in ICT-mediated activities can be used to reflect on the dynamics of interactions within online and offline relational networks. Questions surface as to how dynamics of power are constructed and experienced within the contexts of ICT-mediated networks. Who become the key players within youth's peer contexts and why? What kind of role do ICT, their developers and policy-makers play within these contexts?

Analysis of youth's conceptualizations of ICT in their daily lives illustrated diverse conceptualizations of ICT as a tool, as a way of being as well as an infrastructure. ICT positioning in relation to youth's sense of self became especially visible when youth were asked to imagine a loss of ICT.

This connectedness between self and ICT can be used to reflect on patterns of human interaction and accompanying values. Convenience, efficiency and speed emerged as important values for the youth in their interactions. What kinds of interactions are youth learning to value? What is being extended, reversed, made obsolete and retrieved by faster and increasing ICT-mediated communications? The

close connections between self and ICT also surfaced in that youth's specific story of ICT use is located within the larger contexts of human-technology relations and raises questions as to the meaning of technology within society. How much do we as a society value technology and its affordances? Does access to ICT become a human right? Is increasingly linking technology with a sense of self a valued direction of cultural development?

What emerged from all the connected nodes in this dissertation is a sense of how young people negotiate and navigate themselves in relational online and offline networks in close connection to ICT. I positioned youth as an active nexus within relational networks as well as being emergent from contextual networks. This positioning emphasizes the connections between the self and technological structures within the organizational dynamics of networks.

Questions surface in regard to where else network structures within youth's lives can be seen. What kind of family relations are networked individuals developing in the home? What role do we as a society want person-to-person interactions and physical connections to play in the future? Within selective, changing communities, what will the networked individual value? What kind of agency is experienced, developed and necessary for individuals to negotiate and navigate emotional responses in technologically-mediated situations?

In addition to providing a networked perspective of youth's ICT use that encourages the reader to link developmental, social and technological dynamics of technology use, I have contributed to the development of research methods and methodology within networked, technologically-mediated research practices. I have

described an interdisciplinary, multi-sited research process between the two often disconnected fields of human and technological development, have used the tetrad as an analysis tool and have advocated for re-conceptualizing research practices in the contexts of networked societies.

As a final contribution I have raised many more questions for future research, which I have conceptualized in terms of "network thinking" (Barabasi, 2002).

Future Research

Adolescent developmental processes. One area of future research would be to explore the connections between online and offline developmental processes. For example, how do youth choose whether to pursue online or offline spheres of autonomy and identity? A second area would be to extend conceptualizations of theoretical concepts, such as agency and self-esteem, to make visible how ICT-mediated interactions and ICT themselves play a role in these essential concepts of adolescent development.

Dynamics of interactions. Another area of future research would be to apply the dynamics of scale-free networks (Barabasi, 2002) to the contexts of youth's lives and evaluate whether they would be beneficial in understanding the connections among family contexts, peer relations and youth themselves within networked contexts and in new ways. This application may provide a network perspective that would be helpful in addressing issues of ICT-mediated interactions, such as networked bullying.

Cultural values. A further area of research would be to explore what kind of meanings are associated with individual events and what kind of factors emerge as most relevant in contributing meaning to a youth's life e.g. how do technological and non-

technological communication patterns relate? What events or activities have a lasting impact on young people and in what kind of situations?

An additional area of future research would be to explore current conceptualizations of childhood and adolescence from parent and youth perspectives. For example, what happens to valuing imagination and creativity in non-technological settings, such as in the garden, and how do imagination and creativity present themselves within ICT-mediated activities? Are value shifts happening in regard to children's and adolescent's experiences and if so, what kind? Or do certain values remain and just their locations of expression change? A longitudinal study to assess whether and how cultural values are changing would be necessary. Comparing this to other countries in the world in contexts of globalization would open new contexts of connectivity.

Technology and self. Another area of future research would be to explore how lack of access to ICT is experienced by youth within the contexts of most peers using ICT. How do these youth conceptualize their Self-ICT relations? And if SelfandICT are indivisibly linked, what kind of policies and practices need to be developed to ensure that continuous connections are not misused to cause harm? What kind of hardware and software features need to be made transparent or need to be integrated into tools, in order for the user to critically assess and reflect on choice of use? What kind of practices and policies are in place to ensure ethical developments in the use of ICT? These questions could lead to further areas of future study.

Navigation and negotiation skills. Being located in networks means continuous travelling along online and offline connections absorbing multiple relations. Individuals are presented with constant choices to make: whether or not, to whom and in what form

to be available. This can be tiring and overwhelming until ways of managing different

pulls can be found. An area of future research would be to explore more in-depth what

kind of learning and coping mechanisms youth develop in order to navigate and negotiate

their online and offline relations. What kind of skills do youth need to successfully

negotiate and navigate themselves in online and offline networks? What kind of

technological tools would be helpful? How could they be developed to allow youth an

empowered position among networks within online and offline relational networks?

Barabasi (2002) remarks that "in the twentieth century we went as far as we could

to uncover and describe the components of complex systems" (p.225), now it is time to

"demand a brand new framework" (p.226) that allows for "fitting the pieces to one

another, node by node and link by link, and capturing their dynamic interplay" (p.226).

In general I believe that the focus on dynamic conceptualizations and integrative research

practices will continue to evolve.

Researcher Reflections

As I complete the writing of my dissertation, I look back on my research process

since 2001. My journey too encompasses stories of developments and change in

academic and personal contexts. My inquiry and process has been shaped within

interdisciplinary networks and the temporal timelines in which it was undertaken. At

times it was exhilarating to make connections and at times it became a challenge to

remain grounded at the nexus. My qualitative research lens sometimes clouded, at times

I was pulled toward technological determinism, at times my focus on connections

disappeared and at times I lost my voice in the network of connections. As I now talk

about my research, I am acutely aware of how each person in my network approaches my

work from their locations within their academic and personal networks and connects to a

specific node of the dissertation. Although networked perspectives exist, I have become

aware of their links to more bounded perspectives.

The recognition of how closely youth's sense of self has become linked to ICT,

surprised and somewhat concerned me. Stated provocatively: Am I really becoming, or

have I already become, an organic extension of ICT while simultaneously extending my

self through ICT? I believe that it has come to concern me because youth's stories have

made visible how incredibly powerful ICT relations can be, and yet, how frequently ICT

are not conceptualized beyond an invisible tool that only becomes visible upon

breakdown. It concerns me how powerless I may feel if ICT are taken away from me and

how invisible power relations within technologically-mediated networks currently are.

As ICT develop at a rapid pace it is difficult to have a sense of what is happening here.

Further research is required, as well as a stepping back to discuss rapid technological

evolution in connection with social and cultural changes as ICT use is firmly

contextualized in daily lives. Awareness of the dynamics of online and offline settings

enables me to better understand and act from my point of networked being.

Looking Forward through the Rearview Mirror

This research process has made visible the constant change and flux in

contemporary North-American society. Insights within this dissertation already need to

be temporally located in 2001-2006 as information and communication technologies

continue to evolve and contexts continue to change. Understanding what has happened in

the past enables me to glimpse insights and possibly anticipate some of the future

implications of current societal and technological developments. All youth that I talked

to within this research agreed that experiences in offline groups and social settings were preferable to those in online settings. It is my hope that by continuously *looking forward through the rearview mirror* (McLuhan as cited in Benedetti & DeHart, 1996), we as individuals and as a society can more fully understand emerging processes of human interaction. This will assist us in responding to them in ways which enable peaceful online and offline relations for the children of our future.

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Appendices

Appendix A: Guiding Questions for the Interviews with Youth

1. Can you describe the most interesting experience you've had using the Internet, cell phone or MSN in your life?

    How did this affect you? What did you think about it?

2. How does using the Internet, cell phone, MSN matter to you? Can you give some examples?

    How do you feel about not being contacted? Do you ever feel excluded? Overwhelmed? Anxious? Stressed out? How do you manage all these connections? Do you have different ways of reacting to different messages and people? How are your personal relationships affected by being or not being connected?

3. What and/or who do you feel connected to through these technologies? Can you tell a story as an example?

    How do you connect and disconnect yourself?

4. Can you imagine someone taking these technologies away from you? What would you think and feel?

5. How is it different sitting in a room full of people or alone in your bedroom connected through MSN? Do you feel differently about yourself in these situations? If yes, why? If no, why not?
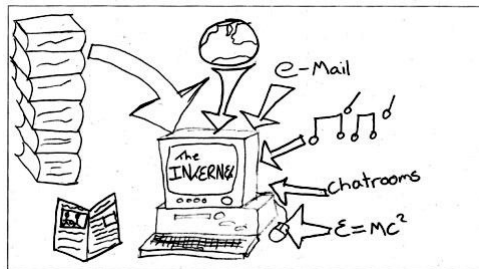
Connected Youth Research Project
University of Victoria, School of Child and Youth Care & Computer Science

Looking for Interview Participants
16-19 years old!

Participate in a 1.5-2 hour interview and talk with the researcher about how technologies are part of your lives. You will receive a movie/concession voucher as a Thank You for your time!

To participate you need to:

- Be connected through technologies
- Be between 16-19 years old
- Have used the Internet / Cell Phones / MSN frequently for at least one year
- Live in/around Victoria, B.C.

When: November. Tuesday/Wednesday 15/16 or 22/23 anytime, Saturday/Sunday 19/20 or 26/27 anytime.
Other times can be arranged to fit both of our schedules.

Location: Your House or University Campus, 2300 McKenzie Avenue, Technology Enterprise Facility (TEF), Room 225 (just up the stairs) whatever works best for you.

Come alone or bring a trusted friend and participate!
Contact the researcher at xx@xxx.xx (xxx) xxx.xxxx
Find more Project Info @ **http://xxx.xx.xx.**

Appendix C: Copyright Permission

April 27, 2007
Mechthild Maczewski
University of Victoria, BC, Canada

I authorize you to include in your thesis "Understanding how Information and Communication Technologies matter to Youth: A Network of Developmental, Social and Technological Dynamics" the following 4 comic strips.

Baby Blues October 22, 2006
Between Friends, date unavailable
Zits October 22, 2006
Zits, date unavailable

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