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SOCIO-SPATIAL IMPLICATIONS OF AMERICAN UNIVERSITY STUDENTS' CELL-PHONE CONSUMPTION: MULTIPLE CONNECTIONS, PERSONAL MANAGEMENT, AND SOCIAL NEGOTIATIONS

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Abstract

Since the late 1990s, cell phones have rapidly diffused into the hands of American university students and their uses have been incorporated into campus settings. This dissertation contextualizes the socio-spatial significances of their usages of cell phones by exploring three aspects of consumption geographies: 1) multiple meanings associated with ownership, use patterns, and experiences; 2) personal management of communication systems which cell phones are part of and; 3) social negotiations involved with using cell phones in different socio-spatial contexts. Central to the examination of these topics is the issues of mobility, extensibility, and surveillance. This study contributes to the growing number of studies on cell-phone consumption and on young people and technology in two respects. First, it offers empirical findings on the practices, the meanings, and the experiences associated with cell-phone consumption by university students attending two Pennsylvanian campuses through the analysis of data collected through both survey questionnaires and personal interviews. The data compiled are assessed qualitatively and quantitatively and triangulated with a textual analysis of university publications across the nation. Second, in the light of the empirical findings, this research provides discussions on the social constructions of youth and technology by drawing upon and fusing theories and frameworks found primarily in the fields of young people's geographies and studies of the social dimensions of technologies. I illustrate how uses, meanings and experiences associated with consumptions of cell phones are related to students' various identities and lifestyles, often reinforcing and defying various stereotypes. In addition, this work also highlights how the management of personal cell-phone uses revolves around aspects of residential and familial circumstances, cost, and the degrees of openness and aspirations of students to social connectivity. Finally, I discuss how various social negotiations involving young people in domestic settings, campus spaces, transitional spaces, and public roads involve different levels of monitoring processes. Their cell-phone ownership and usages are both legitimized and problematized according to the perceived and actual "necessity," "competency," and degree of "personal freedom."

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Chapter 1—Geographies of American university students' cell-phone consumption

Introduction

Indisputably, cell phones have become a popular technological device used not only the professionals and the wealthy, but also by "common" people throughout the world. Along with Internet-connected computers and other information communication technologies, cell phones have become an indispensable means of facilitating personal communication and access to various forms of information. One can observe and hear people using cell phones in various settings— walking down a street, driving around town, riding mass transit, at home, in classrooms, shopping malls, movie theaters, restaurants, and airports. The infrastructures to support wireless communications have been upgraded and implemented in the interval of a few years across regional, national and transnational scales (Kano 2000). As this "wireless" and easily portable technology becomes more prevalent, a number of social issues (e.g., intrusiveness in public spaces, safety hazard while driving) also become widely debated in various arenas from newspaper editorials, to speeches made by lawmakers, to casual conversations at social events. Concomitantly, there has been a growing number of scholars working in media studies, cultural studies, gender studies and sociology that have been examining the diffusion, meanings, and behavioral practices associated with the mass consumption of cell phones in different national and regional contexts. These international and interdisciplinary collections of studies are represented in series of edited volumes that have appeared since the late 1990s (Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997; Brown, Green, and Harper 2002; Katz and Aakhus 2002; Okada and Matsuda 2002; Katz 2003) which provide a wide array of both empirical and theoretical research on cell phone consumption. Included in these volumes are also collaborations and contributions by policy makers and researchers working in information communication industries.

Very little interest however, has been exhibited by geographers for examining the socio-spatial implications associated with the uses of a communication tool that is potentially used *anywhere* and *anytime.* One of the spatial consequences of this spatial freedom is that it facilitates people in conducting business, keeping in touch with others, socializing, performing parenting, and increasing feelings of safety and security beyond the designated spaces of offices, homes and payphones. But this also means that cell-phone usage has brought certain meanings and experiences to places where calls are taking place such as university campuses, streets,

restaurants, and buses. Cell phones and other similar wireless technologies are gradually but surely being incorporated into our lives, and, as more people are using them, their uses become integral part of everyday spaces and vernacular landscapes.

The various meanings attached to how cell phones are changing from the notion of "luxury" to those of "convenience" and even "necessity." In the United States, the "usefulness" of cell phones has been discussed increasingly after tragic events such as the 1997 school shooting that took place in the Columbine High School in Colorado and the series of terrorist attacks on Sept.11, 2001. In the wake of Columbine killings, many school teachers brought cell phones to their classrooms as a safety device. Similarly, after the terrorist attacks, several newspaper articles commented on aspects of information communication technologies such as mobile phones, satellite TV and e-mail and their role in bridging "distance and destruction to help business, families, friends and governments truly connect" (Harmon 2001). More broadly, advertisements from the earlier phase of diffusion have appealed to a sense of fear among travelers, especially women, to purchase phones and service contracts for their use in the case of a vehicle malfunction or other emergency (Rakow and Navarro 1993). Even beyond moments of crisis, cell-phone uses are increasingly identified to be routine activities of modern everyday life for a broader spectrum of society.

The "yuppie" (young urban professionals) image associated with cell phones in many national contexts (Roos 1993; Robison and Goodman 1996; Solnit and Schwartzenberg 2000, 119-135; Haddon 2003, 51) is eroding rapidly, and access to cell phones is no longer restricted to small segments of society. The affordability of cell phones and associated calling plans has allowed their consumption to not only permeate into different economic classes but also into different age groups. It is estimated that nearly 80% of American people between the ages of 19 to 65 already own a cell phone and there is growing cell-phone ownership among those who are over 65 (Selingo 2005). According to the 2005 figure provided by the PEW Internet & American Life Project, a non-profit research center studying the social effects of the Internet on Americans, "fully 76% of those in Gen X" (age 28-39) "own cell phones and 75% of younger Baby Boomers" (age 40-49) own them. Sixty-eight percent of both Gen Y (age 18-27)[1] and older Baby Boomers (age 50-58) own cell phones, "as do 62% of those over age 60" (PEW Internet website 2005 a and b). These figures illustrate that cell phones have become a ubiquitous item in many households and diffused into different age groups.

[1] Generally, "generation Y" includes those who are younger than 18 but the survey sample excludes younger generation Y because the study looked at "adult groups."

Cell phones are most often conceptualized as a *personal* technology—with multiple family members and individuals owning their personal cell phone—as opposed to shared landline or Internet-connected computers in a household. Generation Y—a common term that is used to describe today's age group of early teens to mid-twenties (born approximately between the early 1970s to mid-1990s), are seen as an important "market" from the point of view of the cellular industry because Baby Boomers and Generation X has already achieved high ownership rates. In addition, Generation Y—also dubbed as the "digital generation"—would be more likely to embrace wireless technology, compared with those who are over 60. For instance, PEW Internet & American Life project also comments that the most likely cell-phone texters (i.e. sending messages using Short Messaging System) are in Generation Y where "fully 63% of those with cell phones in that cohort are texters" which is much higher compared to cell-phone owners in other age cohorts (31% of Generation X, 18% of younger Baby Boomers, 13% of older Baby Boomers, and 7% of those over age 60) (PEW Internet website 2005 a). Hence, particular uses of cell-phone technology—such as texting—are associated with certain age groups. It is no surprise that the bulk of the marketing of cell phones is directed toward young consumers who frequently use them and who are more likely to spend more money on extra features that come with cell phones (Selingo 2005) as well as towards middle-aged parents who pay for "family shared" calling plans. From soccer moms to high-school students, there are different "reasons" for each having their own cell phones and different ways in which they are used.

One of the places where cell phones have penetrated into the young demographic cohort is in college towns and on university campuses. University students using and carrying cell phones have become part of everyday landscape and experiences across campuses in the United States. Many of today's young adults who fall into the age category of Generation Y are university students. Being a graduate student and an instructor spending time on American university campuses and in college town settings, I observed first hand the rapid diffusion of cell phones among the young generations during the last few years. On a more and more frequent basis, I began to witness students on their cell phones as they walk across campus and to regularly hear cell-phones ringing in different spaces, including classrooms. As an international student, these observations were neither necessarily surprising for me nor unique to American university settings. Instead, it was more puzzling that cell-phone phenomenon did not flourish earlier when cell-phone consumption was already a fact of life in my home country of Japan. Nonetheless, increasingly, cell phones have become a popular item to own and use in the United States and while I worked on my dissertation research, I also became a cell-phone owner.

There are common experiences associated with university student life—moving away from family and friends, studying hard, socializing with various people, and exploring different aspects of life in mutli-cultural settings which universities provide. As cell phones diffused into hands of university students, cell-phone uses became intertwined with such typical circumstances and activities. The use of a cell phone may be now considered a mundane activity. However, it is not appropriate to assume that all university students are homogeneous with respect to the uses of cell phones or the experiences or meanings associated with them. Perhaps also, as I mentioned earlier, many university campuses in many other countries are also experiencing the cell-phone phenomenon, and hence, it is not exclusively an American phenomenon. It is necessary therefore to examine cell-phone consumption on multiple scales from global, national, to community, to individual levels but also in terms of different social contexts and groups. In order to contextualize the socio-spatial implications and geographies associated with cell-phone consumption by university students, in this dissertation I explore how cell-phone consumption became prevalent and integrated into many college students' lives by discussing the dimensions of usage mainly relating to family, gender, ethnicity, residency, and age group.

Young people and cell-phone consumption in the United States

In the United States, the number of subscribers of wireless services has been dramatically increasing due in part to the declining costs of both cell phones themselves and their usage plans since the mid-1990s.[2] According to the Cellular Telecommunications and Internet Association, over 180 million people subscribe to cellular service in the U.S. today (2005) compared to 340,213 in 1985 and around 109 million in 2000 (CTIA Website c 2005-2006). According to a 2003 article in the magazine *Wired*, "roughly 3 percent of US households have let go of landlines; and additional 8 percent are expected to follow suit during the next five years" (Stein 2003, 43). Further, "nowhere is that clearer than among college students and young adults, more than 10 percent of whom now rely exclusively on cell phones" (Stein 2003, 43). Similarly, according to an on-line article by CNN called "Bye, bye landline phones," as many as 7.5 million have "cut the cord"—abandoning regular landline phones and only using their cell phones instead. The

[2] For example, Stein states that "even Americans with landlines are now spending more time chatting on wireless phones…Even prices are coming down. The average monthly bill for a mobile number has dropped from $51 in 1995 to $48 today. By contrast, the average local wireline bill has jumped from $30 in 1995 to about $35 today. Analysts say it won't be long before the prices for both types of service even out" (Stein 2003, 43).

article claims that that “students, recent graduates and young professionals” are “leading the way” in this trend (CNN website 2003). In this article, one of the scenarios for “cutting the cord” is illustrated by a graduate student living in Chicago. First, he replaced dial-up Internet connection with a cable-based Internet connection because of the convenience and effectiveness of the cable connection. Since the monthly bill would be costly to keep a regular phone line, a cell-phone subscription and Internet cable connection, he dropped the wired phone line since the cell phone can serve a similar communication purpose. In fact, financial considerations play an important role in university students’ decisions to start using cell phones. A majority of university students are in the age group of young adults (18 to 25 year olds), most of them are no longer considered legally a minor, and most often move away from their families’ homes. Evidently, because of various circumstances many college students face, such as moving into new residences, often not working full time and being on campus settings more than around the house, there are strong incentives to pick up the cell phone either in addition to or without the home wired phone.

Many college students do not actually buy cell phones themselves but instead their family members, most likely their parents, have provided them with cell phones before and upon leaving for college. At universities, cell phones can be used to keep in touch with their friends and family from their homes towns as well as just to provide a security and convenience. In this sense, cell phones in many college students’ lives symbolize family ties. One of the dimensions to this link is that many parents pay for family calling plans where the students are included and so monthly payments are the parents’ responsibilities. The uses of cell phones are often monitored, restricted or negotiated between family members. But at the same time, in many instances, the familial relations mediated by the cell phone can become a “safety net.”

The bulk of the studies on information and communication technologies in a western context have focused more on either adolescents and young teens, or, older age groups who are in the professional world (Silverstone, Hirsch, and Morley 1992; Howard 1998; Sefton-Green 1998; Bingham, Valentine, and Holloway 1999; Hutchby and Moran-Ellis 2001; Brown, Green, and Harper 2002). This research, instead, examines the socio-spatial implications associated with current uses of cell phones by American young people, particularly the young adults who are university students. Over the past two decades, there have been a growing number of studies that examine the roles and experiences of information communication technologies, including cell phones, in young people’s lives. The term “digital generation” signifies certain types of consumers that are brought up in a different kinds of socio-physical environments from the previous generations due to the presence and availability of various communication technologies

(Tapscott 1998; Neuborne 1999; Bothum 2005). The growth of this field also reflects the forces of a "cultural turn" in the social sciences which brought increasing attention towards consumption practices in everyday contexts (de Certeau 1984; Miller 1995). Some have focused on young people's uses of and experiences mediated by Internet-connected computers, television and video games at schools and homes (e.g., Green, Reid, and Bigum 1998; Howard 1998a; Lealand 1998; McNamee 1999; Oswell 1999; Valentine and Holloway 20001a; Holloway and Valentine 2001c; Valentine 2002). Cell phones have also been examined by multiple scholars because the young age groups are the heavy users in many national contexts (Green 2002; Kasesniemi and Rautiainen 2002; Kim 2002; Ling and Yttri 2002; Skog 2002; Green 2003).

Surprisingly however, despite the fair amount of attention paid to and research conducted on the young American cell-phone users by the media and marketing and consulting firms, there have been very limited empirical studies by academic researchers on cell-phone consumption by American young people. One reason may be due to the fact the intensity of cell-phone consumption by American young people has been somewhat less and slower in its manifestation compared to their counterparts in European countries such as Finland and East Asian countries such as Japan (Stein 2003). Nonetheless, young people's uses of cell phones in the United States have now become prevalent. To fill this research gap, this dissertation examines aspects of cell-phone use by American university students who are in the age group of 18 to 25 years old. As a social and cultural geographer working in the field of young people's geographies, I am interested in meanings and practices associated with cell-phone uses in theorizing how information and communication technologies mediate young people's everyday space, social relationships and their social-cultural identities. For example, most of these students who are in their late teens and early twenties often negotiate various social boundaries such as those of adulthood and childhood and control the nature of relationships with their family members and friends.

Many narratives surrounding information and communication technologies often include certain stereotypes of young people. For example, it is the social aspects that are often emphasized about young people's uses of cell phones such as teenagers chatting constantly on the cell phone, accessorizing the cell phones, customizing ring tones, and sending text messages. It is important to argue and it is emphasized in my study that one should not assume that university students in general have similar concerns and uses of cell phones or that they perceive and experience the cell-phone phenomenon alike. Nichola Green (2003), in her empirically grounded study on cell phones and young people in a British context, emphasizes the diversity among young people and their uses and meanings associated with cell phones. Her research project

“suggests multiple and diverse negotiations of identity and social relationships that challenge the notion that researchers can associate ‘youth’ and ‘technologies' as singular categories, and that all ‘teenagers’ can be understood as forming part of the same generalized group” (Green 2003, 201). Following Green’s approach, my study, grounded in social and cultural geography, is concerned with issues of socio-cultural identities such as those of gender, race, ethnicity, nationality, age and so on. The point here is not necessary to simply break down university students’ identities into multiple categories when such “postmodern” fragmentations often lead to the now widely recognized situation of the “crisis of representation.” Instead, the aim is to show that the age group that is often referred to as the “digital generation” consists of young people that have multiple familial, social, and economic backgrounds and also various interests, aspirations and lifestyles. The purpose of emphasizing this aspect of *diversity* is to contextualize the forces of the “social construction” side of information communication technologies such as cell phones (Fischer 1992). Diffusions of technologies always involve negotiations between various social groups in terms of how and by whom those particular technologies should and could be used. Often these negotiations contribute to (re)shaping accepted and deviant uses of particular technologies—and also to the subsequent redesign of technologies (Churchill and Wakeford 2002).

Socio-spatial implications of “cutting the cord”

As cell phones have become mass consumed by various people all around the world, their designs, capabilities and their associated uses have also been transforming. For instance, the appearance of cell phones available in the United States in the mid-1980s and earlier was “big” and “clunky” and often connected to automobiles (Laufer 1999; Murray 2001). Today, phones have become small enough to easily fit into the palm of the hand or in a pocket. Additionally, their “looks” and style have also diversified—from the “candy bar” style phone (most often associated with Nokia brand) to the now popular “flip-open” styled phones (*Economist* 2005). Cell-phone technology is evolving rapidly and cell phones can now be used for more than talking. Most cell phones currently available in the United States have added features and capabilities beyond voice communication—including taking, storing and sending pictures and short video clips, customized ring tones, games, Internet access and Instant Messaging (most features often come with additional costs). One of the functions that is used world wide is the Short Messaging System (SMS) or “texting,” a system that allows users to send text messages to another cell

phone or e-mail account. SMS is heavily used by young people in many countries such as Finland, South Korea, Great Britain and Japan (Kasesniemi and Rautiainen 2002; Green 2003). For example, the Japanese young generation is often times referred to as *oyayubi zoku*—the thumb tribe—due to the widespread use of text messaging on their mobile phones and because of their ability to type their messages quickly, sometimes performing "touch-type." An incident that illustrates the established uses of SMS in South Korea is a mass cheating incident that was facilitated by "texting" while students were taking an important exam for college entrance qualification in December 2004 (BBC News website 2004). As the *Washington Times* article title "Young cell users rack up debt, one dime message at a time" indicates, SMSs are also becoming popular in the United States especially among young users (Foderaro 2005). As in Korea, in the United States, there have been concerns by educators on how SMS is used for academic dishonesty including cheating during exams (Kobin 2001; Saulnier 2005).

This study deals with the uses of cell phones from the late-1990s to the first several years of the 2000s, when cell phones became much more affordable, mass consumed, and rapidly changing both in technological function and stylistic appearance. This dissertation recognizes these swiftly developing technological changes associated with ICTs (information and communication and tehnoloiges) including the increasingly muti-functional dimension of cell phones. Clearly each of these different capabilities—what people can do with the cell phones—deserve close examination. For instance, in *Smart mobs: The next social revolution,* Howard Rheingold (2002), a writer on ICTs, has offered his view on the future implications of uses of Internet-connected cell phones in different contexts, in ways that are both empowering and destructive or deviant for various people. In a similar manner, there will be different social and geographical significance of the uses of cell phones that have installed GPS (Global Positioning System), a system that allows users to navigate in unfamiliar places and locate certain services. The socio-spatial significance of various people taking, storing and sending pictures and short video clips using cell phones in different contexts is equally interesting. Yet, as a starting point to initiate the discussion on socio-spatial implications of cell-phone consumption, I focus on the basic uses of cell phones in the United States today—making and receiving calls, sending text messages, and using other basic services that come with most cell phones (such as voice mail, address book, alarm clock). Given the rapid developments in cell-phone technology in the last few years, this study is almost a historical geography of the phenomenon, with surveys in 2003 measuring attitude and usage in the early phase of mass adoption of the device.

In addition to considering the multi-dimensional aspects of the use and development of cell-phone technology, its consumption warrants the examination of many spatial issues including geographic scale, social spaces and groups of people. For example, the recent geographical literature has examined cell phones in the context of urban geography (Bertaut 2000; Townsend 2002), as part of telecommunications in relation to urban transportation (Janelle 2004) and the implications of cell-phone uses for workers and workplaces (Gant and Kiesler 2002; Laurier 2002). This dissertation deals primarily with two main geographies examined from the scales of national, local and body and social spaces of media representations, family and campus settings. First the geographical dimension concerns sense of place and experiences mediated by the uses of cell phones. When many students are fully or partially "cutting the cord," their everyday spaces can be altered and entail certain experiences and meanings associated with those spaces and places. The other spatial aspect I investigate in my research is the ways that various social relationships and socio-cultural identities of university students are mediated by their cell-phone uses.

One of the most obvious spatial consequences of "cutting the cord" is that the space in which phone conversations and "texting" take place is no longer "fixed" or "expected." This may be reflected or contribute to a common way of "starting" a conversation using a cell phone—either to ask or state where one or the other party to the conversation is—because the caller and the receiver can potentially be anywhere. When one calls a cell-phone number, one is no longer calling a specific home or workplace because that an individual may be anywhere at that point of time. While the use of a cell phone allows the user to be potentially connected to anyone from anywhere, such conveniences simultaneously submit the cell-phone user to unwanted communication—for example, being connected to work even during off-work hours (Gant and Kiesler 2002). When phone calls can be made and received anywhere—i.e., they are no longer "fixed" inside a residence, office or to the public pay phone—there are new experiences brought to the place where the phone communication occurs. Despite their perceived and actual utility, cell phones can impose an intrusion into privacy and private spaces, both for the users and bystanders. Consequently, cell-phone technologies and their uses and implementations are contested and even perceived as social problems by various groups of people—depending upon the social and spatial context. Due to the popularity of cell phones, it is most likely that every person living in the United States has a "story" to tell about them and has an opinion about the appropriateness of how cell phones are used. Cell phones can symbolize "independence," "convenience," and "popularity," but also can be perceived as "excess attachment," "rude

behavior," and "potential danger." The narratives associated with cell-phone uses highlight the new meanings brought about to the idea of "public," "private," and "family" and ways of conducting everyday life.

Among the various debates about the uses on cell phones, "security" issues, especially those associated with driving, are perhaps the most discussed issue in an American context. In the United States, cell-phone use while driving has been problematized as a safety risk, and there has been a move to regulate such use through state and local laws. There is a belief that cell phones provide security and convenience to drivers in the event of an emergency such as a car accident or vehicle malfunction. Yet, many people are concerned how "cell phones and driving don't mix" and such sentiment is exemplified in a bumper sticker slogan "drive now, talk later!" created by Tom and Ray Magliozzi of the National Public Radio program "Car Talk" (Car Talk website 2005; Leff 2000). Compared with many other countries, the American context is often characterized as a "mobile" society (Katz 1999; Hanson 2004; Janelle 2004) with many people commuting to work and school, conducting business and other everyday activities often far from home, especially using personal vehicles. In such a context, mobile communications using wireless technologies such as portable computers and cell phones have become particularly meaningful in a vernacular sense. Anthony Townsend, commenting on cell-phone consumption and cities states that "mobile communications devices profoundly affected cities, as they were woven into the daily routines of urban inhabitants. Most importantly, widespread and fundamental transformations in the very nature of mobility in cities for the growing masses of wirelessly-connected inhabitants are being overlooked" (Townsend 2002, 62). In addition, American citizens are also known to be very "mobile" in terms of "residential mobility" compared to most countries. "Life-cycle" events such as completion of secondary and tertiary education, marriage and retirement are some of the reasons for residential relocation in many Western contexts (Pacione 2001).

The changing measures, meanings and experiences of mobility among social groups such as young adults in relation to mobile communication technologies are explored in this dissertation. For example, American teenagers might gain greater spatial freedom when they acquire their driving licenses, but because they are still under parental guidance, and, inexperienced drivers, they may be provided with cell phones by their parents. There are different levels and aspects of "mobility" that are relevant in understanding the experiences of cell-phone uses by young people. For instance, the changing locations of telephones in relation to the human body is due to new forms of mobility—"mobile reachability" (Roos 1993, 447)—which liberate people from fixed

locations in order to be reached or, contact others. This aspect of phones' locations is important for different social relations such as those of the family. For teenagers in U.S., Japan and many other countries, telephones in the living room often mean or meant that conversations will be partially heard by other family members (Yoshimi, Wakabayashi, and Mizukoshi 1992). Young people's voice and SMS communications facilitated by cell phones should be seen in the light of what Janelle theorizes as "extensibility"—which measures "the ability of a person (or group) to overcome the friction of distance through transportation or communication" (The definition is provided by Adams 1995). Young people do not have to stay home to wait for a call and can be contacted even when others do not know their whereabouts. This can help facilitate tight network among friends and families. Furthermore, by owning a private phone designated for their personal use rather than using a standard phone system connected to a main room in household, they can keep the "private" aspects of their lives away from family and community monitoring.

Multiple levels of "surveillance" due to the increasing measures of "extensibility" induced by cell-phone communication are relevant to understanding how social relationships and identities of American young adults are mediated by cell-phone uses. Nichola Green theorizes cell-phone communication as "population 'surveilling' themselves and each other" (Green 2002, 40)." This includes not only parent and community surveillance over teenagers, but, also the ways in which teenagers are monitoring other teenagers' possession of cell phones, types of cell phones, what they are doing, and who they are with. The measures of young people's extensibilities as well as practices of surveillance assisted by various information and communication technologies such as telephones, cell phones, pagers and Internet-connected computers—or a combination of these—must be considered carefully since the forms and functions of these technologies are diversifying. In addition, the "extensibility" and "surveillance" mediated by cell-phones has generated multiple meanings and experiences for young people including safety issues, presentations of self to co-peers, and governmental and corporate surveillance processes.

Research statement

The primary agenda of this thesis was to conduct an empirically grounded study examining the socio-spatial implications of cell-phone consumption by American university students. My research collected usage patterns, voices and experiences from students who are in the age group of young adults (18-25) and who are considered "the digital generation." A series of personal interviews and questionnaires were conducted during the period of January 2003 to

December 2003 on two Pennsylvanian university campuses (Penn State—University Park campus—and Shippensburg). In addition, I also surveyed university-based publications on cell-phone usages published from 1998 to 2005. By triangulating between the qualitative and quantitative analyses of interview transcripts, questionnaire data and media representations, I contextualize and explore processes in the period when cell-phone usages became a common phenomena across university campuses across the nation. In light of the empirical findings, I discuss the social constructions of youth and technology and associated geographies by drawing upon and fusing theories and frameworks found primarily in the fields of young people's geographies and studies of the social dimensions of technologies.

I take both phenomenological and social constructionist approaches in order to address how university students make sense of the phenomena as well as to show young people's involvement in molding social-cultural landscapes and meanings associated with uses of cell phones. My research builds on socio-spatial theories and frameworks developed by geographers such as those of mobility, extensibility, surveillance, but also of private and public space, identities and space, sense of place, and normalized geographies. In addition, the examinations both build on and develop contrasts with the recent academic literature, primarily on cell phones, but other information and communication technologies as well, from both American and other national contexts. In order to address the two main geographies—a) sense of place and spatial experiences and b) social relationship and socio-cultural identities—I triangulate between three primary areas of study related to cell-phone consumption. First, I examine the variety of ways in which students have been incorporating cell-phone technology into their lives. I identify the multiplicity of uses as well as various socio-cultural boundaries associated with ownership, uses patterns, and experiences of cell phones. Secondly, I illustrate the main issues and experiences associated with students' personal management of communication systems, including cell phones. Third, I examine the various social negotiations involved with using cell phones in different socio-spatial contexts. Therefore, my research contributes to the pool of studies on cell-phone consumption, social dimensions of technologies and young people's geographies by offering empirical findings and theoretical discussions specific age group set in a particular historical period and place.

Overview of chapters

This dissertation consists of eight chapters. The next two chapters (Chapters 2 and 3) present the significances, agendas, and contributions of my research by providing a literature review that builds the theoretical and methodological foundation of my research. In doing so, I make clear my research goals and contributions to the socio-spatial understandings of the roles of information and communication technologies in young people's lives. Chapter 2 provides an overview of the major frameworks, debates, and theories in the two fields that are relevant to my examinations of university students' cell-phone consumption. First, I briefly summarize the characteristics of the two fields—*young people's geographies* and *studies of social dimensions of technologies*—by identifying the major frameworks utilized by scholars working in the two respective fields as well as the key literatures relevant to my study. Then, I outline the significances and the contributions of my research that draws upon and fuses the frameworks and discussions found in the two fields. Chapter 3 is devoted to discussing the methodological considerations of my research project which is set within certain epistemological and disciplinary boundaries. I outline the ethical considerations behind examining young people's geographies and the major methodological considerations that I took into account during the designing and execution of my research. Chapter 4 presents a detailed description of the research design by elaborating on the methods employed, data collection processes, analysis techniques, and the ways in which my research questions evolved during the research process. As I reflect on my research practices, the ethical and practical issues associated with the recruitment of participants and interviewing are elaborated upon. In addition, I summarize the profiles of the participants.

The subsequent three chapters provide detailed discussions of the empirical findings. In Chapter 5, I describe dimensions of cell-phone ownership and the process of early diffusion into campus. I analyze the initial reasons for acquiring cell phones and the ways these reasons relate to dimensions such as family, gender, ethnicity, residency and age group. Cell phones are primarily used for emergency purposes and to keep in touch with friends and family. In addition, I show how cell phones, often seen as a personal technology, are also often tied to students' families because parents are paying for their cell bills and are part of "family shared" cell-phone plans. My examination includes how cell-phone ownership relates to the realm of a "family" or household by exploring dimensions of gender relations, parenting practices, and life stages. I also discuss how cell phones are an economic and convenient choice for students to replace a wired

phone in their residences due to the availability of various technological connections in residences, their residential arrangements and their daily routines.

Chapter 6 focuses on the consumption patterns by various subgroups in order to identify certain tendencies associated with them. Students can be loosely grouped into categories depending on their initial intended purpose of acquiring a phone, and intensity of uses, and the extent to which they use various functions on the cell phones. Cell phones are placed in students' lives in relation to and in addition to uses of other information and communication technologies such as Internet-based communications (Instant Messenger and e-mail) as well as wired phone communication. I discuss the factors influencing students' choices of various communication outlets over others. For some students, cell phones have replaced wired phones and are used for emergencies and / or long-distance phone connections. On the other hand, cell phones for some students are "more than a phone" since they are used to participate in youth culture, orient them in space and time and with their peers, as well as used to personalize transitional and public spaces. Students personally manage various communication systems according to their accessibility to each technology, and, by controlling their extensibility and availability to others throughout the day. Furthermore, I illustrate how students put importance on their degree of control over communication systems.

Chapter 7 theorizes the social negotiations and socio-cultural boundaries associated with cell-phone usages by discussing the gendered dimensions of cell-phone uses, monitoring processes involved in cell-phone consumption, and various assessments derived from students' observations. I explore how cell phones are gendered technology by examining the association with gendered performances as well as stereotypes. Furthermore, cell phones are used by female students to negotiate the vulnerability associated with being in public spaces. Next, I focus on categorizing different levels of "surveillance" associated with cell-phone communication which provide "alliances," safety nets, constraints and intrusion in to one's private space. I illustrate that students' cell-phone consumption involves both audible and visible spatial practices that are both "concealed" and "revealed" to others in private, domestic, public and institutional spaces. Finally, I highlight the various, sometimes competing, views and claims on the appropriateness and legitimacy of cell-phone usages by young people including uses in public spaces and while driving. I argue that the degrees to which students feel it *necessary* to have cell phones, *competent* in using cell phones responsibly, as well as *personal freedom* in using cell-phone technology in various contexts are at heart of their assessments.

The concluding chapter (Chapter 8) summarizes the empirical findings and theorizations and ties together the three analytical chapters in relation to the socio-spatial implications of university students' cell-phone consumption in the contemporary American context. It also lists a possible future research agenda by building on the major findings. The conclusion emphasizes the multiplicity of uses and meanings associated with cell-phone uses by young people and how they continue to be socially constructed through different narratives and spatial practices. Since cell phones are evolving due to their multi-functionalities, and as a technology that has become an integral part of students' lives, various social transformations with new geographical implications such as the co-existence of private and public spaces, social networking and mobilization of young people, processes of surveillance, and renegotiations of socio-cultural identities can be anticipated in the future.

Chapter 2—Young people's geographies and consumption of personal mobile information and communication technologies: theoretical frameworks

Chapter overview

As a socio-cultural geographer studying multiple meanings and experiences associated with cell-phone usage by university students who are young adults, my study primarily draws upon theories and frameworks from the sub-discipline of *young people's geographies,* a genre that has flourished in the past decade. The sub-discipline is concerned with diverse aspects of lives of young people in different places and socio-spatial contexts. It encompasses studies examining how and where the categories of age and life stages such as youth, teenager, childhood, and adulthood are located and negotiated in both different social and physical spaces. Moreover, it is concerned with how such social categories and various experiences of young people intersect and are connected with issues relating to family, citizenship, nation, sub-cultural groups, education, ethnicity, race, class, and gender. It explores how young people's identities are socio-spatially constructed and vary in different social and historical contexts as they are spatially constituted and expressed. The geographers working in this field are equally interested in how young people themselves understand their world and how young people contribute to the (re)production of spaces and places. In addition, because young people's everyday lives most often constitute familial spaces and educational institutions, geographers working in this sub-field have examined parenting practices and spaces of learning and playing (Blackman 1998; Holloway, Valentine, and Bingham 2000; Hyams 2000; Holloway and Valentine 2000a).

In addition to young people's geographies, my research builds on multiple theories and empirical findings offered by a collection of works that consists of studies of social dimensions of technologies. I conceptualize this field to be a theoretically, empirically, and methodologically extensive assortment of research carried out by scholars working in multiple disciplines including media studies, communication studies, psychology, cultural studies, critical pedagogy, history, anthropology, gender studies, sociology, and geography. What ties this diverse group of work together is that it examines the "social shaping" of various forms of technologies. Instead of studying their production and technical dimensions, scholars are examining multiple implications of consumption practices, the actors involved in defining and (re)creating meanings and uses associated with technologies, and the ways in which technologies mediate social experiences, relations, and identities. Among this diverse work studying the consumption of various

technologies, my research for the most part, primarily draws on the following three sub-areas. First, I build my analyses on the empirical findings and theorizations found in the body of research examining telephone and cell-phone consumption by different social groups, particularly women and young people, in various national contexts. Secondly, in my examination of cell-phone-mediated spatial experiences, I highlight multiple theorizations of audio and virtual spaces "inhabited" by individuals as well as the nature of different modes of personal communications from studies examining uses of telephones, cell phones, walkmans, and Internet-connected computers. Finally, I employ the discussions found in the pool of research investigating various social implications of young people's uses of everyday electronic technologies including those concerning youth identities, everyday practices, and socio-cultural spaces.

This chapter is devoted to discussing the major frameworks, debates, and theories in the two fields that are relevant to my examinations of university students' cell-phone consumption. First, I briefly summarize the characteristics of the two fields—*young people's geographies* and *studies of social dimensions of technologies*—by identifying the major frameworks utilized by scholars working in the two respective fields as well as the key literatures relevant to my study. Then, I outline the significances and the contributions of my research that draws and fuses the frameworks and discussions found in the two fields.

Young people's geographies

Young people in geographical studies

Young people's geographies is one of the more recent developments in human geography that has grown since the early 1990s in conjunction with the areas of s*ocial and cultural geography* (also known as *"new" cultural geography*) and *feminist geography* which emerged in the late 1970s to the early 1980s. Especially in the late 1990s, the sub-discipline flourished with a growing number of researchers committed to examining geographies of young people particularly in North America and in Britain. The sub-discipline has succeeded in diversifying its theoretical and empirical agendas and has ascertained its significance in the field of geography and other inter-disciplinary arenas. Geographers who have been integral in developing the sub-discipline include Gill Valentine, Stuart Aitken, Hugh Matthews, Cindy Katz, David Sibley, Roger Hart, Sarah Holloway, and Melanie Limb. These scholars have worked across different disciplinary traditions of geography including: *social and cultural, cognitive-behavioral, humanistic, psycho-analytical, critical,* and *feminist* geography. As in many of the other sub-areas in Geography,

young people's geographies have been an interdisciplinary endeavor—incorporating frameworks, applying theories, and participating in the debates from sociology, history, philosophy, psychology, gender studies, communication studies, cultural studies, and critical pedagogy.

Despite the various intellectual traditions and backgrounds which have contributed to its development, *young people's geographies* can be generally traced into two "camps" due to two waves of development. The "first wave" started in the early 1970s and the "second wave" formed in the 1990s. Geographical studies involving children were largely "absent" until the late 1970s when explicit rejections of the positivist paradigm of the geography began to be made mainly by humanist geographers (e.g., Tuan 1976, 1977; Ley and Samuels 1978; Gregory 1981) The post-positivist movement urged scholars to bring "people" back into geographical studies rather than focus on examinations that reduced "people" and spatial processes into aggregate numbers and regression lines. Pioneering works by William Bunge (1973), Jim Blaut and David Stea (1971; 1974) inspired many geographers, and their work led to studies of children's mapping skills and examinations of children's activities by cognitive-behavioral geographers. This also later led to a "second wave" of work by critical, feminist, and social and cultural geographers. There were also contributions from humanist and cognitive-behavioral geographers in the 1970s and 1980s (Hart 1979; Wood 1982, 1985a, 1985b; Matthews 1984a, 1984b; Downs, Liben and Daggs 1988; Spencer, Blades, and Morsley 1989). For example, Hart (1979) has provided a detailed ethnographic study that mapped out and examined children's outdoor activities in a small New England town. However, these efforts did not flourish into an "established" area of study in Geography right away—it was not until the 1990s that such work became frequent (James 1990, 278; Holloway and Valentine 2000, 8).

It is the different foci and approaches that distinguish the earlier studies from the recent development in young people's geographies. The "first wave" of studies involved the examination of young children by drawing from and informing the "psychological interest in children's spatial cognition and mapping abilities," while groups of researchers since the 1990s have exhibited a more "sociological interest in children as social actors" (Holloway and Valentine 2000, 8). In addition, the scope has expanded to incorporate studies involving teen-agers, adolescents, and young adults situated in different places and social contexts. These two areas make up today's y*oung people's geographies* and both are considered important research topics. Despite the two spheres in the current sub-discipline—studies in behavioral and cognitive geography and research in social and cultural geography—there have not been exceptional and

irreconcilable debates between the two camps.[3] Instead of concentrating their efforts on establishing intellectual boundaries, social and cultural geographers have been joining the debates and utilizing the frameworks found in sociological studies on childhood and cultural studies of young people.

For the past thirty years, one of the agendas for geographers working in the sub-discipline was to establish studies on young people as legitimate and important areas of study in Geography. The "cultural turn" in social sciences including Geography, which shifted epistemological and methodological foci and agendas, brought new concerns such as sensitivity to social diversity and critical perspectives in geographical studies (Jackson 1989; Kong 1997). This contributed to renewed interests among the "new" cultural and feminist geographers in researching children's geographies. A series of articles in the first half of the 1990s appeared in major geography journals, and a few books were published which problematized the lives of children and illustrated the significance of geographical studies on children as "marginalized" population. For example, Sarah James's article published in *Area* in 1990, titled "Is there a "place" for children in Geography?" recalled the past studies of children by Bunge and reiterated a "commitment to give children, as a minority group, a voice in an adultist world" (Holloway and Valentine 2000, 9). She also reported the enduring absence of studies on children in the discipline. She stated that

> More than twenty years on a browse through the vast majority of geographical bookshelves or any geography course syllabi soon makes us realize that geography is / has been dominated by the study of "man," and adult man, and latterly adult women. We might in fact be forgiven for thinking that children simply do not exist in the spatial world, since so much geographic research is undertaken in terms of adult experience only. Of course research questions are equally applicable to both adults and children. During the late 1970s, it was suggested that geographers should recognize the existence of women and consider, "How the other half lives"—may I suggest that it is now time to consider how the other third or quarter—the children—live. Many geographical questions which were raised during the 1970s, along with many others are pertinent to a study of children in geography (James 1990, 278).

[3] One of the debates that can be considered as "controversial" in the sub-discipline has been within behavioral-cognitive geography, between Jim Blaut and Roger Downs working with Lynn Liben and their disagreement over mapping abilities of children (when and how they develop mapping skills), the degree of accepting Piagetian developmental theory (Blaut rejects and Downs and Liben accept with modification), and how to study children's mapping abilities (Downs and Liben 1997; Liben and Downs 1997; Blaut 1997a, 1997b). According Aitken, this thirty-year debate, however, has not had much impact in the course of development of young people's geographies as a whole due to the disagreement on the narrow topic of mapping abilities (Aitken 2001a)(Aitken 2001). The sub-discipline has diversified its scope of interest from mapping abilities of children and consequently creating other agendas.

The above statement reflected the feminist and "new" cultural geographers' concerns for creating "new" spaces to examine and incorporate marginalized and alternate voices in the adultist and male-oriented discipline. In this article, James outlined the agendas for studying children, particularly in the socio-urban policy arena, and questioned why there had been little research undertaken which "critically examines the ways in which children's lives, experiences, attitudes and opportunities are socially and spatially structured" (James 1990, 278). Her article generated wide-ranging discussions on the lack of "intellectual coherence and direction" in the field of studying young people's geographies (Sibley 1991; Winchester 1991; Aitken 1994, 3).

This renewed movement led to the diversification of the literature through a theoretically-rich explosion of geographical studies on young people. These studies focused not only on young children but also on the exploration of the lives, identities, and spaces of adolescents, teen-agers, and young adults. An example is the series of edited and authored books on the subject of young people's geographies published by Routledge. The two editorial volumes *Cool cultures: Geographies of youth cultures* (Skelton and Valentine 1998) and *Children's geographies: playing, living, learning* (Holloway and Valentine 2000a) are collections of case studies drawn from around the world, highlighting various socio-spatial aspects of young people's lives. In *Geographies of young people: Morally contested spaces of identity* (2001a), Aitken updated his earlier publication *Putting children in their place* and presented further agendas for the sub-discipline by including discussions on theories of bodies, sexuality, race, and globalization. Moreover, that the empirical and theoretical research was reaching a critical mass was also reflected in the special issues appearing in *Environmental and Planning A* in 2000 called "From crib to campuses," in *Area* in 2001 called "Geographies of childhood" as well as individual articles being published in major geographical journals including *Annals of Associations of American Geographers* (e.g., Katz 1991; Valentine 2002), *Professional Geographer* (e.g., Valentine and Holloway 2001a), and *Urban Geography* (e.g., Valentine 1996b; Vanderbeck and Johnson 2000; Holloway and Valentine 2001c). The launching of a journal *Children's Geographies* in 2003 also reflected the trend of the sub-discipline reaching prominence.

Negotiations of identities, public space, and mobility

Recent studies on young people's geographies have employed two major frameworks that evolved out of the interdisciplinary arena of sociological studies of childhood (e.g., James 1993; James and Prout 1997). One of these is to take the ontological standpoint that rejects the biologically deterministic and essentialist assumptions about identities and examines "childhood" and "youth" as socio-spatially constructed categories. Sarah Holloway, Gill Valentine, Stuart Aitken, and others have drawn from Aries' (1962) historical study on childhood set in a French context to illustrate that "childhood" is not a "natural" nor "universal" category and that "the current understanding of children in the North as being less developed, less able and less competent than adults is historically specific" (Holloway and Vaalentine 2000, 2-3). Thus, they emphasize the fact that meanings, practices, and experiences associated with categories of age and life stages such as "childhood," "adolescents," "teenagers," "adulthood," and also other social identities, may vary between historical, social, and geographical contexts. Recognizing the importance of situating the nature of "childhood," social and cultural geographers have studied diverse aspects of young people's lives in Britain and North America and other national contexts (Katz 1991; Katz 1993; Karsten 1998; Skelton and Valentine 1998; Holloway and Valentine 2000a; Young and Barrett 2001). In doing so, geographers have paid attention to particular sites such as public spaces (Valentine 1989a; Ruddick 1996; Valentine 1996b; Valentine and McKendrick 1997; Watt and Stenson 1998; Matthews, Limb, and Tayor 1999; Vanderbeck and Johnson 2000; Collins and Kearns 2001; Kitchin and Law 2001), workplaces (Bowlby, Evans, and Mohammad 1998), nightclubs (Malbon 1998), schools (Hyams 2000), playgrounds (Gagen 2000), domestic environments (Holloway and Valentine 2001c), the countryside (Matthews, Taylor, Sherwood, Tucker and Limb 2000; Valentine and Holloway 2001c), and cyberspace (Leonard 1998; Valentine and Holloway 2001a; 2002).

"If childhood is a social rather than a biological phenomenon—which varies between social groups, societies and historical periods"—then its construction, processes involved in contesting meanings associated with childhood, and children's experiences are worthy of academic inquiry (Holloway and Valentine 2000, 5). Accordingly, examinations of childhood involved careful explorations of how various social identities are (re)created, perpetuated, negotiated, and resisted by different social groups including young people themselves, particularly through studying "representations" of identities and carrying out interviews and participant observation in different domestic, public, and institutional spaces. For example, Claire

Dwyer's work (1998) has looked at how young British Muslim women negotiate the dominant "representations" of their identities reflected in dress codes in north-west London. David Parker (1998) has examined how the "representations" of young British Chinese male identities such as those capsulated in Bruce Lee movies are understood and portrayed in wider society and among British Chinese themselves. Moreover, the definitions, imageries, and practices associated with terms used to signify social-cultural identities simultaneously imply value and moral judgments made by various social groups contesting what kinds of behaviors and experiences are considered appropriate, good, and normal in different spaces. Hence, examinations of the social constructions of categories of identities are about uncovering certain relationships that may exist between social groups and exploring multiple ideological, biological, and spatial boundaries demarcating "us" and "them."

Valentine (1996a; 1996b; 1997a; 1997b) illustrates an example of a power hierarchy between adults and children and the spatial boundaries related to "childhood" in her study on public spaces. Her study is mostly set in a British context, but she also extends her theorizations to include a North American setting. First, she identifies that there is a dichotomy in imageries associated with children. On the one hand children are often portrayed as the "angels" who are vulnerable and in need of protection. In contrast, there are also other images of children—as "devils" who can hurt other children. Parents often perceive streets and other public spaces as where strangers (most likely to be seen as adult male)[4] and other children "roam" who can harm their own children. Consequently, parents often restrict their children's access to public spaces due to adultist point of views and the practices of "parenting culture." Valentine argues that

> Parents determine the extent of their children's personal geographies by deciding at what age they should be allowed outside alone and at what age, and when, they may go to different places (the shops, school, the park, the city center, etc.) unaccompanied by an adult. What it means to be a "good parent," therefore, is to walk a tightrope between protecting children from public dangers by restricting their independence, whilst simultaneously allowing them the freedom and autonomy to develop streetwise skills and to become competent at negotiating public space alone. It is a process that is highly gendered, both in terms of parents' perceptions of boys' and girls' respective vulnerabilities and competencies to handle danger in public space; and in relation to how mothers and fathers negotiate the parental responsibilities of setting children's spatial boundaries and discipline any infringements (Valentine 1997a, 38).

[4] Valentine (1996b) argues "public space is repetitively (re)produced through these stranger-danger campaigns as a space populated by "deviant" others, a space in which the male body (particular the black male body) is saturated with threat and danger. But although the male body is constituted through fear, the female body is marked as safe. It is women, particularly those with children, that youngsters are taught to turn to in the face of danger" (p.210).

Young people's spatial experiences in and access to public spaces are often controlled by their parents or adult authorities based upon their understandings of the nature of public spaces and these "others." Multiple marginalization from and negotiations of access to public spaces is one of the central themes studied by geographers by looking at meanings and practices associated with identity constructions and negotiations concerning young people. For example, another process of marginalization from public spaces is studied by Susan Ruddick (1996; 1998) who examined experiences of homeless young people in Los Angeles. She found that they must negotiate their identity of being "homeless" in public spaces because they are often perceived to be deviant, dangerous, and unwanted. Matthews, Limb and Taylor (1999) argue that the discourse associated with curfew laws put on young people of certain age in some American and British cities reflects the notion that minors spending time in the streets are deemed to be deviant and dangerous.

The title of one of Valentine's articles (1996b)—"Children should be seen but not heard: the production and transgression of adults' public space"—captures the processes involved in the production of public spaces by adults that usually do not include young people's viewpoints and typically fail to recognize young people's contributions to creating and ways of experiencing public spaces (see also James 1990 and Matthews, Limb, and Taylor 1999). Valentine's problematizations of power hierarchies involving production, practices, and meanings associated with public spaces reflect the second equally important framework employed by social and cultural geographers working in *Young people's geographies*—to view young people as "social actors" and "as beings in their own right rather than as pre-adult becomings" (Holloway and Valentine 2000, 5-6). This perspective is illuminated in the studies which specifically highlight young people's agency in creating landscapes and spaces including participation in producing public art or claiming personal spaces by simply squatting in public spaces (Ruddick 1996; Breitbart 1998). The studies utilizing interviews and participant observation involving children and young people illustrates that in many areas of the Western world, public spaces such as street corners and shopping malls are important spaces for social networking among friends (Matthews, Limb, and Taylor 1999; Vanderbeck and Johnson 2000; Holloway and Valentine 2000a). Those researching young people's geographies emphasize the importance of playing, exploring, and hanging around for young people in terms of weaving social networks, learning about their environments, and negotiating their identities (e.g., Aitken 1994; Valentine and McKendrick 1997; Katz 1998; Matthews, Limb, and Percy-Smith 1998; Matthews, Taylor, Percy-Smith, and Limb 2000; Vanderbeck and Johnson 2000).

Multiple processes of marginalization of young people from public spaces may be a contributing factor for some researchers observing that the everyday activities of children take place in certain contained and fixed spaces such as homes, playgrounds, schools, and after-school clubs (Katz 1993; Watt and Stenson 1998; Gagen 2000; Vanderbeck and Johnson 2000). For example, Vanderbeck and Johnson's empirical study in an economically disadvantaged inner-city area of a mid-sized city in the southeastern United States shows that the shopping mall is one of the only places where young people can "hang out" because of the unsafe conditions of the neighborhood they live in (Vanderbeck and Johnson 2000). However, in the town of their study, young people's access to a mall is also limited due to parents' concern about childrens' safety in walking down the street and restrictions put on riding a bus without adult accompaniment. Similarly, Katz (1998) in her comparative study involving American and Sudanese children argues that it is increasingly harder for American children to freely move around in the areas beyond their homes, playgrounds, and schools due to safety concerns. She calls this "eroding ecologies of youth" and suggests that for the economically disadvantaged urban youth in the United States, there are fewer opportunities for autonomous outdoor play or "hanging out" because "public space deteriorated and perceived as unsafe from a variety of perspectives both social and physical" and consequently, "young people become prisoners of their homes, often isolated with only the television or worse for companionship" (Katz 1998, 137). In addition to the adultist nature of public spaces, a central topic studied by geographers involves the geographical extents and aspects of young people's mobility and their understandings of everyday environments by utilizing methods of mental maps, self-directed photography, surveying, and interviewing (Hart 1979; Matthews 1984; Aitken 1994). The discussions of the degree of mobility, experiences, and the knowledge of their surroundings must also involve examinations of young people's age, class, gender, family composition, location of communities, and nationality (Matthews 1984; Katz 1991; Aitken 1994; Sibley 1995; Matthews, Limb, and Taylor 1999; Gagen 2000; Tucker and Matthews 2001). For instance, just as argued by Valentine in relation to parenting practices, Katz also points out that "the restricted access to public environment, and with it many opportunities for forging and negotiating peer culture and acquiring the various skills associated with these negotiations, is generally worse for girls than boys" (Katz 1998, 137).

Cell-phone technology and its uses by young people and their parents add another dimension to the above discussions of young people's mobility in relation to parenting culture. One of the earliest examinations of cell-phone uses by women in the United States by Rakow and Navarro (1993) highlighted how cell phones have become a tool for "remote mothering" practices.

Parents often equip their children with cell phones to monitor their children's activities beyond domestic spaces since an attribute of cell phone is that one can be potentially contacted anywhere anytime. Thus, the process associated with tele-parenting using cell phones involves parents' "surveillance" over their children. Nicola Green (2002) states that the implication for such parental "surveillance" but also "surveillance" by other agents is that it "normalizes the notion [that] the individuals *should* be available and accountable to others, visibly and transparently, at any time and place" (p.33). In this sense, a form of surveillance mediated by cell-phone technology is similar to the institutional surveillance experienced by prisoners in Bentham's panopticon theorized by Foucault—disciplining of prisoners' behaviors with their assumption that they are constantly under surveillance (Foucault 1977; Hannah 1997). Parents as well as their peers can track down one's whereabouts and they are expected to be reached anywhere anytime. Therefore, "surveillance, regulation and mutual accountability" associated with using cell phones can "raise issues of privacy and trust amongst individuals, organizations and institutions" and are therefore "sites of struggle and negotiation for identity, activity and control" of young people "in everyday life" (Green 2002, 42-43). My examinations of young people's cell-phone uses then, incorporates the discussions found in young people's geographies including the negotiation of identities, experiences in public spaces, mobility, and various relationships with parents, other adults and peers.

Studying social dimensions of technologies

Personal mobile information and communication technology

In order to contextualize and further explore the multiple socio-spatial implications of cell-phone consumption by young people, such as the issue of surveillance in young people's everyday lives, I also utilize the theoretical frameworks and empirical findings drawn from a selected mix of studies focusing on the social dimensions of electronic and communication technologies. Just like the social constructionist framework employed by social and cultural geographers in examining young people's geographies, these studies focus on the processes of the social construction of technologies. In other words, central attention is paid to how the uses and meanings surrounding technologies are molded and negotiated by different social groups as well as the assessment of various social experiences associated with uses of technologies. Cell-phone uses can be examined from multiple angles according to various characterizations of the technology and associated uses. Among the several possible ways of classifying the technology, I

focus on three major attributes. Cell phones can be conceptualized as *information and communication* technology that is *mobile* and *personal*. Accordingly, I consult the literature on telecommunications, especially those concerning telephones and cell phones, and when suitable, call attention to studies on other personal electronic technologies that facilitate communication and / or that are characterized as mobile. I turn to literature beyond studies exclusive to cell-phone uses because cell-phone technology has commonalities with other electronic and communication technologies. Cell phones are no longer considered as just a wireless version of landline phones but rather, should be theorized as a form of multi-media due to the diversification of its function and uses (Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997; Okada and Matsuda 2002; Okada 2005).

A cell phone is an information and communication technology that facilitates voice communications just like landline phones, but also text communications, between two parties most often located in two different physical locations. Additionally, recent developments in cell-phone technology allow visual images to be captured, stored, and exchanged; the reception of radio and television broadcasts; and, Internet connectivity. In response to multiple globalization processes often facilitated by electronic technologies, geographical studies on information and communication technologies and telecommunications have become another area of study that has grown significantly since the late 1990s. In particular, Anglo-American geography has witnessed a flood of papers on the socio-spatial implications surrounding Internet-connected computers, cyber space, and World Wide Web communities (Adams 1997; Adams and Warf 1997; Froehling 1997; Starrs 1997; Taylor 1997; Kitchin 1998; Leonard 1998; Bingham, Valentine, and Holloway 1999; Froehling 1999; Lee 1999; Light 1999; Barta-Smith and Hathaway 2000; Crang 2000; Wheeler, Aoyama, and Warf 2000; Dodge and Kitchin 2001; Holloway and Valentine 2001; Warf 2001; Valentine 2002). In fact, Wheeler comments that "Internet" has become synonymous with telecommunication while observing the abundance of studies on computer-mediated communications (Wheeler, Aoyama, and Warf 2000, 3). In contrast to the ever-growing research involving Internet-connected computers in geography and also in other disciplines, examinations of telephones have been less visible in geographical studies. There are very few geographical studies that address social dimensions of telephone technology (Pool 1977; Martin 1991a; 1991b)—rather, the uses of telephones are most often mentioned in passing while examining urban networks and tele-commuting (Adams 1999; Janelle 2004).

Similar observations of telephones as "a neglected medium" in academic studies have been made since the 1970s in other disciplines such as communication, media studies,

psychology, history, and sociology that have taken interest in examining social aspects of various forms of technologies (Fielding and Hartley 1987, reviewed in Yoshimi, Wakabayashi and Mizukoshi 1992). This has been a noteworthy trend when telephones are a common everyday technology found in almost all households and workplaces in the contemporary United States. The "penetration rate" or household ownership level of telephones has been overall very high—94% in 1997—in the United States (Arafeh 2000). It is a technology that has a taken-for-granted status in industrialized nations. Such ordinariness of telephony is reflected in how Joshua Meyorwitz described the experiences of "speaking to someone on the telephone" as "so natural that we almost forget about the intervening medium" (Meyrowitz 1985, 109 cited in Cooper 2002, 20). While extending their observation in Anglo-America to Japan, Yoshimi and others argued that the fact that telephones have occupied a commonplace in "our" contemporary vernacular landscape may have contributed to the lack of scholarship on social dimensions of telephone (Yoshimi, Wakabayashi, and Mizukoshi 1992). Furthermore, they argued that the multiple implications of telephones mediated social relationships and experiences should be examined *especially* because telephones play such a natural role in everyday communication. Since the early 1990s, this lack of scholarships on social dimensions of the telephones as well as other research interests such as investigations of consumption (e.g., Silverstone and Hirsch 1992) and gendering (e.g., Wajcman 1991; Rakow 1992b) of technologies have led to several scholars to bring discussions of telephone uses to the forefront. This is especially so among scholars taking historical and feminist approaches (Marvin 1988; Martin 1991b; Fischer 1992; Rakow 1992a; Fischer 1997; Rakow 1997, also see review in Arafeh 2000).

Feminist scholars such as Rakow (1992a), Martin (1991b) and others, for example, have shown "how dominant narratives and representations of the domestic telephone characterize its spaces, uses, and users in gendered terms" by examining two aspects—the history of women as phone workers and as phone users (Reviewed in Arafeh 2000, 116-118). In the initial marketing of the telephone, uses associated with "sociability" were not considered. However, due to the increasing popularity of telephones for non-business uses—especially used by women—telephone companies started to emphasize gendered messages in their advertisements. In reviewing the body of works on "women and telephones," Araeft states that "current social-scientific research on the telephone tends to distinguish" between the "instrumental uses" which are "those which further a rational or logistical goal (e.g., making appointments or arrangements, getting or reporting information, intervening in a crisis situation.)" and "intrinsic uses" comprised of "pleasurable phoning such as for company, entertainment, or interpersonal interaction" (Araeft

2000, 123). She also mentions how some studies have highlighted how women generally tended to talk more on the home phone (Araeft 2000, 123). Often, in discussing such tendencies academic literature has characterized "women's talks on the telephone" merely as "gossip, chitchat, and chatter" emphasizing the intrinsic uses (Rakow 1992a, 2) despite of the fact women use cell phones in variety of ways including instrumental uses. Thus, in regards to women as users for telephones, Rakow and Navarro have argued that "the telephone is a technology that has been strongly associated with women, at least in the domestic sphere. The manner in which they use it and social evaluations of women's talk on it are indicative of women's social positions in the United States" (Rakow and Navarro 1993, 145). Rakow's ethnographic study (1992a) involving women's phone use in small- town America highlights how the instrumental and intrinsic uses of telephones reflect women's physical isolation within private homes. The examination of the processes involved in the social construction of telephone technologies and its associated uses and meanings, then, must include the discussions of users' social identities. Importantly, the identities can go beyond gender to also include young people, teenagers, workers, parents, students, and others. However, as Araeft points out, there are very few studies on telephones that address how other social identities relating to nationality, race / ethnicity, class, sexuality, and age relate to telephone uses even while recognizing that all "women" do not relate to and use the telephone the same ways (for exception see Moyal 1992).

The recent literature on social dimensions of telephones including discussions surrounding gendered aspects of telephone uses are important in my study because cell phones can be characterized as a wireless version of landlines in terms of its use. To engage in a phone conversation—whether it is on a telephone or cell phone—with someone is an ordinary event. Like telephones which are a "normalized" technology, cell phones, although still considered relatively new, are also increasingly incorporated in our everyday lives in the United States and other parts of the world. Therefore, the multiple social implications and meanings for users of the technology are worth examining to understand how such technologies are becoming part of ordinary landscapes acting as our "extensions" to facilitate communications(McLuhan 1964). At the same time, various perceived social "impacts" of cell phones are being problematized as cell phones are used in different places. The ways in which cell phones are used are often contested by different individuals but negotiated by users themselves. Cell phones, a hybrid form of telephones, have particular sets of practices, issues, and geographies associated with their uses. Consequently, examinations of cell phones warrant an understanding of how certain social relations are mediated by phone communications and are maintained and transformed. In other

words, the discourse surrounding these technologies is worth examining not only to study the immediate consequences of intended uses but also to understand how they are reinforcing and / or bringing changes to certain social relations and experiences.

The increasing number and heavy intensity of cell-phone consumption around the globe in the recent past has been contributing to the growing number of studies on social dimensions of cell-phone technology and associated uses set in many national contexts. For example, the editorial volumes such as *Perpetual contact: Mobile communication, private talk, public performance* (Katz and Aakhus 2002) and *Machines that become us: the social context of personal communication technology* (Katz 2003), consist of empirical findings on cell-phone consumption since the late 1990s spanning many national contexts including Finland, Norway, France, Great Britain, Bulgaria, Philippines, Israel, China, Korea and the United States. Even though, there is a concentration of studies from European countries, this trend reflects the fact that cell phones are a global technology in the sense that they are consumed in many parts of the world. At the same time, the collection of studies show that *place matters* in understanding how cell phones are consumed as well as how meanings associated their uses may differ or be similar among national contexts depending on factors such as supporting technological systems, cost of connectivity, state regulations, cultural practices, and attitudes towards cellular technologies.

In addition, there is a substantial pool of research on telephones and cell phones by Japanese scholars—mainly sociologists and scholars of media studies—written in Japanese. These studies range from explorations of Japanese young people's cultural politics, social histories and psychological considerations of telephony, social debates on cell phones, ethnographic findings of high school girls' involvement in prostitution activities, analyses of visual representations, to examinations of myths and scientific studies surrounding cell-phone uses such as those concerning health risks and talking while driving (e.g., Miyadai 1997; Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997; Okada 2000; Okada and Matsuda 2002). The work by Yoshimi and others has involved studies on telephones with a focus on social experiences and on media forms by building on studies by Marshall McLuhan (1964) and Gary Gumpert (Gumpert 1987) and Carolyn Marvin (1988) (Yoshimi, Wakabayashi, and Mizukoshi 1992; Yoshimi 1995). Some of these studies have been translated into English and appear in the edited volume *Personal, portable, pedestrian: Mobile phones in Japanese life* (Ito, Okabe, and Matsuda 2005) along with more recent Japanese studies. It is important to point out that the Japanese studies on telephones and cell phones not only build on Japanese but also on Anglo-American literature—yet their studies themselves are largely not recognized in Anglo-American

literature. In return, using my ability to read Japanese, I incorporate these theoretical frameworks from Japanese scholarship which offer insightful discussion on cell-phone uses but rarely are recognized in Western literature due to language constraints.[5]

These assorted studies of cell-phone consumption set in many national contexts are also diverse in terms of epistemological perspectives and are frequently interdisciplinary in nature. The contributions have been made especially from scholars working in media and communication studies, and sociology, where studies of information and mass communication such as television, Internet-connected computers and other domestic technologies are established and on-going (e.g., Morley 1992; Silverstone and Hirsch 1992; Silverstone 1994). In addition, work also comes from researchers in anthropology, cultural studies, geography, and, given by non-academic researchers. Studies on cell phones address many dimensions including cell-phone uses in relation to work (e.g., Churchill and Wakeford 2002; Gant and Kiesler 2002; Laurier 2002; O'Hara, Perry, Abigail, and Barry 2002; Sherry and Salvador 2002), cell phones in urban systems and landscapes (e.g., Bertaut 2000; Townsend 2002), cell-phone uses in public places (e.g., Cooper 2002), and the social implications of cell-phone use for different users (e.g., for parenting practices and for networking by teenagers) (Rakow and Navarro 1993; Roos 1993; Matsuda 1996, 1997a, 2001; Green 2002, 2003; Kasesniemi and Rautiainen 2002; Ling and Yittri 2002; Weilenmann and Larsson 2002). Like the studies on telephones, very few geographical studies so far have addressed the multiple geographies associated with cell-phone consumption, especially those related to particular social groups and individual users (for exception see Laurier 2001; 2002). This is particularly surprising when the examinations of cell-phone uses involve socio-spatial issues that are central to geographers such as meanings and experiences associated with mobility, public and private space, and practices of consumption.

One of the defining characteristics that set cell phones apart from telephones is that they are a mobile technology that is portable—they are designed to be carried easily in the palm of one's hand, in a back pack, hanging off a belt, or in a car. Brown states that it is "the mobile component of the *mobile* phone which is its most important feature. We do not buy your mobile phones because they come with voice mail, or for the games you can play on the phone" but because of their "ability to be in contact while we are outside the reach of conventional land phones" (Brown 2002, 7). This enables telephone conversations and communications between two parties to be initiated anytime, from most places. The spatial movements associated with a

[5] I also observe that there are cell-phone studies written in other non-English languages such as Scandinavian languages, French, and Italian (see bibliographies in Haddon (2003) and Lipposcope (2004)). Unfortunately, I do not read these languages.

cell phone are reflected in the way in which we speak of the device. For example, Townsend sees the shifts in calling the device "mobile phone" from "cell phones" in the English-speaking countries in the late 1990s:

> The mass diffusion of mobile telephones in industrialized nations during the second half of the 1990s, coincided with a decisive shift away from the cellular designation towards the use of the term mobile telephone. This indicated a broad shift in cultural perceptions and marketing campaigns from a view where the technological innovation was seen to be in the supporting infrastructure (cellular) to one where the intelligence is embodied in the device itself (mobile). And unlike linking oneself in one's mind to some complex and constraining grid of antennas, the idea of augmenting oneself with a tiny, smart device was appealing (Townsend 2002, 69).

In the United States, the common terms used are "cell phones," "cell," and "wireless phone," more than "mobile phones," "mobile," or "cellular phones." But phrases such as "mobile to mobile" and "mobile network" are also used most often in describing the cell-phone service and in advertisements to emphasize the mobile characteristics of the device. Furthermore, Cooper commenting on mobile technology states that

> [m]obility can be conceptualized in different ways, even though they all denote some form of movement in space and time. A distinction is made, by some mobile operators for instance, between three kinds of mobility which find their expression in the mobile phone / device: mobility of the user; mobility of the device; and, since they can be accessed from any point, mobility of services (Cooper 2002, 25).

These three forms of mobility are intertwined to make the cell phone a distinctive technology with particular characteristics that contribute to the production of multiple meanings and implications around cell-phone use in different contexts. Here, I am focusing chiefly on the mobilities associated with both users (i.e. personal mobility) and devices (i.e. portability) by paying attention to theorizations, practices, meanings, and experiences at the scales of individual bodies in relation to negotiations and creations of spaces and social identities.

As discussed earlier in this chapter, aspects of mobility are one of the central geographical themes explored by scholars studying young people's geographies. But it is also one of the important concepts explored by human geographers investigating topics such as urban and transportation systems, migration, and others. The geographical discussions of personal mobility are important to consider in understanding socio-spatial implications of cell-phone uses. The different degrees of mobility experienced by men and women have long been an area of interest in understandings of gender relations for feminist geographers. One of the earlier works in the context of urban and transportation geography (e.g., Hanson and Hanson 1981; Hanson 1986)

measured the time and distance of "journey to work" and highlighted that in general, men traveled longer distances and longer periods of time than women. Building on such findings, later, others examined women's preferences and / or constraints in working closer to home in order to accomplish the dual tasks of both productive and reproductive work (England 1996; Domosh and Seager 2001, 120). Earlier studies on cell-phone uses by Rakow and Navarro (1993) found that middle-or upper-middle-class suburban women living in predominantly white neighborhoods used cell phones for "remote mothering"—"mothering work" involving "coordinating and meeting children's schedules and being 'on-call'"—and working "parallel shifts"—"existing in domestic and work worlds simultaneously" (p. 153). Cell-phone technology was utilized by these women according to their mobility needs for performing their work and managing family tasks. Their work and domestic worlds were located in multiple locations that required car travel, since "public transportation is limited or non-existence" (p.153), but cell phones allowed them "to bring their private worlds of domestic responsibilities into their public world of work" and to take their family lives with them wherever they go" (p.155).

Furthermore, the discussions relating to gender and automobile travel are significant to consider in examining cell-phone uses because United States has long been an automobile society. Domosh and Seager (2001) in examining social-historical geographies of women argued that in the United States, "the car has been an especially powerful vehicle of women's liberation, both literally and metaphorically." Yet such mobility for women was contested and controversial as reflected in how early American commentators saw independent control of women's travel as "a threat to family stability, good social order, and women's sexual purity" (Domosh and Seager 2001, 123). Such "'gendering' of the automobile demonstrated how aspects of mobility relate to the construction (and reconstruction) of masculinity and femininity, and the assignment of 'proper' gender roles" (Cresswell 1993; McDowell 1996; Domosh and Seager 2001, 123). Furthermore, mobility is not only about automobile travel and uses of other modes of transportation but also experiences and meanings associated with a person's movements in space. And, these also have gendered dimensions as well. Valentine's earlier work, which came prior to her examinations of children and public space, investigated how women's fear of being in public spaces was greater than being in private space despite the fact that there were more violence experienced in domestic settings. Such women's perception of danger associated with public spaces restricted movements in public spaces, especially urban spaces during the evenings (Valentine 1989, 1992). The aforementioned study by Rakow and Navarro on suburban women's uses of cell phones, pointed out that cell phones were often provided by their husbands to

“protect” their wives. They stated that for women, “having a telephone in the car provides a means to call for help, reflecting their husbands’ and in some cases their own perception that as women they are more vulnerable than men when they are alone. These perceptions may be based on beliefs, for example, that women do not have the mechanical skills to handle car trouble or because they are possible victims of assault” (Rakow and Navarro 1993, 152). Therefore, “it is gender ideology” such as masculine association of automobiles in the United States and the role of husband as protector, “are operating within a particular political and economic context, that leads to women and men living different lives and using technology differently” (Rakow and Navarro 1993, 155).

Recent literature on mobility by feminist and social and cultural geographers has involved the discussion of how the spatial movement of a body should be seen as a “socialized movement” that is a “human geographical activity imbued with meaning of power” (Cresswell 1999, 176). For instance, drawing on feminist theorists such as Marion Young, Judith Butler, and Elizabeth Grosz, Tim Cresswell considers “how mobility is embodied differentially—how the act of moving is reflected in and constructed through different bodies” (Cresswell 1999, 176). Using a historical case study of social constructions of *tramps* in the late-nineteenth century United States, he stated that “working definitions of the tramp were combined with the geographical fact of mobility and ideas about work to differentiate between those mobilities that were to be applauded and those mobilities that were suspect” (Cresswell 2001, 170). At the time of establishment of transcontinental railroads, wanderers both workers and non-workers that were mostly male but some female, increased their mobility. They roamed long distances using the railway for transportation. Such wanderers were called *tramps* or *hobos* and considered to be deviant, dangerous, and unwanted in society and local communities, especially female tramps since this was seen as improper for women at the time (p.188). Furthermore, the female tramps often dressed like men as they roamed around the country in order to fit into the image of the majority of drifters and to protect themselves from potential rape. He argued that such female roaming bodies—*migrant women dressed as men*—“transgressed some familiar assumptions about the gendering and classing of mobility and produced anxiety in a number of onlookers who had no place for such people in their comfortable and comforting schemes of perception” (Cresswell 1999, 179). In other words, the tramp and its associated negative connotations was in some ways based on traditional views about gender roles (Cresswell 1999, 183). The above discussions of mobility and gender including degrees, experiences, and meanings of bodily movements are also relevant to aspects of mobility related to cell-phone uses—that is, the

mobilities of users, devices, and services. It is especially significant to ask how aspects of mobility of cell phones are associated with the meanings, practices, and experiences, not only related to gender, but also to other social identities.

Moreover, just as the female tramp wearing men's clothing was considered "improper," it is important to recognize the meanings of how cell phones relate to user's body due to their portability. The collection of works in the editorial volume *Machines that become us* (2003) emphasizes how cell phones and other personal technologies are embodied by users. The editor of this volume, Katz, summarizes in the introductory chapter, the ways in which personal technologies such as cell phones (machines) are theorized to "become" part of the users. First, cell phones are considered as extensions and representations of users themselves. Second, cell phones are seen as "part of a person" in that "these technologies become physically integrated with the user's clothing and even body." Finally, "cell phone has fashion aspects" that is "becoming to the wearer" (Katz 2003, 1). In such instances, how cell phones "become" part of one's body, clothing, fashion and as extensions can be examined to help understand the various social experiences and meanings associated with cell phones that are accepted as well as considered problematic. Tim Creswell defines embodiment as "the process whereby the individual body is connected into larger networks of meanings at variety of scales" (Cresswell 1999, 176). Cell-phone devices are often embodied by young people for enhancing their communication capabilities and as fashion statements are connecting to wider social and cultural networks of meanings. Examinations of mobility associated with cell phones involve the analyses at the scale of an individual body, since as extensions of the body they contribute to the representations and definitions of social identity.

As one of the geographical studies that took bodies as a scale of analysis, Robyn Longurst's work explored how changes in body shape because of pregnancy, women experienced being and moving in spaces differently than when they were not pregnant (Longhurst 2001). It was not only the changes in body shape that affect their spatial experiences but also in how people treated and perceived pregnant women in public spaces. This example shows that mobility relates to particular social identities such as being female but also how one's body affects an experience of moving in particular spaces.

In addition to studying aspects of mobility, human geographers examining transportation and technologies have utilized the idea of "extensibility." Paul Adams for example, provides an in depth discussions of how Janelle's framework of extensibility can be used to explore a boundary of a person as opposed to a boundary of a human body (1995). A person's presences and behavior

impacts can be felt through various media such as photographs, books, mass communications, and telecommunications across space and time beyond the immediate physical boundaries of a person's body. In terms of relationships with young people's geographies, Valentine and Holloway (Holloway and Valentine 2001) have employed the idea of extensibility to consider the geographical extent of children's activities by using Internet-connected computers located in their homes and schools by communicating with others who are physically far away. Their study explores how such interactions mediated by computer communication relate to the development of their social identities and negotiations of these identities with their peers and parents. *Extensibility*, along with the concept of *mobility,* is useful in understanding the socio-spatial implications associated with telecommunications and information and communication technologies such as telephones, cell phones and computer-mediated communications. In particular, various implications of extensibility of cell phones can be theorized in terms of *private / personal* spaces from domestic settings to privatized experiences and *public / social* dimensions relating to social networks and political mobilization.

Building on how telephone uses consist of those that are instrumental and intrinsic, cell phones permit communication in times of emergency or to schedule important meetings. But in addition, they are also used for "entertainment" purposes such as contacting friends, killing time, just chatting, and playing games installed on a phone (Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997; Kasesniemi and Rautiainen 2002; Ling and Yttri 2002). These are all considered to be personal uses. Studies on telephony have often emphasized how phone communications are private and personal. For example, Arafeh (2000) describes the *private* dimensions of wired domestic telephones by stating that

> [t]he phone is intimate. It connects the private sphere of the home within the private spaces of the phone connection—the private line. The phone is also immediate and emotional—perfect for frequent and involved conversations and social connections which typically occur in the private, personal space of the home (p.115).

The virtual space of the phone call can be theorized as personalized place where the two callers experientially inhabit. Talking on the phone is often an intimate experience, especially because it is based on voice communication. One can hear the other callers' tone of the voice and breath patterns through a receiver, picking up emotions and allowing one to "feel" the presence of the other caller (Yoshimi, Wakabayashi, and Mizukoshi 1992, 142). It can be argued that there is a tendency to use cell phones more as *personal* technology compared to a wired phone since it is usually carried by an individual user. Prior to and along with popularization of cell phones, other

portable electronic technologies (such as personal music players, portable DVD players, video games, and wireless laptops) have been used to personalize the user's immediate surroundings beyond the domestic settings. Michael Bull's (1999; 2000; 2001) studies on the meanings and auditory experiences of personal stereos addresses how media and technology plays a part both in people's sense of place and in the management of everyday life. Like personal stereos, cell phones and other portable personal technologies are used to create and sustain certain audio-visual "environments" suited for a user's personal preferences and entertainment.

The portability of cell phones and the corresponding mobility of service provisions allows continuous phone reception and connectivity facilitate users to be potentially always be connected, being in a state of "perpetual contact" (Katz and Aakhus 2002). Consequently, such a state alters one's sense of being in a place by inhibiting the intimate and immediate "virtual space of the phone call" (Adams 1995). The feeling and knowledge of always being connected can contribute to particular styles of social relations. In theorizing and examining his empirical findings about the contemporary "technoscape," cell phones, E-mail and text messaging service, Christian Licoppe states that "the transformation of this technoscape allows for the development of a particular pattern of construction of social relationships—that of the 'connected' management of relationships, in which the (physically) absent party renders himself or herself present by multiplying mediated communication gestures up to the point where copresent interactions and mediated communication seem woven in a seamless web" (Licoppe 2004, 135). It has been pointed out by several scholars that when one is engaging in a telephone conversation, the people in a caller's immediate surroundings perceive that the caller is in the state of "absent presence." This is because the caller is partly present in a particular physical space and partly present in the virtual space of the phone call (Adams 1995). Thus, when one is talking on the phone, one is "existing" in two "spaces"—physical space where one's body is located and the ungrounded "virtual space of the phone call." Because of the mobilities and extensibility associated with cell phones, their use actually challenges the nature of public and private spaces since private conversations do not necessarily "occur in the private, personal space of the home" (Arafeh 2000, 115). In many instances, the caller who is "half-present" in a physical location becomes "rude" and "annoying" from the points of view of the people present in the immediate surrounding of a cell-phone user. Cell-phone rings and phone conversations represents highly private space and are perceived to be disruptions in a range of social settings such as being in a restaurant, attending a public performance or riding a public transportation. In addition, one of hotly contested debates in the United States is whether to allow cell-phone uses while driving.

Those against such uses base their argument on the belief that engaging in phone calls can potentially steer the attention of the driver away from the road. Thus, often, private uses of cell phones in public spaces create problematic circumstances. Moreover, it challenges the very meaning of public spaces, and questions the appropriate uses of personal technologies.

In contrast to the personal use dimension of phone communication, it can also be theorized in the light of social networking through both instrumental and intrinsic uses. Paul Adams, commenting on geographical examinations of computer-mediated communications states that "telecommunications do not simply rearrange information and ideas in space, they also alter the balance of power in social struggles. Although it supports centralization of power and capital, subordinated groups can achieve certain goals by exploiting the existing telecommunication infrastructure" (Adams 1996, 417). It may be easier to perceive how Internet websites can be used to mobilize social struggles and / or used to create "communities without propinquities" (Walmsley 2000). This is because, even though they have temporal dimensions, they are both visible in the forms of websites, E-mail lists, "chatrooms" and "blogs" and tangible in the sense that one can access them and participate with them through E-mailing, posting comments, and the creation of websites. Mass communications in general, such as television and radio broadcastings have long been used to mobilize social gatherings, disseminate certain ideologies, and create a sense of solidarity among different social groups (Adams 1992; Yoshimi 1995). On the other hand, it may be less obvious for phone communications to be conceptualized as a tool for mobilizing social movements and used for political ends because the private aspects of the technology are often emphasized (Arafeh 2000). Arafeh (2000) in observing that telephones are often theorized as private technology, explores how telephone communication can be used by women and other marginalized groups (e.g. gay and lesbian populations) to network and create quasi-public spaces such as the case of support hotlines. Social histories of telephone and cell phones since the 1980s also include discussions of how young people have utilized "audible message boards" through a telephone service called *daiaru kyu tu* (Dial Q2). This service allows people to leave, listen, and reply to voice messages and to call the numbers of a *terekura* (telephone club) to "hook up" with others (Yoshimi, Wakabayashi, and Mizukoshi 1992; Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997). In another example, cell phones' text-messaging systems were used to mobilize political movements in opposition to former Philippine President Joseph Estrada due to allegations of corruption (Katz and Aakhus 2002). However, compared to the studies of Internet-connected computers, geographers have paid less attention to the roles of

cell phones from the point of view of social struggles and their place in the negotiations and constructions of social identities and social change.

There is nothing inherent in technologies themselves that makes them personal or social. A social-constructionist approach, however, emphasizes how technology is "a medium with consequences that are significantly shaped by the historical, social, and cultural context of its uses" (Light 2001, 711 cited in Suoranta website 2003). For example, in the United States, historical uses of party lines allowed for easy eavesdropping on conversations (Fischer 1992). Yoshimi has pointed out in his work on the social history of the telephone in Japan, how the location of telephones has shifted over time due to both technological innovations as well as changing social relations (Yoshimi, Wakabayashi, and Mizukoshi 1992). Telephones were not found in most homes until after the Second World War. Once they entered into the realm of the average household, telephones were most commonly placed near the entry-way. Over time, the telephone moved into the living room and eventually into individual bedrooms. Yoshimi sees cell phones as part of this historical progression of shifting places for the telephones and toward privatization of the device. The location of where the phone is placed is significant in examining different social relations such as family relations. For teenagers in the developed world, telephones located in the living room often mean that they cannot engage in "private" conversation since their conversation will be partially heard by other family members (Gillard, Wale, and Bow 1998).

Rakow and Navarro argue that "the cellular telephone, because it lies in that twilight area between public and private, seems to be an extension of the public world when used by men, an extension of the private world when used by women. That is, men use it to bring the public world into their personal lives. Women tend to use it to take their family lives with them where they go" (Rakow and Navarro 1993, 155). They concluded that the diffusion of cell-phone technology was reinforcing gender roles and hierarchies rather than empowering women or transforming the association of women and domestic spaces. Taking such a social-constructionist approach in understanding technologies also requires the consideration of who is empowered by cell-phone technology. That is, it is important to discuss who the "have" and "have-nots" of cell phones are and what cell-phone uses mean for different social groups (e.g., Matsuda 1997a). So far I have been highlighting the theorizations of gendered aspects of telephones and cell-phone uses but it is also important to recognize that

> the variation of extensibility according to race, class, age, gender, and other socially significant categories binds micro-level biographies to certain macro-level societal processes. New media provide new forms of extensibility that in

> some cases perpetuate uneven distributions of social status, income, and power and in others serve to erode these structures. The concept of "extensibility" thus needs to be broadened to focus more attention on extensibility's derivation from and challenges to social power structures (Adams 1995, 268).

Echoing such a framework, in my dissertation, I am examining cell-phone usage by American university students who are young adults. In doing so, some of the questions to explore are what does it mean for them to be potentially connected all the time? What sorts of public, social, personal and private spaces are associated with young people's uses of cell phones? How important is it for young people to possess and use cell phones to maintain, express, and change their lifestyles and social identities? Next, I turn to specific discussions addressing such questions involving socio-spatial implications associated with young people as consumers of personal and mobile information, and, address communication technologies approached from the perspectives of young people's geographies.

Young people as consumers of technologies

As geographical studies on young people diversify, by exploring different dimensions of young people's lives and by employing various socio-spatial frameworks, some geographers have began to direct their attentions to the roles of various electronic technologies and digital media. Their studies often utilize a social constructionist approach and are concerned with the negotiation of young people's identities played out in numerous spaces. For example, McNamee (1999) examines the different approaches taken by parents to restrict children's access to video games in domestic settings for female and male siblings. Bingham, Holloway and Valentine's study (Bingham, Valentine, and Holloway 1999; Holloway and Valentine 2001, 2001c; Holloway, Valentine, and Bingham 2000; Valentine and Holloway 2001a, 2001b, 2001c) explore the implications of Internet-connected computers in schools and domestic spaces by discussing issues of sexuality, peer culture, and parenting practices. These studies have emphasized the importance of studying technologies present in domestic and educational spaces and how their uses relate to familial and gender relations in order to understand the processes involving identity negotiations and young people's ways of understanding and experiencing technologically mediated spaces. Such geographical studies are also part of an interdisciplinary field of sociological studies on children and technologies. This field represented in edited volumes such as *Wired-up: Young people and the electronic media* (Howard 1998), *Digital diversions: Youth culture in the age of multimedia* (Sefton-Green 1998), and *Children, technology and culture: The impacts of*

technologies in children's everyday lives (Hutchby and Moran-Ellis 2001) is concerned with the social construction of young people's identities and the social implications of such technologies on young people's lives. Sefton-Green argues that "*children* (or *youth*) and *new technology* are terms which are often yoked together in discussions about the nature of contemporary social change, precisely because they both embody similar teleological assumptions about growth, progression and development which underpin late modern society." Yet, "rarely are these shared notions of the future analyzed together" (Sefton-Green 1998, 2). These studies bring the two fields—those studying "children" and those studying "technology"—together to offer theoretical and empirical evidence of the implications of technology on young people's lives.

Young people's lives are increasingly mediated by technology and they are seen as heavy users of digital technologies in domestic settings. In addition, technological literacy is argued to be heavily important in today's workplace and school curriculums and activities have incorporated uses of digital and electronic media. So far, the collection of studies on technologies has not adequately addressed young people as consumers of these technologies and sociological studies on childhood have not sufficiently addressed the roles various technologies play in their lives and in meanings associated with being young. Observing this trend, Bingham, Holloway, and Valentine (1999) claim that "the ideas of "children" [or young people] and "technology" separately must be urgently directed to the notion of "children" [or young people] and together" (656). My dissertation aims to contribute theoretically by fusing the frameworks and discussions found in studies of young people's geographies with the social dimensions of electronic technologies. In particular, discussions on constructions and negotiations of social identities, experiences in public and private spaces, and social implications of technologically mediated relations are highlighted in my analyses of cell-phone uses by young adults.

Juha Suoranta, writing for 2003 United Nations' World Report, points out the lack of breadth and depth of statistics relating to young people's uses of technologies (Suoranta website 2003). While there are a growing number of studies that examine electronic technologies uses by youth (e.g., Howard 1998; Sefton-Green 1998; Hutchby and Moran-Ellis 2001; Holloway and Valentine 2001c) and cell-phone uses by young people in European and Asian contexts (e.g., Miyadai 1997; Green 2002; Kasesniemi and Rautiainen 2002; Ling and Yttri 2002; Green 2003; Miyaki 2005; Okada 2005), there are very few in-depth studies focusing on telephones and cell-phone use by American youth (Gillard, Wale, and Bow 1998; Wynn and Katz 2000). Therefore, my study intends to fill such empirical gap by presenting a case study of how cell phones are diffusing into certain age group in a particular setting—young adults in American university

campuses. Haddon in suggesting cell-phone research concerning young people asks a series of research questions:

> In the light of the current studies of youth and the mobile [cell phone], we need to explore what happens to the consumption of this current cohort as its members grow older and some of the arguments about the mobile in relation to their particular status as adolescents no longer apply? […] [T]his technology took on a role for them partly because it arrived at a particular stage in their life course. What are the differences in consumption for future generations of youth (or younger children) when this ICT [Information and communication technologies] has been more established? In other words, what difference does it make to grow up with a technology (just as generations grew up with television) as opposed to the generations who experienced its first arrival? Still, on questions of age and age cohorts, how does mobile telephony consumption change for the elderly as more people retire having used mobile phones when they were younger? (Haddon 2003, 52).

A study involving American university students' cell-phone consumption, then, is interesting not only for international comparative purposes but also in examining how cell phones are used by a particular age cohort at a time of when cell phones have become popularized in many social settings in the United States. It is important, however, to keep historical perspectives in mind while developing understandings of the processes of the social constructions of technologies. This is because cell-phone consumption relates to young people's biographies and geographies but also because each information and communication technology has its own biography (Haddon 2003). Anthropologist Igor Kopytoff (1986) has suggested that tracing "the 'career,' of objects over their 'life'" and "how objects are culturally defined and redefined" reveals much about the society in which these objects are located (Kopytoff in Haddon 2003, 46). In addition, Haddon points out that "people often acquire ICTs, go through an initial period of experimentation, and then fall into a routine usage pattern. Despite this routinization, consumption patterns also change as result of social and technological change" (Haddon 2003, 46). Cell phones have been already undergoing significant transformations in their style, technical capabilities, and available options. Meanwhile, perceptions concerning cell phones have changed from that of a luxury item used exclusively by a limited segment of society to that of a convenient, common and / or necessary communication tool among many people around the world. My study is interested in biographies of cell phones in relation to an age group (young adults), in particular settings (American university campuses), and within current social "technoscape" where new forms of electronic digital information and communication technologies such as cell phones and personal computers are becoming a significant part of everyday lives and which are increasingly becoming problematized.

There are three inter-related socio-spatial areas of academic inquiry associated with the consumption of cell phones by young adults that emerges when I blend together the frameworks and discussions from the two fields—young people's geographies and studies of social dimensions of technologies. The first involves an exploration of the "representations" of young people as heavy users / consumers of digital technologies. Recent media and academic representations of young generations have included the terms "digital generation," "audio-visual generation," and "cyberkids" to describe both the environment of their everyday settings as well as their heavy use patterns. Sefton-Green states that "perhaps the most salient image of a contemporary child in western society is a picture of a rapt face staring entranced at, almost *into,* the computer screen. This image is powerful not just because it encapsulates the hopes and fears within popular narratives of childhood but because it also tells a parallel story, the narrative of technological progress" (Sefton-Green 1998, 1). Young people's uses of cell phones are another popular depictions that symbolize current "youth culture" in many national contexts. One of the earliest depictions of the uses of cell phones by teenagers was in the Hollywood 1995 movie "Clueless," where rich "valley" girls in California chatting away on their cell phones portray their "economic class," "popularity," and perhaps "femininity" because of the existing stereotype that women in general talk a lot on the phone (Skelton 1989; Rakow 1992a; Arafeh 2000; Lohan 2001). How do cell-phone uses fit into these representations signifying technological uses associated particular generations? And, what sorts of empirical observations are associated with young people and cell phones? Just like recognizing that "women" are not a universal and essentialized category (McDowell and Sharp 1997), there is a danger to essentialize all experiences and uses by young people, teenagers, and children as the same. On this point, Nicola Green's research sought to lay out empirical findings to "challenge the common assumption about an affinity between young people, technology, and 'the future'" and to "critique the common emphasis on the issue of *difference* between 'teenagers' and 'others,' which by implication, places all teenagers in the same identity and behavioral categories, and implies the formation of youth 'subculture'" (Green 2003, 201). An empirical inquiry of cell-phone uses of young people should include variations in uses and ownerships as well as the social constructions of identity in different contexts.

One of the negotiations of young people's identities associated with uses of information and communication technologies involves how contemporary notions of childhoods are defined in relation to adulthood. Sefton-Green argues that "the digital age is one in which conventional definitions of childhood and adulthood are being redefined through social usage rather than in

terms of biological age" (Sefton-Green 1998, 4). According to him, one of the reasons for this is because digital technologies "seem to offer a kind of 'adultification,' since young people can act in the digital realm with an equivalence of grown-up power at the same time seem to have continued the process of 'juvenilization' associated with leisure pastimes, and in particular with notions of playing games" (Sefton-Green 1998, 3). There are studies that illustrate how children and young people teach their parents and other adults around them how to use ICTs e.g., Bingham, Valentine, and Holloway 1999; Valentine and Holloway 2001a). Such examples indicate how competences of using technologies do not necessarily correspond with biological age and adult-child relationships are often altered because of the uses of such technologies. Also, the value placed on the incorporation of digital media technologies into educational arenas often produces tension between educational and non-educational uses. At the same time, there is sometimes a very thin line between uses of technologies for entertainment and work. For example, the domestic personal computer had a strong connotation of "home entertainment" during the early course of the diffusion process in British context (Haddon 1992, Sefton-Green 1998, 3). Many adults use technologies for personal entertainment and the contemporary association of childhood with playing does not necessarily hold. If childhood and adulthood are destabilized because of uses of various technologies, their uses by young adults are particularly interesting to examine because age-wise, they occupy "a hazy liminal state" between adulthood and childhood (Sefton-Green 1998, 4). Moreover, universities are interesting spaces where tensions between appropriate and inappropriate uses are experienced and where university students negotiate the related multiple meanings associated with learning, working, and playing.

The second aspect that I explore in my study is how cell-phone uses by young people relate to their experiences in various social, public, private, and domestic spaces. Aside from educational spaces, another prominent space where young people experience technologies is situated within domestic settings. Cell phones are often used as substitutions for domestic wired phones, and they facilitate communications between members in a household. A domestication approach, described and applied by Haddon, is useful in analyzing aspects of cell-phone consumption. The domestication approach explores how changes in life style and life stages such as telecommuting, family dynamics, and retirement affect changes in family member's usage patterns (Haddon 2003, 45-46). Additionally, the approach centers its examination on "the negotiations and interaction between household members and politics of the home" (Haddon 2003, 45). Haddon states that in studying the consumption of domestic technologies, "we have to be aware of individual and household aspects, and strategies to control technologies, both in the

sense of controlling use by others and controlling the place of technologies in one's own life, which, in turn, relate to the type of life and identity to which people aspire" (Haddon 2003, 45). Young adults' identities as teenagers and students, as well as life events such as getting a driver's license, may be factors in how parents decide to purchase cell phones for their children and themselves. As I discussed earlier, cell phones are often utilized for mothering practices and therefore parenting culture and gender roles become part of how cell-phone uses are negotiated in domestic settings by different family members.

Another process set in a domestic context that contributes to the destabilization of the boundaries between childhood and adulthood is related to young people's consumer power. Young people are "both *indirect* and *direct* consumers of new technologies" (Sefton-Green and Buckingham 1998, 8; Lee 2001). Clearly, young people do not have the same kind of spending power and "perceived levels of competence" as adults (Lee 2001, 160) but "young people clearly influence their parents' purchasing power" indicating that "the spending power of the young does not directly correlate with their cultural power" (Sefton-Green and Buckingham 1998, 8). Media and advertisements are directed toward both adults and children because they recognize the "cultural power" associated with young consumers. In this sense, consumer society involves a partial 'de-differentiation' of the states of adulthood and childhood" (Lee 2001, 160) because children have "independence of mind as consumers" (p.167). Moreover, contemporary marketing strategies are directed to particular consumer groups based on age because of young people's consumer choices and roles. The current age group of young adults is part of "Generation Y," and they are seen as important consumers of digital technologies as much as the "Generation X" and the "Baby Boomers" are today. But, they are also seen as a key consumer group in the future. Young adults are important consumer groups because they also may have more financial ability to pay for digital technologies than younger segments of society who are more likely to rely on adult guardians to pay for the technologies.

The extensibilities of technologies also facilitate interaction with non-household members since private spaces of household are connected to public realms through digital media. Lee argues that because of this connectivity, particularly offered by television, young people came to play a significant role as consumers since the Second World War in developed countries (Lee 2001). Several scholars have also pointed out how young people's everyday spaces are increasingly saturated with digital electronic technologies that facilitate ways of interacting with and experiencing both known and unknown worlds. For example, the experience of domestic television consumption can be seen as "simultaneously staying home and imaginatively, at least,

going to places" (Morley 2000). The critics of ICTs—such as some parents and policy makers—have been calling for extra surveillance on what sorts of information young people are exposed to and interacting with (Bingham, Valentine, and Holloway 1999; Valentine and Holloway 2001a, 2001b). Some of the fear associated with exposure to particular television programs, access to violent video games and materials on the web may be due to the ability of children to extend themselves into inappropriate spaces where parents cannot control and supervise. Valentine and Holloway (2001a, 2001b) identify that there are similar parents' perceptions applied to "public spaces" and "cyberspace" since cyberspace also represents danger associated with public space where strangers "roam" and possibly "harm" their children. In Japan, the wide spread and frequently reported involvement of young teenage girls with illegal-prostitution activities involving middle-aged men is often facilitated by cell phones. Because young people are able to contact anyone without the interference of a third party, their extensibility is often seen as something that needs to be controlled because it may involve deviant activities made possible by the nature of a mobile technology.

Cell phones may not always necessarily represent deviant activities but rather convenient ways for young people to connect and interact with their peers. Because of the nature of mobility and extensibility associated with cell phones, young people do not have to stay home to wait for a call. This can help facilitate flexible "networking" and can significantly facilitate young people's management of their friendships, relationships with their family, and the development of an independent self. Several scholars have examined cell-phone consumption by teenagers in Finland and Norway. Their studies show how cell phones are used for both instrumental purposes including setting up meetings among friends and interacting with parents and also as expressive tools to control and manage their social presentation of self (Kasesniemi and Rautiainen 2002; Ling and Yttri 2002; Skog 2002). Short text messaging systems have been used to send and collect chain letters and advertisements. Moreover, an ethnographic study in Sweden has examined how cell phones—which are considered as devices used for private purposes—are in fact shared by teenagers (Weilenmann and Larsson 2002). The sharing of cell-phone devices among friends enforces the sense of belonging to a group and the creation of a place to "huddle around." This can be seen as both ways of privatizing their surroundings and simultaneously connecting to immediate and wider social networks.

Networking among teenagers with the use of cell phones can be conceptualized as creating a sense of belonging to a group. For young generations in many national contexts, cell phones are part of the expression of personal style while simultaneously confirming the ambient

peer culture which regards the cell phone as “stylish.” Wearing a particular cell phone for teenagers can be seen as one way of articulating “us” and “them” (Green 2002; Ling and Yttri 2002; Haddon 2003). Haddon argues that

> studies of mobile telephony use by adolescents similarly indicate that consumption patterns often only make sense when non-domestic social relationships are considered. This allows analysts to appreciate the importance of "gifting" calls, which serve to cement relationships with peers. It also shows that the amount of numbers stored in the phones memory has itself a social currency, showing the user has the (right) mobile phone markers of participation in a network. This perspective also highlights the fact that style of use and placement on the body form part of appropriate teen behavior (Haddon 2003 51).

The third aspect I am investigating is cell-phone consumption as embodiment practices which signify and demarcate youth cultural identities. “Consumption” is used here as (re)productions of socio-cultural meanings by purchasing, possessing, displaying and using of goods and services and not simply as an act of buying. Drawing from cultural studies, “new” cultural geographers have examined consumption practices in different places (Jackson 1989; Mills 1993; Binnie 1995; Jackson and Holbrook 1995; Clammer 1997) and they illustrate how consumption practices create a sense of belonging to certain socio-cultural groups and solidarity between people. John Clammer (1997), who has theorized consumption practices in contemporary Japan, argues that the Japanese consumer "is not merely a passive victim, but operates at the nexus of needs, desires, products, taste, information and tradition, and is capable of endlessly restructuring the relationships between these into a kaleidoscope of possibilities" (P.95). Similarly, according to Sallie Marston (2000) who examines American female consumers in historical contexts, defining and negotiating such relationships through consumption may be conceptualized as constructing a politics of scale. Consumption is not only about the practice of buying identity, but also about subverting the dominant meanings of representation and (re)creating cultural boundaries. People create, manipulate and negotiate meanings through their uses of technological objects.

I have identified three inter-related areas of academic investigations in regards to cell-phone consumption by American university students—representations of young people as users and consumers; social implications of technologically mediated spaces and relations; and embodiment practices. Young people are important consumers and actors in the social constructions of technology. My examination of young people’s geographies associated with cell phones considers not only how cell phones are framed by advertising but also the processes by which cell phones gain meaning beyond those which are advertised (Haddon 2003, 51). The

meanings associated with uses of technologies intersect and facilitate constructions of social identities and boundaries such as those of adulthood and childhood. Cell-phone usages contribute to how young people experience domestic, educational and public spaces and how they relate to family members, friends, peers, and non-acquaintances. Since cell phones are used in spaces outside of domestic settings, young people negotiate cell-phone uses with their peers but also with people who are not necessarily their acquaintances.

Summary

My study of university student's cell-phone use is primarily grounded in a sub-field of young people's geographies that has materialized since the 1970s but has become an established area of study in geography by the late 1990s. It also builds on theories and empirical findings found in an international and interdisciplinary collection of work examining the social construction of technologies and cell-phone consumption. One of my research aims is to bring together the discussions on young people's geographies and social dimensions of technologies by theorizing multiple identity negotiations, technologically-mediated experiences and social relations in different spaces, and spatial implications associated with cell-phone usages. In particular, the meanings and experiences of *mobility*, *extensibility,* and *surveillance* associated with university students' uses of cell phones are central to my examination. In addition, another contribution of my research is that it offers an empirical study involving American university students, who are young adults and by definition between "childhood" and "adulthood." They are conceived as a generation that is technologically savvy with many types of communication technologies infused within their everyday settings. Some of the issues explored in my empirical analyses are their relations with their family members and peers, gender and age aspects of technologies, and the notion of "always" being able to communicate.

In the next chapter, I present the methodological issues associated with my investigations. The methodological discussions are also derived from the two areas within which I situate my work. More specifically, ontological and epistemological issues involved in employing frameworks of social construction of identities and technologies and young people as social actors are discussed.

Chapter 3—Social constructions of technologies and identities: methodological considerations

Chapter overview

The previous chapter laid out the theoretical foundations of my research by outlining the significances, agendas, and contributions of my studies. My research investigating various socio-spatial meanings, experiences, and processes related to American young people's uses of cell phones is situated in the interdisciplinary fields of *young people's geographies* and s*tudies of the social dimensions of information and communication technologies*. In addition to theoretical dimensions, methodological aspects must also be discussed in order to fully situate my dissertation; within the two disciplines there are scholars working in different philosophical traditions and taking various methodological approaches. Therefore, in this chapter, I continue to position my research within the discipline of geography and beyond by discussing the major methodological considerations that I take into account during the designing and execution of my research.

My methodology takes a social-constructionist approach and is primarily informed by a combination of three philosophical traditions—phenomenological, postmodern, and feminist geography. These traditions reject modernistic meta-narratives that claim universal "truths" to explain and make predictions about our social world. Instead, they highlight multiplicities, tensions, and contradictions surrounding socio-spatial meanings, experiences, and practices. There are three methodological aspects that are central to my study;

- A contextual social-constructionist approach taken in examining meanings and experiences surrounding uses of information and communication technologies
- The utilization of both qualitative and quantitative methods
- An employment of ethical and reflexive research practices advocated in feminist geography.

As I laid out in the last chapter, the two inter-related frameworks—the social constructions of identities and technologies as well as young people as social actors, especially as consumers of technologies—are pivotal to my examinations of young people's cell-phone uses. I discuss the major geographical agendas and challenges in employing these frameworks while briefly summarizing the methodological approaches advocated by scholars working in the two fields. I begin the chapter with a discussion of approaches taken in examining aspects of social

construction, and then move on to outline the methodological issues associated with young people as social actors in constructions of identities, technologies, and spaces.

Contextual social-constructionist approach

Examinations of dimensions of social construction include consideration of how technologies are owned, used, perceived, negotiated, and resisted by different social groups in different socio-spatial and historical contexts. But more importantly, such examinations address questions of how the uses of technologies relate to the construction of social identities, to the socio-spatial meanings associated with technologies, and to the experiences of technologically mediated spaces and social relations. One of the important aspects to studying young people's uses of technologies is to pay attention to the various representations signifying discourses of young people as consumers of technologies. Such representations do not naturally exist or necessarily always reflect realities applied to all young people's uses and experiences. A way to understand the meaning of the representations involving young people and technology is to examine the processes and factors contributing to constructions of representations and how they correspond with or contradict empirical observations. Also, representations reflect certain stereotypical and naturalized (therefore taken-for-granted) categories which the processes of young people's identity negotiations are part of and young people's uses and perceptions of technologies can perpetuate, resist, and embrace.

The introduction, diffusion, and uses of various forms of technologies have historically generated public concerns, hopes, and fears relating to social change (Marvin 1988; Fischer 1992; Luckenbill 1995; Bingham 1996; Thrift 1996; 1997; Bingham, Valentine, and Holloway 1999). Most often, there are "claims" which debunk or praise new forms of technologies and these viewpoints cannot be isolated from the contexts in which these arise. The recent proliferation of information and communication technologies into the homes and the hands of many have also generated various claims and opinions in regard to consequences and appropriateness of their uses. Such conceived and anticipated significances of usages by social groups are debated through various types of media, among academic circles, by policy makers, and through daily conversations. In fact, various issues ranging from privacy, identity theft, etiquette, to health concerns are emerging as social problems. Those claims and opinions illustrate how technologies are used, defined, perceived, and experienced by different members of society and how uses of

technologies are related to various social, cultural, economic and political struggles, negotiations, and conditions.

One of the ways to examine claim-making activities surrounding various forms of information and communication technologies is to employ a social-constructionist approach developed and utilized by scholars studying *social problems* in sociology, criminology, psychology, and history (Best and Horiuchi 1985; Best 1990; Jenkins 1992; Best 1994; Best and Luckenbill 1994; Jenkins 1994; Best 1999, 2001b; Jenkins 2001). Their research focus is to explore the multiple processes and actors involved in the construction of social problems by investigating who the claim makers are that are central in defining the social problems; what kinds of rhetoric and frameworks are used; and what the interests and consequences are for various actors in claiming the problems (Jenkins 1992, 2). Social constructionists have worked on case studies of social problems that come to the fore through the "sudden upsurge of public and media concerns" (Jenkins 1992, 3) by examining the role of social movements, professionals, the press, politicians, and particular interest groups in the context of wider social, political, and bureaucratic forces (e.g., Best 1994; 1995). This methodology of studying claim-making activities by various groups has also been employed by geographers in order to discuss the spatial dimensions of social problems. Examples of such studies include Gill Valentine's analysis of the moral panics surrounding the Jamie Bulger murder case in Britain as well as Tim Cresswell's case studies of graffiti in New York City, music festivals in Britain, and a "tramp scare" in the United States between 1869 to1940 (Valentine 1996a, 1996b, Cresswell 1996, 1999, 2001).

A social-constructionist approach emphasizes the fact that in order to link certain social conditions and people as part of a social problem, a group of people has to indicate and believe that such conditions are (a) wrong and troubling; (b) are widespread affecting significant numbers of people; and (c) need to be and can be "fixed" (Loseke 1999, 5-6). The processes of naming a condition as "a social problem is to take a moral stand" by providing a subjective definition of what is good and bad (Loseke 1999, 10). Therefore, researchers taking a social-constructionist approach are mostly concerned with the moral and the subjective dimensions of social problems. In contrast, an alternative way of examining social problems is to use the *objectivist* approach that focuses primarily on the "real" and tangible social conditions and people by describing and measuring different aspects of and prescribing the solutions to problems (Best 1999, 1). Often morally and politically motivated, they often produce and / or work with objective indicators of social conditions and types of people who are affected (e.g. children, women, impoverished population) (Loseke 1999, 7). In addition, for objectivists, the social problems that exist "out

there" *can* be but also *must* be discovered, measured, and solved and they believe that the "particular phenomenon exists and constitutes a problem by virtue of causing harm of disturbance to a significant section of the society" (Best 1999, 1).

The differences between objectivist and constructionist (subjectivist) approaches often lead to an argument that "either you believe the social problems exist outside human awareness, *or* you believe that social problems are constructed" (Loseke 1999, xi). To take an extreme example, in their influential book *Constructing social problem*, Malcolm Spector and John Kitsuse (1987) take the stance of *strict constructionism* (Best 1995, 6; Loseke 1999). Due to their epistemological belief and their attempts to maintain methodological rigor, they argue that social conditions or phenomena termed as social problems should not be examined at all in the process of studying social problems because "it is unnecessary" and "impossible to know the 'objective' reality behind a problem" (Jenkins 1992, 2; Best 1993; Loseke 1999). In other words, strict-social constructionists are not concerned at all whether the social conditions in which claims are based are true or harmful.

Even though ontological and epistemological differences are very important to recognize in academic research, certain dichotomies and different approaches taken in examining social phenomena are often exaggerated and perpetuated in academic circles. The strict social-constructionist approach of the 1970s has since been modified, and it is most likely that there are different degrees to how social constructionists involve objective conditions in their analyses. For instance, scholars who are *contextual-social constructionists* have "the same concern about the process by which the problem is constructed, brought into the arena of public debate, and used to shape matters of policy" but also "seeks first to examine the plausibility and factual basis of the claims made in order to support the reality of a problem" (Jenkins 1992, 2-3). Hence, contextual-social constructionists' works have often pointed out the discrepancy between what people define and perceive as social problems versus the actual objective conditions reflected in governmental statistics or some other indicators (e.g., Jenkins 1992; 1994; Best 1995; 1999). According to Loske (1999), this is because "there's no necessary relationship between the measurable characteristics of any given condition or the people in it and a definition of that condition as troublesome" (p.8). In this light, in some instances, how statistics and other "facts" are collected, compiled, and presented are examined by social constructionists because various official and unofficial statistics are often used in the claim-making process to persuade the public that something is or is not a social problem (Best 2001a).

To a similar end, social and cultural geographers have studied how the place and people of events are portrayed in the media (Burgess 1985; Aitken 2001b) and how maps and place imageries can distort "reality" and signify certain discourses as much as perpetuating certain social relations and conditions (e.g., Monmonier 1991)**.** Illuminations of distortions are significant since they can contribute to "lay a poor foundation for social policy" as well as maintaining certain social power hierarchy (Best 1999, xiii). Moreover, certain perceptions and understanding of social problems "will encourage us to react toward those objects in particular ways" and "successful claims can lead to objective changes in the social world" and "can lead to changes in how we make moral sense of that world" (Best 1999, xi; Loseke 1999, 14, 139). A contextual-social-constructionist approach is useful in understanding moral geographies associated with young people including the examinations of which cell-phone uses are considered appropriate and who makes such "decisions." Furthermore, it can be used in exploring how different claims contribute to shaping and understanding of young people's cell-phone uses and experiences by young people themselves. Sefton-Green (1998) recognizes that the debates about children and future "are inevitably bound up with much broader ideological, moral and social motivations, yet they often float free from any discussion of the concrete realities of children's lives, or of their actual uses of these new technologies" (p.2). In this light, empirical aspects of experiences and uses of technology are equally important as the examinations of discursive dimensions (e.g. representations) of technological uses. As I have mentioned earlier, the research area of young people and technology recently emerged as a response to empirical and theoretical deficits as well as a recognition of the significance of fusing discussions of young people and technology together. There has been tendency in these theorizations of the relationships between spaces and technology to be quite abstract (e.g., Bingham 1996; Hinchliffe 1996; Murdoch 1997; Graham 1998a; 1998b; Crang 2000) but an increasing number of studies involve empirical analyses (e.g., Adams and Warf 1997; Froehling 1997; Jackson and Purcell 1997; e.g., Adams 1999; 2002) .

Qualitative and quantitative inquiries

A variation between objectivist and subjectivist approaches in examining social phenomena and / or problems can also be seen in geography as reflected in the "idealist" / "materialist" (or "realist") debate found within the study of human and physical landscapes (e.g., Mitchell 1995; Walton 1995; Demeritt 1996; Mitchell 1996; Peet 1996; Walton 1996; McCann

1997). “New” cultural geography emerged in the early 1980s as a critique towards a “traditional” cultural geography that provided rich descriptions and cataloguing of material artifacts and cultural attributes. “New” cultural geography argued that “culture” should not be treated as something “superorganic” (Duncan 1980; Jackson 1989) but rather, should focus on how elements of our cultural world are socially constructed, contested, and perpetuated. Ironically, there have been multiple critiques aimed at earlier writings in “new” cultural geography for being overly theoretical, focusing mostly on representations and not involving the materiality of objects and social practices in their analyses (see Mitchell 1995; Walton 1995; Jackson 1997; Kong 1997).

Such a general dichotomy between subjective and objective approaches may also reflect the aforementioned (see Chapter 2) split observed among agendas and empirical works in young people’s geographies—between those who study the social construction of “childhood” / “youth” and those who study the socio-spatial conditions of young people as well as cognitive aspects of children. As pointed out earlier (see Chapter 2), within the sub-discipline such dichotomies are often welcomed since it is viewed that both subjective and objective perspectives are equally significant in understanding various geographies. And recently, there has been a growing number of studies within “new” cultural geography that have been interested in the materiality of social phenomena and cultural objects as much as discursive aspects (e.g., Jackson 1999; 2000b). Correspondingly, my research, which takes a social-constructionist approach, involves examinations of various representations of young people’s cell-phone consumption in the forms of ideas, claims, texts, and visual images but also actual practices and technologically-mediated experiences. In addition to examining the sensory aspects of technologically-mediated spatial experiences (Yoshimi, Wakabayashi, and Mizukoshi 1992; Yoshimi 1995; Bull 1999; 2000; 2001), I incorporate discussions from a recent development in humanistic geography—“emotional geographies” (Sibley 1995; Anderson and Smith 2001; Sheller 2004). Mimi Sheller (2004) for example, examines “automotive emotions” which is “the embodied dispositions of car-users and the visceral and other feelings associated with car-use” (p.223). She argues that “car consumption is never simply about rational economic choices, but is as much about aesthetic, emotional and sensory response to driving, as well as patterns of kinship, sociability, habitation and work” (p.222). Similarly, cell-phone consumption also involves various emotional geographies from the range of emotions that are prompted in using cell-phones to feelings towards family members, peers, and the object of cell phones themselves.

Such a discussion—which empirical dimensions of technological uses are studied—is linked to a researcher's consideration of suitable research methods to be employed. The research method one chooses primarily depends on what one wants to know or do (Creswell 1998; Smith 2001; Valentine 2001). For example, qualitative inquiry is appropriate to study subjective dimensions concerning meanings, emotions, social interactions, and experiences (Dwyer and Limb 2001, 7; Smith 2001). It is often characterized as "messy" and "unbounded" compared to quantitative methods, which are typically used to measure objective conditions, test pre-existing theories, and to simplify reality in order to understand trends and patterns of social processes (Dwyer and Limb 2001, 7; Smith 2001). Young people's geographies can trace its lineage from humanistic and Marxist / critical geography emerging in the 1970s that materialized "as an explicit critique of the prevailing paradigm of geography as a spatial science associated with the Quantitative" paradigm of the 1950s and 1960s (Dwyer and Limb 2001, 3). Moreover, Dwyer and Limb (2001) state that especially humanistic geography "provided the impetus for the exploration of qualitative methodologies by geographers as a means of understanding people's elusive sense of place" (p.3) and "drew upon two different kinds of qualitative methodologies" (p.3-4). One is

> hermeneutics, focusing in particular on the reading of texts and literature to explore people's associations with and understanding of place. This approach paved the way for the development of a cultural geography concerned with the understanding of cultural landscapes as texts. The other strand of humanistic geography was closely allied to social science and drew upon ethnographic methodologies, which were underlain by a phenomenological perspective. Here emphasis was placed on developing "grounded theories" from careful local studies characterized by a participant observation and an understanding of the lifeworlds of the researched (Dwyer and Limb 2001, 4).

Current writing in young people's geographies is overwhelmingly dominated by research that employs qualitative methods, despite its acceptance of subjective and objective approaches. Moreover, there has been a heavy concentration of scholars in young people's geographies who take a range of ethnographic methodologies—including participant observations and interviews more than textual analyses (e.g., Hart 1979; Katz 1991, 1993; Aitken 2000a, 2000b).

Both hermeneutics and phenomenological methodological strands that are practiced in "new" cultural and young people's geographies are concerned with how different social groups, identities, and knowledges are *situated* and *partial.* This is also one of the important views in post-structural and postmodern geographies which argues that "neither researcher nor researched can fully know the world, or fully be detached from the construction of knowledge" (Haraway 1988; Barnes 2000; Dwyer and Limb 2001, 5; Smith 2001, 25). This view of knowledge is based

upon “a recognition of the social world as something that is not fixed or easily known but that is made up of competing social constructions, representations, and performances” (Dwyer and Limb 2001, 8). Susan Smith states that employing qualitative methods is about “adopting a strategy that aims to place non-dominant, neglected, knowledges” such as those of young people, “at the heart of the research agenda” and this means that one is “redefining relevant, useful,” and “legitimate knowledge” through their research (Smith 2001, 25). Hence, the selection of various methodologies cannot be considered separate from the researchers’ standpoints and alignments vis-à-vis particular ontological and epistemological approaches. In fact, within human geography, a general tension can be felt between studies utilizing qualitative and quantitative methods. Although there has been a heavy emphasis on empirical research, young people’s geographies have heavy tendencies in employing ethnographic methodologies that are tied to humanistic geography and social-constructionist standpoints rather than quantitative methodologies and objectivist views.

Such an association of methodological approaches to certain sub-disciplines and / or ontological and epistemological views is reflected in the debate about qualitative and quantitative methodologies in feminist geography since the mid-1990s. As illustrated in a series of articles that appeared in *Professional Geographer* in 1995, a dialogue was initiated by those who felt marginalized by the fact many feminist geographers explicitly reject quantitative methods. Some geographers felt that because of a strong assumption that links feminist techniques to qualitative methods (Lawson 1995; Mattingly and Falconeralhindi 1995), those studies that utilize quantitative methods were not “feminist.” This debate had two outcomes in the end. First, it enforced the importance of critically examining the strength of different methods used to understand gender relations, spaces, processes, and issues. It also showed that geographers who have a feminist agenda have diverse epistemological and methodological approaches—from realists, structuralist, post-structuralist, to post-modern perspectives (see McDowell and Sharp 1997; Moss 2002). It is important to point out that there is a difference between *empiricism* which is tied to “positivism” (and therefore in disagreement with “postmodernism”) and *empirical inquiry* which is a “substantive study” based on various epistemological approaches to examine observational phenomenon and processes (Gregory 2000, 206). Social-constructionist standpoints, therefore, do not necessarily correspond with qualitative inquiries and objectivist standpoints to quantitative methods nor “split between different philosophical and epistemological underpinnings” and techniques (Dwyer and Limb 2001, 2-5).

It is not uncommon for researchers to mix various quantitative and qualitative methods in order to "triangulate" their observations and data and to strengthen their analyses and build or explore various social theories (Dwyer and Limb 2001, 6; Valentine 2001). *Triangulation* is the "use of multiple or mixed methods, researchers and information sources to confirm or corroborate results" (Hay 2001, 198). This allows a researcher to acquire confidence in one's data or to examine different aspects of a phenomena (Hoggart, Lees, and Davies 2002, 312; Smith 2001, Valentine 2001). Valentine (2001) states that researchers "can use multiple methods," both qualitative and quantitative, "or different sources of information to try and maximize our understanding of a research question" (p.45). The triangulation of methods does not necessarily entail that the researcher will reach a similar conclusion from each method, but rather, "different techniques may throw up apparently very contradictory findings" (p.45). According to Valentine, this inconsistency means that one has been successful in showing "the complexities, contradictions, ambiguities and messiness of human behavior and everyday life" (p. 45).

My intention here is not to undermine the important contributions by humanistic and feminist geographers in advocating and utilizing various qualitative methodologies or to ignore the epistemological implications of using various methodologies. Rather than being caught up in the debate relating to subjective or objective dimensions using qualitative or quantitative methods, I believe that employing multiple methods in studying subjective and objective dimensions of uses of information and communication technologies strengthens the empirical and theoretical facets of my research. In fact, the studies of the social dimensions of technologies range from ethnographical studies (e.g., Rakow 1992a) to historical studies relying on archival and textual analyses (Martin 1991a; 1991b; Fischer 1992; 1997) to those studies mixing survey and interview techniques (e.g., Howard 1998; Sefton-Green 1998; Katz 1999; Katz and Aakhus 2002). All of them contribute to showing the complex processes and various agents involved in social construction of technologies. My study utilizes qualitative methods of interviews grounded in the phenomenological tradition which "describes the meanings of the lived experiences for several individuals about" about a phenomenon (i.e. cell-phone consumption) (Creswell 1998, 51). I complement and contrast findings from the series of interviews with textual analyses that examine various meanings but also quantitative methods based on survey data to explore practices and experiences. Instead of taking strictly a grounded-theory approach—generating theories from data—my empirical analyses also builds on and engages with existing theories on cell-phone uses and socio-spatial processes and experiences. I provide detailed discussion of methods employed in my study in the next chapter (Chapter 4).

Situating and representing young people's voices, identities, and practices

A socio-constructionist approach has interest in how multiple social actors such as producers, marketers, inventors, and political organizations mold characteristics of information and communication technologies. Among the multitude of actors, several studies have focused particularly on how "the final consumers choose, employ, and experience a technology" and how they contribute to molding socio-spatial meanings as well as the re-invention of characteristics of technological devices and their uses (Fischer 1992, 16-17; also see Marvin 1988; Fischer 1997; Bull 2000, 2001; Haddon 2003). Indeed, while some research has examined how cell-phone technology mediates young people's lives, it also illustrates the way that young people play a part in "the distribution and institutionalization of mobile technology" (Green 2003, 201)(Katz and Aakhus 2002; Green 2003, 201). Accordingly, my study examining cell-phone technology from a user-end perspective involves the framework that young people should be viewed as competent social actors (see Chapter 2). This means that my research illuminates the roles of young people, as consumers, in molding meanings and socio-spatial spaces through usages (and non-usages) and in articulating their perceptions and experiences. There are a series of methodological challenges associated with carrying out such a framework. They range from conceptually situating young people's voices, identities, and practices to the ways of doing research—from choosing research methods to how research is presented in the final text.

My dissertation places the identities of young adults who are university students as the primary crux of investigation. Just as feminist scholars point out that there are multiple identities that intersect with being male or female (McDowell and Sharp 1997; McDowell 1999), there are multiple social categories that cross over with identities of being "young" (Green 2003, 201). Holloway and Valentine (2000) state that

> [t]hough children are defined in relation to adults, other differences also fracture (and are fractured by) these adult-child relations. Children's identities are classed, racialised, gendered and so on, just as gender, class and racialised identities are cross-cut by adult-child relations. Moreover, these adult-child relations are constituted in different ways in different times and place (p.6).

One of the tasks of "situating knowledges" (Haraway 1988), is, then, to recognize the fracturing of identities while identifying which identities are relevant in different socio-spatial contexts without excessively fragmentizing or simplifying identities. It is important to note here that individual identities should not be treated as fixed, but rather, need to be acknowledged by the fact that they can be variable, contradictory, and negotiated. Nicola Green (2003) in her study of

young people's uses of cell-phones concludes that "youth 'subcultures' and 'countercultures' can be extremely contradictory" (p.215). Building on Strauss's work (1982; 1984) , she argues that "the social worlds of young people are created through the process of both segmentation and legitimation, which are constantly negotiated, and ensure that communities of young people cohere not only around identity, but also difference and diversity" (Green 2003, 215).

Such considerations of various social identities are also extended to how the researcher's identities are problematized by researchers themselves because of their postmodern perspective that the location or standpoint "of the theorist makes a difference to what is being claimed" (McDowell 1996, 28; also see Duncan and Ley 1993). As discussed earlier, the choice of qualitative methodology is related to the research tactic that recognizes and examines the multiple negotiations and practices that take place in various spaces—including those that are dominant or marginalized. In addition, qualitative methods such as in-depth interviewing are often employed in an effort to take the collaborative and non-exploitive approaches that are considered to be an "empathetic research encounter" (Dwyer and Limb 2001, 4; Smith 2001, 29). At the same time, feminist geographers who advocate qualitative methodologies also point out that "ethnographic research methods cannot be assumed to be empowering and indeed raise many significant issues about the vulnerability of research subjects" (Dwyer and Limb 2001, 4). Dwyer and Limb in describing the utilization of qualitative methodologies state that the

> recognition of knowledge as partial, situated and socially constructed and contested shapes all stages of the research process. In particular, issues are raised for the researcher about how her own subjectivity and positioning within the research process are acknowledged, how the boundaries between "insider" and "outsider" are negotiated and how those with whom the research is undertaken are represented in the written (and other) outcomes of the research (Dwyer and Limb 2001, 8).

As part of handling such issues, *reflexive* research practices are advocated for ethical reasons but also to maintain rigor and credibility in one's research (Baxter and Eyles 1997; Dwyer and Limb 2001, 9). Reflexive procedures include critically self-reflecting about one's research processes, one's role in research, one's positioning in relation to research subjects, as well as ethical implications of one's research. Each of these should be made explicit in the final research product.

These concerns about situating the roles and the positionalities of researchers are also acknowledged by researchers that do not necessarily use ethnographic methodologies in their studies nor who have intimate encounters with participants. In fact, it is almost taken-for-granted to include such self-reflections in the produced texts—from dissertations to published articles—when practicing feminist and social and cultural geographical research. However, several scholars

have also provided cautions about such practices by arguing that "we cannot be fully aware of, or articulate, our own self-positioning" (Dwyer and Limb 2001, 8). Susan Smith claims that such reflexive writing practices have the potential to lead to "textual narcissism in academic writing, where nothing can be said without a string of qualifications, provisos and auto-critique" and "this trend toward over-self-justification can also be a means by which authors claim more not less authority, so inadvertently undermining the credibility of what the non-academics have to say" (Smith 2001, 26-27; see Crang 2005 for a response to such critique). While Smith's cautions must be taken seriously, reflexive research practices cannot be omitted here since I take the viewpoint that research is a "mode of interference" by advancing certain understandings, policies, and meanings of social worlds. For this reason, some researchers have argued that research should be halted when it involves unethical practices or affects the researched in negative manner (see Smith 2001, 27; England 2002). Thus, adopting reflexive practices means that there is a constant tension that a researcher must engage in (Dwyer and Limb 2001, 9) by positioning oneself in relation to participants and by considering ethical issues such as addressing the participants' comfort levels in participation and making sure that informed consent is obtained from the participants (Holloway and Valentine 2000, 9).

Aside from the considerations about how various socio-cultural identities are situated and affect one's research, there are other issues that need to be wrestled with while contextualizing the processes and agents of technological consumption. For example, Valentine and Holloway (2000b) observe that within the sub-discipline of various geographies associated with young people, there exists "an irreconcilable split between research which is global in its focus—for example that which examines the importance of global process in shaping children's position in different societies across the world—and that which has more local concerns—for example studies which show how children are important in creating their own cultures and life-worlds" (p.10).[6] This duality also reflects the two possible ways in which the sub-discipline is called—geographies of young people and young people's geographies. The former implies more emphases on how young people are affected by political, economic, and social processes and examines the processes involved in the social constructions of childhood, young people's human rights, child labor issues, and young people's access to various resources. The latter signifies a collection of studies focused on developing an understanding of the creativity of and multiple articulations made by young people. I have purposely chosen the term *young people's*

[6] One exception to this split is Katz's study (1993) which examined the relationships between the global and local through ethnographic work involving Sudanese girls.

geographies to describe the sub-discipline I situate my work in, since my research heavily emphasizes young people's opinions and agency in the social constructions of information and communication technologies.

There is, however, still a challenge of how to understand and situate young people's agency and voices without compromising the examination of various socio-cultural, economic, political, environmental and material processes and conditions "beyond the control of individual" young people (Holloway and Valentine 2000, 6). In regard to cell-phone consumption, the structural challenges that young people negotiate, and are sometimes limited by, range from the availability of technological infrastructure, cost, legislations that restrict uses, and parental controls that are sometimes imposed (Ling and Yttri 2002; Haddon 2003). Cooper argues that since cell-phone technology "connects the global, in the form of a network of satellites and transmission points, with the most local of social interactions," it raises questions about "the appropriate form and level of analysis" in studying various cell-phone phenomena (Cooper 2002, 29). There are different scales of analyses that are utilized in order to examine the aspects of surveillance associated with cellular technologies—from governmental surveillance over citizens, to corporations monitoring consumer behaviors, to parents contacting their children, to young people keeping in touch with their peer's whereabouts. Likewise, there are multiple geographical scales involved in the degree of extensibility and mobility associated with young people's cell-phone uses. This dissertation particularly contextualizes the "local" socio-spatial implications of young people's cell-phone consumption by discussing the experiential geographies of individuals and how cell-phone consumption is taking place in domestic, educational, and social spaces. At the same time, I identify how local understandings and experiences are part of national and global networks of meanings and geographies.

Related to such analytical trials involving the selection of scales and the evaluation of the structural processes related to individual agencies are the deterministic perspectives taken by scholars in studying technologies (Fischer 1992; Thrift 1996). Fischer identifies two strands of studies that hold deterministic arguments in examining technologies—technological and social determinism. There have been technologically-deterministic studies that examine the *impacts* of technology *on* society and fail to recognize the multiple social forces and actors that may equally contribute to social change as well as technological inventions. The other, deterministic viewpoint, takes a "social symptom approach" arguing that the technologies are reflection of *Geist* –the "spirit" of the times—which tends to assume that "the several effects of any device operate in parallel and are the same for all people" (Fischer 1992, 15). In order to avoid falling into either

deterministic perspective, I take the social-constructivist approach that examines how "struggles and negotiations among interested parties shape" technological history (Fischer 1992, 16) by centering the examination on "the purposeful user employing, rejecting, or modifying technologies to his or her needs, but doing so within circumstances that may in some instances be so constraining as to leave little choice at all" (Fischer 1992, 19).

In his historical examination of the "effects" of electronic technologies on community, Fischer asserts that such effects have been generally modest and are not the only significant reasons for social change. In reaction to technologically-deterministic studies in the past, he argues that researchers should "abandon the word *impact*" because "the metaphor misleads" in terms of understanding the role of various technologies (Fischer 1992, 12) . Moreover, he contends that the "effects" of technology such as telephones and automobiles in relation to nature of social communities "differ from one specific technology to another" and "any one technology can be contradictory" (Fischer 1997, 113). It is important to recognize how cell phones, distinguished from wired telephones, portable stereos, or Internet-connected computers, mediate particular socio-cultural geographies. At the same time cell phones cannot be separated out and isolated from other information and communication technologies in young people's everyday spaces. Rather, they must be studied in relation to, or, conjunction with, other technologies to understand the constructions of technologies, identities and spaces (Licoppe 2004).

Finally, in such examinations, there is also an issue of how to position technological objects themselves in social processes and change. For example, in studying technological aspects, actor-network theorists (e.g., Latour 1993) emphasize how both human and nonhuman elements are associated with and act upon one another to form multiple dynamic systems which are the source of "agency in the world" (Bingham 1996; Murdoch 1997; Thrift 2000). Such perspectives complement the social-constructivist point of view that tends to emphasize subjective dimensions and human actions by highlighting the importance of the materiality of technology. My study recognizes the "networks of associations" driving technological innovations, consumption and experiences in unpredictable ways (Rimmer and Morris-Suzuki 1999, 1191). But I choose to take a phenomenological approach instead of employing the actor-network theory by centering my analysis on young people's agency and meanings associated with how young people relate to technological objects—from the way they use cell phones, their understandings of the cell-phone technology, various emotional feelings attached to cell phones to the multiple ways in which they experience cell-phone consumption.

Summary

The three main methodological aspects to my study—social constructivism, choice of methods, and reflexive research practices—are informed by the combination of phenomenological, postmodern, and feminist approaches that put a premium on multiple views, experiences, meanings, practices, and social relations associated with technological uses. My study, primarily informed by frameworks and agendas of young people's geographies, also tackles the wider geographical debates such as the selection of methods and analytical scales; weighing the significances of structural processes and an individual's agency; and identifying and dealing with fractured identities—issues that are also imperative in other sub-disciplines such as political, feminist, and critical geography (e.g., Cloke, Philo, and Sadler 1991; Adams 1996; Agnew 1997; McDowell and Sharp 1997; Taylor 1999). As I focus on young people's identities, voices, experiences, and understandings associated with cell-phone consumption, phrases such as "negotiating," "contextualizing," "situating," and "reflexivity" are key concepts and practices that I engage in throughout my dissertation research including in my writings. The next chapter (Chapter 4) undertakes the reflexive research practices by discussing aspects of research design, data collection, and methods employed.

Chapter 4—Data Collection and methods: questionnaires, personal interviews, and textual analysis

Chapter overview

I devote this chapter to providing a critical discussion on my research processes. I provide a detailed description of methods, data collection and analysis by elaborating on my research design and data collection processes as utilized to investigate the meanings, experiences, and practices associated with American university students' uses of cell phones from a collective to a personal scale. While discussing several possible data-collection techniques, I focus on my selection of a combination of personal interviews, questionnaires, and textual analysis of media representations as the primary means by which this research is conducted. Moreover, I describe the selected study sites, the subject recruitment process, questionnaire and interview administration, and qualitative and quantitative analysis techniques utilized to assess the interviews, questionnaires, and textual media. Concomitantly, I attempt to problematize my role as a researcher and my interactions with the university students and to make my ethical considerations and practical issues during the data collection processes clear in order to engage in both *reflexive* and *critical* research practices as put forward by feminist and social and cultural geographers discussed in the previous chapter.

Consideration of methods

As discussed in Chapter 2, the research methods utilized in my study are based on the nature of the research questions and my epistemological position. My research agenda has three primary components. First, I intend to conduct a critical study that will contribute empirically to the pool of work on cell phones and other information and communication technologies (ICTs), and at the same time, build on socio-spatial theories based on social constructivist and humanistic traditions. Second, I proposed to examine how university students negotiate different spaces and identities and engage in claim-making activities surrounding uses of ICTs. Finally, one of the important aspects of my research is to represent young people's lives and voices and to gather first hand accounts of cell-phone uses. Therefore, I wanted to have interactions with and involvement of current university students in my research as much as possible. Such research goals require primarily qualitative methods that gather and deal with "the feelings,

understandings and knowledges of others" in order to explore "some of the complexities of everyday life in order to gain a deeper insight into the processes shaping our social worlds" (Dwyer and Limb 2001, 1). In my dissertation, however, I decided to combine both qualitative and quantitative methods to examine different aspects of everyday practices, social issues, spatial processes, and place experiences in order to strengthen and broaden the empirical foundations of my dissertation.

The methods initially considered in order to achieve my research goals were: 1) personal interviews, 2) questionnaires, 3) textual analysis of media representations, 4) focus groups, 5) personal diaries of cell phone uses, and 6) ethnographic fieldwork involving participant observation. Each method has its strengths and weakness in terms of what it can "do" while also exhibiting financial and time limitations that must be weighed. In addition, various ethical aspects and my research contributions to the pool of work on geographies of young people and information communication technology were the factors considered in choosing appropriate and practical methods for my research. Below I discuss the three methods that I have selected for my study—personal interviews, questionnaires, and textual analysis of the media coverage and representations—and the rationale for choosing them. Then, I suggest the other three methods that can be utilized to investigate young people's geographies and sociological studies of ICTs in future work—namely focus groups, personal diaries, and ethnographic-participant observation.

Methods employed

Personal interview

The personal interview is one of the most common methods geographers use to gain "access to information about events, opinions and experiences" and to "investigate *complex behaviors and motivations*" (emphasis in original) (Dunn 2000, 52). It has become common place in socio-cultural studies of information communication technologies including women, young people and others (Rakow 1992a, 1997; Rakow and Navarro 1993; Bull 1999, 2000, 2001; Lohan 2001; Valentine and Holloway 2001a, 2001b, 2002; Green 2002, 2003; Ling and Yttri 2002; Skog 2002). The selection of interview methods are intended to collect "a *diversity of opinion and experiences*" but "also reveal consensus on the same issues" (emphasis in original) (Dunn 2000, 52) but not necessarily used to make generalizations based on randomly selected interviewees. Rather, they are used to highlight certain qualities of phenomenon or practices. Moreover, Smith states that

> the qualitative interview transcript is probably the single largest source of qualitative data currently held by geographers. Qualitative interviews are methodologically appealing because they allow a wide range of experiences to be documented, voices to be heard, representations to be made and interpretations to be extracted. Open-ended, qualitative interviews are, after all, *the obvious way of allowing people to speak for themselves* about their own views and experiences of the world. Such interviews, whether conducted with groups or with individuals, are moreover widely regarded as a way of accessing those knowledges neglected in an earlier period of more "authoritative" social research (*emphasis added*) (Smith 2001, 28-29).

Her description reflects the spirit of new cultural geography that problematizes the power relationships between the researcher and researched and the need to pay attention to who is speaking from which context. In other words, according to this view, one takes the idea of "situated knowledges" seriously and critically examines whose voices are silenced or mis-represented and which claims are seen as valid "truths" and legitimate along with alternate views that may be labeled as "minority" and "deviant." Interviews, along with other qualitative methods such as participant observation, are one of the most common methods used to bring young people's voices to the forefront. Moreover, geographers embracing a social constructivist's epistemology take the premise that the childhood and other social categories are not universal but fluid, contested, and spatially expressed and experienced. In order to explore young adults' cell-phone usage from socio-cultural geographical perspective, it was important that I talked to young adults themselves.

Furthermore, as Smith's statement that "allowing people to speak for themselves" suggests, employing interview methods can also be seen as a politically motivated act (Dunn 2001, 52). It reflects a researcher's stance that shows "respect for and empowers those people who provide the data". I have chosen interview as one method of data collection since it can "give the informant cause to reflect on their experiences and the opportunity to find out more about the research project than if they were simply being observed or if they were completing a questionnaire" (Dunn 2001, 52). It is increasingly seen as a standard procedure among researchers studying young people's geographies that the young people themselves be actively involved in their research since it brings the interactions between the researcher and young people to the center of the research as much as what "they" voice out in the research process. Yet, in trying to achieve this, sometimes there are particular issues associated with interviewing young people—particularly young children (Valentine, Butler, and Skelton 2001, also see collection of articles in *Ethics, Place and Environment* v.4 (2) on researching young people's lives). Cautious practices are essential in order to ensure the "empowerment" of young people and avoid mis-

representation or otherwise harming the participants in some way (e.g. emotionally) (Robson 2001). Some interviews are conducted with parents (usually in cases of minors) or in groups to create an appropriate and comfortable atmosphere for interviewing. In a similar spirit, there are other creative ways utilized by geographers and others to collect "voices" and to understand young people's geographical knowledge as in the case of collecting and studying visual images produced by children through self-directed photography and drawings of mental maps (Lynch 1960; Aitken and Wingate 1993; Valentine 2001). I see the interview process—conversing and listening to what participants say about cell-phone uses—as one of the more direct and effective methods to examine young adults' opinions and practices.

Questionnaires

A method that is frequently used in collecting data on uses of information and communication technologies is the questionnaire survey, whether conducted in-person, conducted over the phone or on-line, or collected through the mail (e.g., Yoshimi, Wakabayashi, and Mizukoshi 1992; Mason 1994; Casas 2001; Fortunati 2002; Kim 2002). Questionnaires can be analyzed using both qualitative and quantitative methods depending on the types and format of questions asked. In the case of my research, multiple choice and "fill in a blank" questions allow me to explore prevalent views and usages associated with cell phones. Analysis of categorized and quantified data allows the exploration of some of the overall practices and perceptions held by a sample group and the examination of relevancy and relationships between variables such as age groups, gender, race or residency, and the meanings and practices of certain cell phone uses. Surveys can also include open-ended questions where respondents freely write their answers down and are not restricted to choosing from provided possible responses. In such cases, the generated responses require qualitative analyses. It can become much more difficult, however, to deal with open-ended statements than the multiple choice responses because it may become challenging to "code" and analyze the responses, especially when there are large numbers of comments collected. The limitation of survey data is that it does not, alone, adequately explore the meanings and perceptions associated with cell-phone use. However, they can assist in developing fuller or alternate understandings of information acquired using other types of methods such as interviews (Valentine 2001).

Questionnaires may seem less ethically problematic than other methods such as interviews because there is less face-to-face direct contact with the participants, and they are often anonymous in nature and requires less time commitment. This may allow participants to

more freely participate and express their views (Hoggart, Lees, and Davies 2002, 188). But a researcher must also consider what sorts of consequences responding to questionnaires may have for the participants. For example, Parfitt (1997) and Hoggart, Lees, and Davies (2002) argue that questionnaire should be conducted only when there is no data available to the researcher on the topic. This is because questionnaires involve respondents donating their time and there are numerous occasions when people are asked to take part in surveys, questionnaires, and opinion polls. Accordingly, one must recognize the "weighty responsibility" associated with conducting a survey or "otherwise the respondent's time (usually given free of charge) will have been wasted and public tolerance of surveys will have been further eroded" (Parfitt 1997, 76). In fact, Hoggard, Lees and Davies (2002) claims that "it is a reality of social surveys that people have become less willing to complete questionnaires" (p.187). Recognizing such responsibilities, I have decided to conduct surveys to examine university students' cell-phone use. One of the biggest reasons for this is that there are very limited surveys conducted in sociological studies of cell phones set in an American context. This fact has prompted me to conduct "empirically" based research in the first place. There may be significant survey data that may be collected for commercial purposes (which is frequently mentioned in newspaper articles) but such data are not readily and freely available to a graduate student. Additionally, the fact that survey data is generated from university campus contexts where my interviewees are also drawn from, allows me to have more confidence and validity in building conclusions using data gathered.

There were surveys conducted by others that I encountered during my research process that also explored students' uses of information and communication technology for one of my study sites (Pennsylvania State University, University Park Campus). FACAC Student surveys were administered by The Faculty Advisory Committee on Academic Computing (FACAC) and Information Technology Service at Penn State University in 2001, 2002, 2003 and 2005 involving full and part-time undergraduate students (FACAC websites 2001, 2002, 2003 and 2005). This on-line survey was administered in order to "understand more about students' usage of technology, their experience with technology, and their attitudes and expectations about technology resources" (FACAC 2003 website). I was only aware of the 2001 student survey when I designed my study. In contrast to the 2001 survey that focused more on computer and information system and only mentions cell-phone ownership, the 2003 survey provides information on cell-phone usage in terms of primary reason of use, the cell-phone providers, and length of cell-phone usages. I ask some similar questions in my questionnaire but my survey was designed to ask more detailed questions about perceptions, place of use and about cell phone-uses

and ownership relating to their family members. Another difference between my survey and FACAC surveys is that the latter primarily targeted undergraduate students and categorized participants according to semester standing in contrast to my questionnaire which focused on actual age and included both undergraduate and graduate students. I also included categories of race / ethnicity and distributed my questionnaires at two study sites (Penn State—University Park campus—and Shippensburg). Additionally, my survey also included open-ended questions. The fact that FACAC surveys addressed some aspects of cell-phone usage provided me an opportunity to compare my findings to another survey that was taken at the same campus. There has been no study done, that I am aware of, at Shippensburg involving usage by Shippensburg University students.

Text analysis of media representations

In addition to the above methods that involve interactions with research participants, the third method that I have employed is the analysis of various forms of "texts" since I am mostly concerned with the meanings, perceptions, and "claim-making activities" surrounding cell-phone uses. New cultural and humanistic geographers have a well-established tradition of examining written texts, visual images and landscapes using qualitative and interpretative techniques to offer various "readings," and to build socio-spatial arguments and theories (Meinig 1979; Sorkin 1992; Duncan and Ley 1993; Rose 1993; Mitchell 2000). For example, especially those who practice post-structural analysis and hermeneutics have examined both historical and contemporary "texts" in the form of written materials, landscapes, maps, paintings, films, and institutions as "representation" of our world (Duncan 2000; Hoggart, Lees, and Davies 2002, 311-312). How the cell-phone uses are talked about, shown, portrayed in cell-phone advertisements, films, and newspaper articles can be utilized to understand the issues and perceptions associated with the technological device. They can also be "read" to show how the issues of cell phones are associated with the institutions such as "family" and "university" and are related to different identities of age, gender, class, race and ethnicity. As "new" cultural geographers have shown in their work since the late 1980s, there are always multiple readings on representations and landscapes. In other words, there is a "hierarchy of readings, with favored, normal, accepted readings and discouraged, heretical, abnormal readings—dominant readings and subordinate readings" (Cresswell 1996, 13). I am choosing textual analysis of representations, especially those found in the media, in order to identify the key issues discussed in social arenas but also to

explore and reaffirm the multiplicity of views and experiences associated with the cell phone practices. This entails me to explore the similarity and discrepancy between multiple "texts"—media representations involving published texts and visual images on one hand, and the "texts" I have collected first-hand through the personal interviews and the questionnaire surveys (i.e. interview transcription and written-questionnaire responses) on the other. In order to put university students' "voices" and responses into social context, it is necessary to take a social-constructionist approach involving examinations of how cell phones are talked about and perceived in multiple social arenas.

Other methods considered

Focus groups

A focus group is an effective way to explore people's perceptions about certain social event or phenomena. It has been used for example in the studies examining geographies of consumption (e.g., Holbrook and Jackson 1996; Jackson 2001). It is a qualitative method that aims to involve people into one's research, to understand people's perceptions and views on a social topic, and to make out meanings through interactions among researcher and participants. One of the crucial aspects in conducting and analyzing transcripts derived from focus groups is to pay attention to the group composition and dynamics (Hoggart, Lees, and Davies 2002, 213-219). The selection of participants in a focus group session is "controlled," or, participants are chosen deliberately in terms of their identities such as gender, race, age or other social characteristics (Bedford and Burgess 2001; Cameron 2001). A focus group discussion can reveal how different people view certain social issues such as cell-phone etiquette or reactions towards particular media representations such as advertisements and films. In my study, there may be different meanings that are emphasized or voiced out about cell-phone uses depending on the gender and age group of the participants. Since my research is more exploratory in nature than examining particular theories or hypotheses, it was not a suitable method of investigation for my particular research aim. I have intentionally set my research aims rather broadly in order to first explore what sort of identities within young adults are relevant and negotiated in cell-phone consumption in the United States. Additionally, I anticipated and wanted to explore multiple experiences associated with cell-phone consumption first before narrowing down the scope of my investigation. Focus groups will be potentially useful in the follow-up studies that will entail

more specific investigation about certain cell-phone uses, social problems, and after choosing specified participants to be part of the discussions.

Personal diaries

Another method that can be possibly used to explore the practices of cell-phone users is to ask participants to take a log or to write a diary of their cell-phone use activities. Patiricia Gillard, Karen Wale and Amanda Bow's study involving Australian teenagers asked their interviewees to keep a diary of wired telephone calls over a week (Gillard, Wale, and Bow 1998, 138). In addition, geographical studies by Paul Adams (1999)used an example of an individual home-worker's daily routine to map out the spatialities with tele-working activities. Such case studies can reveal the time geographies (Pred 1984; Adams 1995) involving personal communications and practices of everyday life. The uses of personal diaries can potentially provide information on actual cell-phone consumption practices. Moreover, cell-phone bills often include detailed logs of owners' uses—whom one called at what time and for how long. Such information can be compared to what people say they do and also to how certain ideas about cell-phone technology are talked about in the public arena. Yet, this method entails asking participants to devote significant time to keeping a detailed log and asks participants to reveal personal aspects of their lives for research purposes. In addition, studying people's "exact" behavior raises some ethically problematic aspects of social research. Many people in United States feel uncomfortable that they are under "surveillance" and / or revealing their personal aspects of their lives as reflected in social debates surrounding the use of surveillance camera and implementation of the Patriot Act (e.g., Janik 2001; Staff-Editorial-Daily-Collegian 2001; Walbert and Dobo 2002; Farber 2003; Wernecke 2003).

As a social-cultural geographer, I am not aiming to examine the "exact" practices, but rather, I am more interested in how students perceive and talk about cell-phone uses in different places—the meanings and experiences associated with cell- phone uses—since the narratives are also important part of construction of social reality. After carefully considering and dealing with the ethical implications of this method, personal diaries can also be useful for a researcher in possible follow up studies to look at a particular practice of cell phones in relation to what they "claim." In such instances, however, I argue that participants must have developed a trusted relationship with the researcher, understand the implications of the study, and should be provided with some sort of compensation for giving up their time, personal information, and for their effort.

Ethnographic-participant observation

Ethnographic-participant observation is a method often employed by geographers who study young people's geographies, usually in addition to interviews. For example, geographers and researchers studying young people's uses of technologies will observe and interact with young people in certain places such as classrooms and domestic settings in order to get a grasp of the context and become familiar with the institutional practices (e.g.,Lealand 1998; Holloway, Valentine, and Bingham 2000; Valentine and Holloway 2001b). This method requires a researcher to take detailed notes while living, working, and immersing themselves into "communities" and / or "field" in order to provide rich description of events, and activities (Valentine 2001, 44). The biggest drawback of participation observation pointed out by Valentine is that sometimes this technique hinders in "defining the boundaries of a study and its focus" (Valentine 2001, 44). This is because often researchers "have much less control over what information we collect than in an interview situation and may feel swamped by all the different themes and perspectives that might emerge" (Valentine 2001, 44). Another aspect to this is the degree to which the researcher identifies with the study participants which may blur the boundaries between the researcher and the researched. For example, a researcher may choose to be primarily an "observer" that would not participate in any community activities. At the other end of the spectrum is when a researcher becomes part of the community by fully participating in events and daily activities.

In daily context, I observe young people and others using cell phones in different places, converse with people about particular cell-phone uses, and read and hear about various cell-phone issues. Cell phones are not used exclusively by a single certain group of people in the United States but are seen as an "ubiquitous" technology. And obviously, university students are not the only cell-phone users. In my research, there is no clear "insider" and "outsider" to the phenomena of cell-phone consumption but rather "users" and "non-users" of cell phones that may have different experiences and perceptions. Yet, because of omnipresence of cell-phone uses, both "users" and "non-users" cannot escape from being affected by how cell phones are used or not used by different people in various places. With these conditions in mind, ethnographic participant observation has not been considered to be one of my primary methods of investigation. I am not encountering a new social-cultural context with which that I am not familiar and within which I must immerse myself. Similarly, I am not examining a "foreign culture" or examining a particular phenomena *exclusive* to certain places (e.g. Dowler 2001; Skelton 2001). I have set the

focus of my dissertation on how cell-phone uses are perceived and talked about, including students' observation about cell-phones uses—more than mapping out cell-phone uses according to my observation.

But in reality, my research included a less rigorous form of participant observation in addition to the interviews and surveys I utilized. In a way, I could argue that I was frequently engaging in participant observation in my research since cell-phone consumption permeates different social segments and institutions in the United States. This was because I spent time on university campuses, observed daily cell phone uses by students, and also became a consumer of a cell-phone product during my research process. My daily observation and experiences did affect my research processes one way or another. Even though I wanted to start off my research agenda "broadly" in order to collect various and multiple "voices" and experiences, I did have a general sense of what sorts of issues may relevant as well as theories and findings of cell-phone research in other social contexts. Recently, geographers and others have demonstrated that ethnographic techniques can also be applied to "non-exotic" societies, problematizing the mundane and everyday aspects of life familiar to a researcher (Jackson 2000a). In similar manner, even though I did not choose participant observation as my method, I made special notes when I observed uses of cell phones and when I encountered occasions where cell-phones uses are talked about in various social contexts. At the same time, I was keenly aware that I could not assume that I was a total "insider" of a place and what I experienced and perceived applied to all university students. University students who were young adults had particular circumstances and issues that I, as an older international graduate student, did not identify with or was familiar with. One example that I encountered during the course of my data collection was how communication using Instant Messenger (IM) program on the Internet-connected computer was as prevalent as cell-phone communication among the students. I was not aware of such program or never used it prior to talking to my interviewees. I discuss my "situatedness" as a researcher in my research in relation to the participants in detail in a later section of this chapter.

Questionnaires and personal interviews

Study sites and participant profiles

One of the main goals of this research is to gather the experiences, opinions, and information on practices of cell-phone uses directly from young adults themselves and to examine how they articulate the meaning of cell-phone consumption patterns. Two primary components of data collection that I have chosen in order to facilitate these goals are the collection of

questionnaires and personal semi-structured interviews during the period of January 2003 to December 2003 at two university campuses. The questionnaires were designed to gather general information about a diverse group of university students in the age group of 18-25 and allowed me to collect experiences, opinions, and user patterns from a large number—775—of students (Table 4.1). On the other hand, personal interviews with university students allowed me to explore students' experiences, opinions, and observations of cell-phone uses in a more in-depth and open-ended manner. I interviewed 69 students from various social backgrounds in terms of gender, ethnicity / race, citizenship, age, and residency (on / off campus) (Table 4.2).

Table 4.1: Questionnaire participant profiles

Source: based on questionnaire data

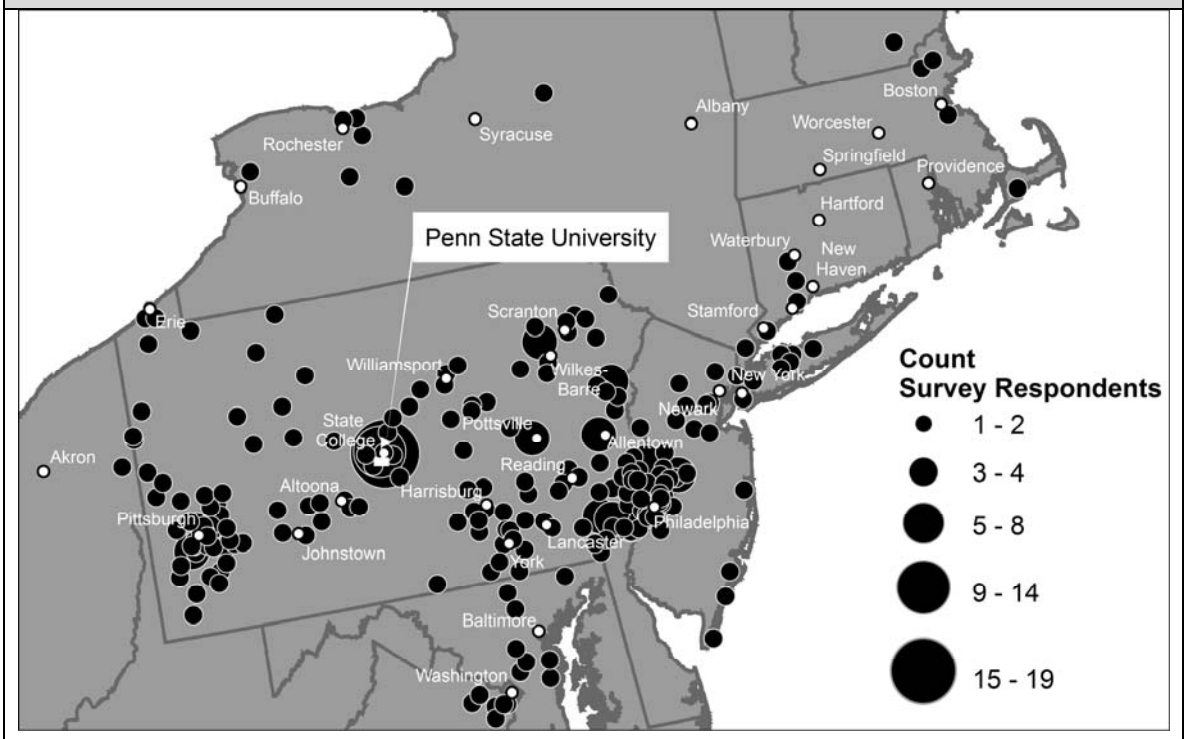
Questionnaire Participants *note: A dew respondents did not indicate their identity in some categories, therefore the total number for categories of ethnicity /race, citizenship, and residency do not add up to 775 students.	**Penn State** 362 students	**Shippensburg** 413 students	**Total** 775 students
Cell phone owner	297	331	628
Cell phone non-owner	65	82	147
Female	176	225	401
Male	186	188	374
White	302	368	670
Non-white	59	45	104
U.S. citizen	347	403	750
International	14	8	22
18-19 yr olds	92	148	240
20-21 yr olds	179	202	381
22-25 yr olds	91	63	154
On campus residents	136	200	336
Off campus residents (includes out-of-town)	226	212	438

Table 4.2: Interview participants profile Source: based on questionnaire data	
Interview participants ***(Total 67 students)***	
Penn State	37
Shippensburg	30
Cell phone owner	53
Cell phone non-owner	14
Female	49
Male	18
Non-white (known minority)	15
International	14
18-19 yrs old	18
20-21 yrs. old	25
22 yrs and older	22
Exact age unknown	2

My study sites were two university campuses located in two Pennsylvanian college towns—State College and Shippensburg. Both the Penn State main campus at University Park and the Shippensburg University campus are situated in the ridge-valley region and are surrounded by rural to semi-rural settings. University Park, the main campus of Penn State University, is a large research institution with various graduate programs. The campus had an enrollment of 41,795 students (35,002 undergraduate and 6,793 graduate students) in the fall 2003 semester. Of the students, 74.9% of undergraduate students and 35.3% of graduate students were Pennsylvania residents (Penn State University website 2001-2006). Figure 4.1 maps the distribution of Penn State students' hometown or main residency in Mid-Atlantic region according to the zip code respondents indicated in the questionnaire. Most questionnaire respondents came from within Pennsylvania. There was a high number of students who came from Philadelphia and Pittsburgh Metropolitan regions, Scranton and Wilkes-Barre as well as towns close to State College. State College is located in central Pennsylvania which has been experiencing urban growth in recent years. The student residences spill over outside of campus boundaries, as there are also commuting students from surrounding regions.

Figure 4.1: Penn State student survey respondents by home zip code

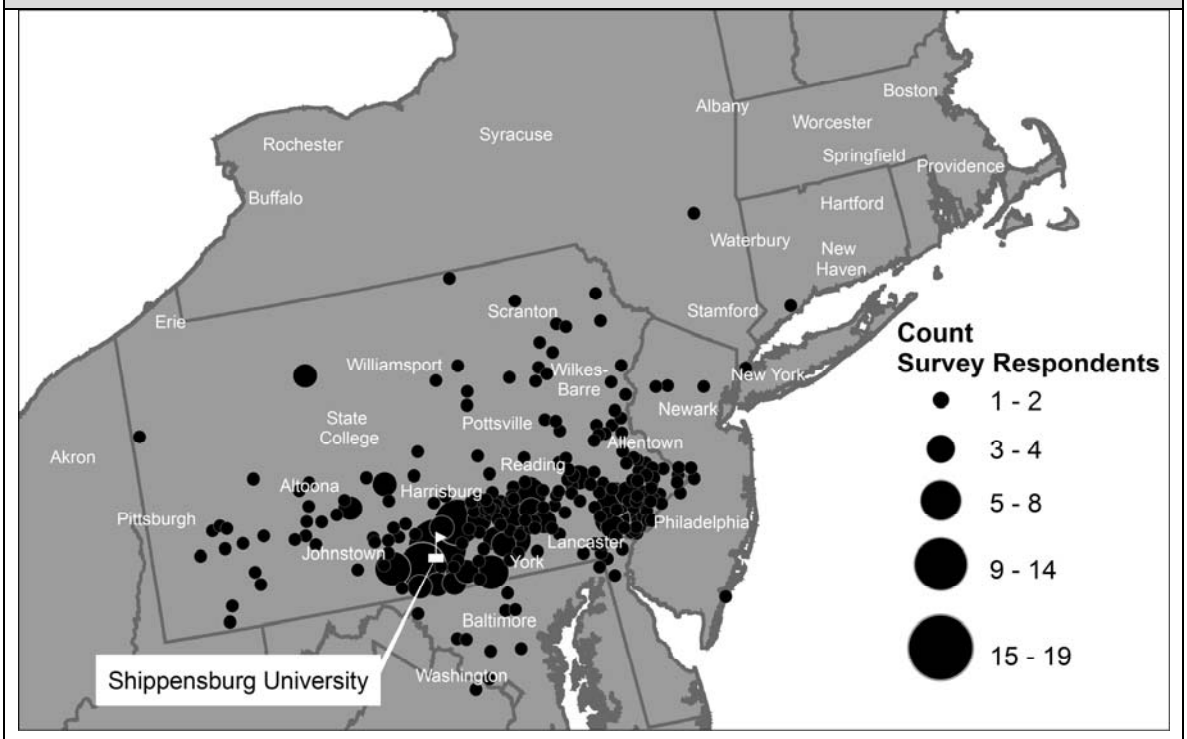
Source: based on questionnaire data



Shippensburg University is part of the Pennsylvania State System of Higher Education. It is located in the small-town setting of Shippensburg, PA, parts of which are in Cumberland County and Franklin County. Located approximately 100 miles south of State College, this region is also experiencing population growth as a bedroom region of Harrisburg, PA and of Hagerstown and Fredrick, MD. Approximately 6500 undergraduates and 1000 graduate students are enrolled in Shippensburg and most students are from Pennsylvania (Shippensburg University website 2001-2006). “Over 2500 undergraduate live on campus in 9 residence halls” but many are commuting and off-campus students (Shippensburg University website 2001-2006). Even though there were about the same number of students who were on-campus (200) and off-campus (212), many of the on-campus students left for home during the weekends. As in the case for Penn State, most questionnaire respondents came from within Pennsylvania. However, there was a higher concentration of Shippensburg students than Penn State students that had their homes located in South-central PA—along Interstate 81and the Pennsylvania Turnpike that wind through Philadelphia, Reading, Lancaster, Harrisburg, Shippensburg, and Chambersburg (Figure 4.2).

Figure 4.2: Shippensburg student survey respondents by home zip code

Source: based on questionnaire data



Initially, I hypothesized that the two study sites would give slightly different place settings for me to compare and contrast. In the end, I believe that the two study sites (rather than one) gave me a way to explore commonalities and differences associated with certain places as well as to explore other "variables" such as gender, age group, residency, ethnicity / race, and nationality. The two study sites differ in terms of the size of the campuses, degree to which they are "urban" settings, students' general commuting patterns, and the diversity composition of the school population. State College is a larger urban context than Shippensburg. In terms of sheer numbers, there are more international and minority students enrolled at Penn State than at Shippensburg. Yet, there are also demographic similarities between the two study sites. The majority of the students at both campuses are "white" Pennsylvanian students and the composition of the two college towns is also very "white." This was reflected in my participant profile; the majority of my participants were "white" and also students with American nationality (Table 4.1).

Recruitment of participants

The recruitment of participants for both the questionnaires and interviews were organized with the assistance from multiple instructors, student organizations, individual students, and university staff. With the help of the instructors of classes, the questionnaires were mainly distributed during the beginning of class periods while the instructors and I were both present. I targeted the distribution of my questionnaires to "general requirement" Geography courses where mostly undergraduate students with diverse majors and class standings are enrolled. The aim was to get a sample that reflects the "diversity" composition of the campuses—in terms of majors, age groups, and gender. The upper-level Geography classes often consist of mostly Geography majors who are juniors and seniors and generally tend to be dominated by male students on both campuses. At Penn State, some of these geography classes were relatively small (under 40) while others were larger classes with over 100 students enrolled. At Shippensburg, most general requirement classes in Geography are designed with no more than 40 students. Students enrolled in "general requirement" Geography classes had an idea about what "Geography" was about and they seemed to be willing to participate in geographical research administrated by a graduate student. Additionally, I also asked undergraduate Geography student club and honor students at both campuses for their participation. I also distributed questionnaires in a few of the upper-class Geography classes and one introductory level English class in hopes of reaching "diversity." In the end, I had slightly more female participants (51.7%) but overall achieved a balanced number of male and female participants. There were more students who are in the age group under 20 than over 21 years old in my questionnaire sample group, and this may reflect the composition of the introductory undergraduate classes (Table 4.1).

The Office for Research Protection at Penn State mandates that participants that are under the age of 18 need parental consent to participate in a social science research because they are legally categorized as minors (Penn State University Office for Research Protection website 2001-2006). There were a few university students who were under 18, and I asked them not to participate in questionnaires and interviews because of practical reasons. Most of these students who are attending a university, would be living in dorms or away from their family members. It would be time consuming and impractical for them to collect their guardians' consents. There were also several students who were very interested in my study and wanted to participate but they were over 25 years old. In such instances, I explained my research aim and the significance of participants being "young adults." Recognizing that university students do not always consist

of those who are in the age group of 18-25, I am still examining this age group of young adults and regarding them as those who are the majority of people enrolled in universities in the United States.

The two methods of questionnaires and interviews were used to gather different types of data, yet the two ways of data collection were interlinked since questionnaires served as one of the ways to recruit interviewees. When passing out the questionnaires, I included separate sign-up sheet for those students who are interested in participating in the interview sessions to write down an E-mail address or a phone number for me to contact them in order to set up the meeting later. There were about one to ten completed sheets that I was able to obtain from each class. I continued to distribute the questionnaires even after surpassing the sample I initially anticipated to collect (460 students) because of the desire to get more minority students as participants, but also because it was the most effective means used to recruit students for interviews. I think this is because students who took the questionnaires learnt about my study, saw who I am, and became interested in being interviewed. In contrast, very few students for the interview were recruited when questionnaires were distributed through a third party (e.g., representatives of student or campus organization). I contacted the students who provided me E-mail addresses on the sign-up sheet within a day and asked them whether they could respond to set up a time and place. A number of students who initially provided the E-mail addresses responded and set up interview sessions. There were also some that notified me that they did not want to participate. For the remaining number of students, I was not able to get a reply or I was not able to successfully contact them via E-mail (i.e. E-mail message "bounced" back). I sent a second round of E-mails few weeks or so later to those who did not respond initially, so they might reconsider participating in the research. This led to additional students who replied and showed interest to participate.

There were very few people who provided me with a phone number because I asked them for either an E-mail address or a phone number in my sign-up sheet. I ended up not calling them since they did not include their names and also I felt uncomfortable calling them up for recruitment purposes. Since I did not know them personally, I thought telephone contact was much more direct and intrusive to student's personal space than E-mail correspondence. This is my personal bias; aside from my family and very close friends, I hardly talk to anyone on the phone on a daily basis and I use E-mail as my primary method of communication in school settings. I am more at ease corresponding using E-mail since I feel there is a comfortable "distance" for me and others to interact. I was particularly conscious about intruding on people's

private space because of recent incidents in which telephone calls to residences for telemarketing purposes have become both a national and state level issue. Pennsylvania, for example, passed a law banning telemarketers from calling those individuals and households that sign up to a "do not call list" (Do not call list website, 2004-2006).

It could be argued that I lost additional opportunities to recruit more interviewees because of neglecting to utilize telephones and cell-phone communications in my recruiting process. Some interviewees, for example, mentioned that some of their friends do not check E-mails frequently as they do and E-mail communication is not the best way for them to contact those friends. On the other hand, many students commented how E-mail let them "screen" and manage unwanted communication and the fact that E-mail is an effective communication tool especially in dealing with school-related matters such as contacting instructors. I felt that it was important to maintain a "comfort" distance in order for the students to not feel coerced or obligated to participate. I also took extra caution not to bombard and continuously nag students by sending E-mails about my research since "junk" or "spam" mails are increasingly perceived to be nuisances that fill up E-mail account spaces. I tried to make the content of the E-mail as concise as possible including statements regarding my research purpose, possible times and places for the meetings, information on protection of anonymity, and a participant's rights to withdrawal (see Appendix A for example of an E-mail). E-mail correspondences allowed me to make sure the participants had a chance to reflect on their participation and to be sure that they wanted to participate in an interview. This allowed the participants, except for few exceptions, to know ahead of time what the interview was about. Most were, therefore, ready and willing to talk about their perceptions and experiences of cell phones once we started the interview.

Generally, I was able to get students who were interested in my research and were enthusiastic about participating in my interviews. They were interested in sharing their opinions and there were also participants who thought themselves as good examples of heavy cell-phone users or non-users. Some students who participated were sympathetic about the fact that often researchers encounter "tough" circumstances in finding participants. Many of those who showed a compassionate attitude were graduate students who are aware of the aspects of the research recruitment processes or were carrying out their graduate research themselves. There were also undergraduate students who made remarks such as "I probably will be in the same boat as you," when they will do research in the future. I also would think that in many instances, students became interested because instructors encouraged students to participate. For example, I was aware that the instructors stated in the classroom setting, how participating in an interview could

be a possible learning experience in multiple ways, and / or mentioned that sometimes researchers have a hard time recruiting students so their participation would help me greatly. I am certain that such comments encouraged students to participate in my research.

In addition to the recruitment method described above, I also made multiple efforts to achieve a diverse student-group sample in terms of students' ethnic, racial, and national backgrounds at both campuses. The aim was not necessarily only for trying to achieve a statistically ideal student sample for my research purposes. Since both universities are predominantly "white" institutions, I believed that I must make sure that I did my best to include minority (including International) students. At Penn State University, I contacted various student organizations that are centered on racial, ethnic groups and international students initially through E-mail correspondence. This method was not as successful as I hoped in either distributing questionnaires or recruiting participants for the interviews. There were, however, several individual students who acted as contact people to find participants. For example, international-graduate students were recruited through recommendations from graduate students within the Geography department by asking around if they could recommend any potential participants. These students asked their friends and acquaintances or sent E-mail messages to mailing lists they subscribed to. There were also a few undergraduate international and minority students who helped me in obtaining additional questionnaires responses and in getting names for potential interviewees. Some participants replied to my recruiting E-mail that was sent through list-serves forwarded by the staff of student organizations and departments. At Shippensburg, which has a relatively small number of minority and international students, it was more challenging to reach out to the minority students. I contacted both the International Student Association and The Office of Multicultural Student Affairs for assistance. With the help of the students and staff from these organizations, they arranged to distribute my questionnaires. Many of theses questionnaires were not collected by me and I was not present when students were filling them in but I concluded that this was the best way to get in touch with the minority population of the university.

Preferably it would also be nice to have a large number of participants in each of the different racial/ethnic categories in order to increase statistical power. Yet, because both campuses were predominantly "white" institutions in student composition, it was extremely difficult to achieve large number of students for each racial / ethnic category unless the main goal from the outset to recruit exclusively minority students. As I have discussed before, I wanted to have diverse sample-group composition, not just in terms of racial / ethnic categories, but also in terms of gender, age, residency, and ownership of cell phones. Because I was only able to obtain

a large number of respondents for each “non-white” category, for the purposes of survey analyses using quantitative methods, I have combined all the students who indicated “non-white” categories and analyzed this as minority students in comparison to “white” students. Race / ethnic categories are often problematic and ambiguous categories and cannot easily translate from one social context to another. In my questionnaire, I have used five racial / ethnic categories used in the U.S. Census. Of those that answered the question, 670 students (86.5%) indicated themselves as “white” (Table 4.1). Among the 104 minority students, 42 (5.4%) indicated as “African-American,” 34 (4.4%) as “Asian,” 7 (0.9%) as “Hispanic,” 2 (0.3%) as “Native American,” 19 (2.5%) as “Other” including those who indicated interracial and multi-racial background and one student that did not indicate race / ethnicity. I was only able to recruit 22 international students (2.8% of total sample) to fill in my questionnaire so some of the analyses separating those students out were not possible. However, I was able to interview several international students in order to ask about their opinions and uses of cell phones in an American context.

Initially I had high hopes that once I had recruited and interviewed several students, a “snowballing” effect would allow me to easily recruit more students. “Snowballing” sampling or “chain sampling” refers to the process of acquiring additional participants via “word of mouth” and / or recommendations from the existing participants or certain contact associates (Bedford and Burgess 2001, 126; Hay 2001, 196). One of the consequences of this “effect” is increasing the total number of participants. In reality, the “snowballing” effect in my research process was minimal. There were only few interviewees that assisted me in getting additional participants by introducing me to their friends and colleagues. At the end of the interview sessions, I politely asked most of the participants, if they come across or could think of someone who may be interested in participating in the study to pass along my recruiting E-mail or my contact information to the potential participants. In fact, most of the time when I asked if they could think of anyone that may be interested in participating in my research, there was either a blank stare indicating that they could not think of anyone or a hesitation to give me names of their acquaintances. Unfortunately, in a few cases this resulted in some interview sessions, which I felt that resulted in “good” conversations, ending in a somewhat an awkward tone. One possible factor for not succeeding in this approach is that my research did not have very rigid criteria (only age group and registered university students) to narrow down the population to a more “definite” group (e.g. female students that have particular experiences). In this instance, it might be hard to think of anyone to recommend since there is not really a clear boundary between “insider” and

“outsider” as in many ethnographic studies where researchers become introduced into a social group and place (e.g. Dowler 2001).

Finally, one of the dilemmas that I had to reconcile in my research process was whether to offer monetary compensation to the students for participating in the interviews. I know first hand that a student life is very busy with studies, activities, and social events, and they are giving up their time to meet with me. It is common for researchers to offer some kind of compensation—money, gift cards or other forms of benefits (McDowell 2001, 90). Especially in the case of their participation resulting in negative consequences, participants should not only be granted strict confidentiality but also should be provided with some type of “compensation.” In the end, I chose to ask for volunteers to be part of the interview sessions. One main reason for not offering the compensation was due to my personal financial limitations. I wanted to interview as many students as possible and I could not foresee whether I would have enough resources to achieve this if compensation was provided. I also identified the topic of interview sessions—uses of cell phones—as not a highly sensitive issue that may cause any kind of emotional or psychological stress for the participants. And since cell-phone consumption had been a “current” topic that was often talked about in multiple social arenas, I anticipated that there would be students who were willing to participate in my study. In addition, I felt awkward in compensating participants because of certain “power” hierarchy that may result from this process. Once the monetary compensation is involved, participant may feel obliged to speak about everything. On the other hand, monetary compensation would have encouraged students to participate in my study and would feel rewarded for their participation. Ultimately, I preferred to talk to students who became interested in my research topic, or in participating in research, and simply interested in talking about themselves, rather than having students sign up to be interviewed because of monetary rewards.

Questionnaire format, administration and analysis

Questionnaire format

The format of the questionnaire included multiple choice, scale-rated, and open-ended questions and was designed to facilitate completion be filled in less than fifteen minutes (see Appendix A). Both the cell-phone user and non users participated in completing the questionnaires. Cell-phone users however, had three times more questions to answer compared to the non-cell-phone users. There were different types of data that was gathered. The first section

consisted of "respondent variables" asking one's gender, age, ethnicity, citizenship, residency, and cell-phone ownership in a multiple-choice format. There were also both multiple choice, scale-rated, fill-in-the-blanks, and open-ended questions that sought to capture the "behavioral" aspects of people's cell-phone usages and the usage of other everyday technological items (Parfitt 1997, 77). Additional questions tried to categorize students' attitudes and experiences. Parfitt (1997) states that "data which relates to attitudes, opinions and beliefs" "tend to be the most difficult data categories to collect" since it involves "patterned responses and insincerity (particularly the tendency of respondents to want to please) and the related problem of 'attitude-forcing'" (p.77). Taking this into account, I tried to pick out a range of attitudes and opinions which I gathered from the text analysis of newspapers and literature on technology and young people as multiple-choice categories.

In contrast to the aforementioned 2003 FACAC conducted at Penn State, my survey included a more open-ended component and more focus on meaning and opinions about cell phones in order to gather as many voices from university students as possible. In addition, I provided a blank space at the bottom of the survey sheet for students to write additional comments on cell-phone uses. This decision to include an open-ended format came from my desire to extend spaces for the respondents to "speak" (albeit in limited space) and not merely checking off provided boxes. Notwithstanding this intention, it is hard to achieve a nuanced, in-depth analysis from what students have written down on a survey sheet because the comments can be very brief and there is no opportunity for me to ask the participants for clarification on what has been written. In fact, Hogart, Lees, and Davies (2002) use the term "superficial encounters" to describe surveys because there is limited "dialogue between the research and the respondents" (p.175). Also, there is the challenge of coding and analyzing hundreds of comments. Yet, these brief comments provided in the questionnaire sheet can also provide a way for me to make comparisons with the content of interview transcriptions.

Questionnaire administration

I arranged with individual instructors for a time for me to come in and distribute the questionnaires in their classes. In most cases, the students were informed by the instructors in advance prior to me coming into their classrooms to conduct my survey. Before the questionnaire distribution, I briefly explained the intent of my research and explained the voluntary and anonymous nature of the questionnaire participation. I did not have to collect signatures from

each of the participants because the questionnaires were designed so that their responses could not be linked to their identities. Therefore the completion of the questionnaires meant that they have consented to participate. Each questionnaire included a separate sheet that acted as implied consent form with details concerning my research and also another separate form which was a recruitment sheet for the interviews (See Appendix A for recruitment sheet).

It took on average ten to fifteen minutes for all the participants to complete and return the questionnaires. Most of the students who were in the age group filled them in and I had a very good return rate of questionnaires. This may be due to the fact that completing questionnaires took a relatively short time, they were mostly collected on-site and in-person, and allowed students to remain anonymous. In the process of distributing the questionnaires in classrooms, I observed that some students at Penn State were enrolled in multiple Geography classes (especially those who are the Geography majors) that I targeted. And for these students, it was a redundant process since they needed to patiently wait while the others completed the questionnaires and took away time from their regular class periods more than once. Also, as I mentioned before, there were students who were under and over the age range that did not or could not participate. Overall however, by targeting the general classes, I sense I was able to approach a diverse student group and it was an effective way to generate interest among students who wanted to further share their experiences and opinions about the cell-phone uses.

Questionnaire analysis

Questionnaires were designed so that I could analyze the responses using both quantitative and qualitative methods. Each non-open ended question was coded by assigning a numerical value to responses. The coded questionnaire responses were entered into a *Microsoft Excel* sheet in order to engage in statistical analysis using *SPSS 11.5* computer software. All the questionnaires that had incomplete section(s) were also kept as part of the overall sample group; all of the completed sections were entered and missing sections were entered as blank cells. For example, some sections asked the respondents to “check all that’s applicable” as opposed to making just one choice for that particular question (see Appendix A, Q#11, Q#12, Q#18, Q#19, Q#25, Q#27). If they did not check off any boxes for such questions, I kept the whole section as blank cells in the *Excel* and the *SPSS* data sheets.

Due to the layout design of the questionnaire, unfortunately there were three sections in particular (see Appendix A, Q#14, Q#17, Q#29) that led to high number of “problematic”

questionnaire responses. All three questions asked respondents to circle a number associated with their responses on each row, yet some respondents appeared to lose track of the number associated with each row. Such responses entailed circling the number on the top row which assigned labels to each number and this led to blank responses in another row and / or two responses per row because respondents circled two numbers. I have entered all responses that were circled appropriately and those problem entries were kept as blank cells in the excel sheet. Furthermore, there were two questions (see Appendix A, Q#9 and Q#16) that asked the respondents to write in the amount of their monthly cell-phone bill and the number of calls they make and received per day. Some responses for these questions needed to be adjusted to suit the question asked. For example, indicated amounts such as "$10 every 45 day" for Q#9 was calculated as monthly bill of $6.67 and those responses that gave range of value (e.g. wrote "1-3 calls per day") for Q#16 were assigned a middle value of that range (e.g. entered as "2 calls per day").

After responses from 755 questionnaires were numerically coded and entered, I was able to engage in multiple descriptive analyses (e.g. frequency, crosstab / chi-square), mean comparison (e.g. one-way Anova) and multivariate statistics, namely series of hierarchical cluster analyses. Combinations of above statistical analyses were used to explore the following aspects of cell- phone consumption:

- cell-phone ownership patterns
- monthly cell-phone expenditures
- cell-phone features commonly used
- where cell phones are used
- intensity of cell-phone use
- reasons for getting a cell phone
- perceptions towards cell-phone uses
- how often students use other common everyday technological items.

I used simple descriptive analyses to see general patterns and average cell-phone use, ownership and monthly bill. In addition to learning about overall cell-phone use trend among American university students, I also explored whether there were any statistically significant differences between certain subgroups relating to gender, residence, ethnicity, and age groups, in regards to user tendencies and perceptions by using mostly crosstab/chi-square analysis. Crosstab deals with statistical comparisons between the *actual* count and *expected* counts of certain variables among

sample groups to determine whether there are certain tendencies associated those groups (Coolidge 2000, 243-244).

Finally, I used hierarchical cluster analysis to investigate the subgroups identified as heavy cell-phone users, users who held certain perceptions, and those who had purchased cell phones for certain reasons. Cluster analysis is "thought of as a data-reduction technique" to "seek to reduce the n original observations into g groups" by a grouping "together of similar observations" (Rogerson 2001, 197-198). Hierarchical cluster analysis, also called agglomeration analyses, creates groupings or clusters from all the entered data in regards to designated variables such as perceptions held by cell-phone owners. As a result of running a cluster analysis, *SPSS* creates a dendrogram (Rogerson 2001, 203-207). It shows a visual illustration of how questionnaire respondents are grouped together and the degree of similarities among respondents within a cluster or a group. After visually identifying multiple clusters from dendrograms, I used mainly crosstab / chi-square for categorical variables, non-parametic tests consisting of independent kruskal-wallis analysis for ranked (e.g. ranked importance) variables and one-way Anova for continuous variables (e.g. cell-bill amount) to further examine the tendencies related to the dominant profiles of the students that make up these clusters.

What I intended to do with quantitative methods in my study was not to declare that females *were* x, y, z as cell-phone owners opposed to male users. But rather, I am using statistical analysis as one of the ways to explore to what extent and in what ways, different social categories and user patterns intersect and are related with each other. Simple descriptive quantitative analyses aided me in exploring multiple dimensions and diversity within cell-phone usage and experiences in addition to qualitative analyses of interviews and multiple texts. They allowed me to investigate and emphasize the *tendencies* of university student's cell-phone usage, opinions and experiences as a aggregate group representing university students who are young adults to the sub-groups within the sample group such as certain age groups (e.g. 18-19 year olds compared to 23-25 year olds), gender, and on / off campus students, but also groups who tend to use and experience cell-phone consumptions in particular ways. Both crosstabs / chi-square and hierarchical cluster analyses were used in non-deterministic and non-normative ways since the suggested statistical tendencies and overall groupings of people necessitated further qualitative interpretations and analyses such as why females tended to have cell phones. In addition, there are also open-ended questions in the questionnaire and for those open-ended responses, I have used the technique of content analysis which pays attention to the frequency of certain phrases or themes (Dunn 2001, 76). I am also able to analyze the responses by the application of the same

coding phrases and themes used in examining other qualitative data—the interview transcriptions and the university newspaper articles (discussed later)—to explore some of the patterns, opinions, experiences, and socio-spatial dimensions of cell-phone use.

Interview sessions and transcriptions

Interview sessions

An interview setting is considered to be one of the key factors in influencing a nature of an interview session, and therefore, various considerations are made by researchers in selecting a place to conduct interviews. For example, Gill Valentine argues that bedrooms can be well-suited for interviews involving young children because such places are often considered to be their "sanctuaries" as compared with spaces found at school, where they are mostly under adult surveillance (Valentine 2001). On the other hand, Linda McDowell, as a female middle-aged researcher, preferred to conduct her interviews with young male adolescents in public spaces because she recognized that the age gap and the gender differences between her and the interviewees can potentially invite "awkward" circumstances if interviews took place in private spaces (McDowell 2001). My interview sessions were held primarily around the campuses, but also took place at local cafés, and students' apartments when students preferred such places. Campus settings were the most convenient places for both the participants and me to meet because we spend a lot of time on campuses as students. Interviews were set up to suit students' schedules, often utilizing time before and after classes or other activities. Consequently, all interviews but one were conducted in the mornings or the afternoons of week days. Most of the interviews were conducted at the student union buildings—the Kern Building and the Hetzel Union Building (HUB)-Robeson Center at Penn State and Cumberland Union Building (CUB) at Shippensburg—since these buildings offered plenty of sitting spaces and are public places where students hang around, meet up with others, eat lunch, and study. Some interviews were conducted while students ate breakfast or lunch in the HUB and the CUB. In addition, there were also interviews that took place in departmental offices if students found those places to be the most convenient settings for them. One negative outcome of conducting interviews in public spaces such as the student union buildings where large numbers of students congregate was that these places had a considerable volume of unwanted background noise that made transcribing some recorded portions of the interviews difficult.

After obtaining permission from each interviewee, almost all the interview sessions were tape recorded in order to be transcribed later. The benefits of tape recording the sessions were that I could fully concentrate on the conversations with the participants instead of taking down vigorous notes (transcriptions were completed later). Only one male undergraduate student preferred not to have his interview tape recorded. In addition, there was one session that I failed to tape record and one session that was partially unrecorded due to a malfunction associated with my tape recorder. I have hand written, then typed up later, the detailed notes for those unrecorded segments of the interviews. The tape-recorded portion of each personal interview session lasted on average about twenty to thirty minutes. The longest interview lasted about an hour. As I expected, there were varying degrees of comfort level associated with each interview session. In general, students were willing to talk to me about their personal aspects of lives but there were few instances in which some students were reluctant to be excessively "open" about themselves, especially while the tape recorder was turned on.

I attempted to create effective interview settings beyond selecting appropriate places for interviews. When we met at Kern Building, the HUB, the CUB or a local café, I often tried to offer them something to drink (but most of students declined) and then we looked for a "comfortable" place to sit. Most sessions started with us "chatting" for a while about various topics, usually about their academic programs and classes they are taking, before we "officially" started our interviews. This facilitated the initiation of our conversation and helped me to get to know their background. Before turning on a tape recorder, I briefly summarized my research purpose to them and went over the consent form before obtaining their signatures. I tried to place the interview guides and the tape recorder in a position that was not "visible" to us nor to the passer-by and those in the vicinity. I did not want the participants to be constantly reminded that their interviews were being recorded since that may have impeded on the natural conversational style of the interviews. Most of the interviewees did not exhibit any concerns over having our conversation tape recorded, but there were a few students who showed noticeable differences in the degree of "openness" and in their volume of voices between when the tape recorder was "on" and "off." In such instances, I tried to reassure them the fact that the recorded tapes are only handled and listened to by me and emphasized to them the confidential nature of the interviews.

There are different types of interview formats that researchers use—from personal histories to group interviews (Hoggart, Lees, and Davies 2002). Most interviews were personal interviews that allowed me to inquire about individual circumstances and viewpoints regarding cell-phone uses. Cell phones have been a relatively new phenomenon on campus and my

interviews focused mainly on asking about students' current cell-phone uses rather than an in-depth discussion of personal "life histories." In order to encourage interview participation as much as possible, I also promoted the idea of a group interview—students participating along with their friends—as one of the formats that they could choose in my recruitment announcement (Appendix A). But most students took the option of being interviewed individually. There were two group interviews—one with two female undergraduate students and the other one with three female undergraduate students—that I conducted. They resulted in yielding interesting group discussions on cell phones because these students were roommates and the discussions were built on their experiences and observations of each other's cell-phone uses.

The interviews were carried out in a free flowing "informal" conversational style but took a semi-structured design by exploring selected topics during the sessions. The aims of giving semi-structural format to the interviews were to create coherence among interviews and to facilitate the coding of the transcriptions. The questions asked addressed the aspects related to students' cell-phone ownership, students' observations and experiences on cell-phone uses in various places, "risks" and "convenience" associated with cell phones and how cell-phone uses may or may not vary among different social and age groups. One particular theme emerged after conducting few interviews and was added to the set of topics I explored. Multiple students mentioned the uses of Internet Messenger (IM) as one of the communication tools in addition to telephone conversations and E-mail correspondences. Responding to this reoccurring theme in the interviews, I added a question that addressed how different modes of communications vary and are used by students. The interview protocol consisted of the following questions:

- What are your major, status (freshman, sophomore, junior, senior) and age?

- Do you have a cell phone?
    - If yes: When did you get your cell phone? What were the reasons for getting a cell phone? Do you pay your cell-phone bill?
    - If no: Are you considering getting a cell phone? Why or why not?

- How do you use your cell phone?
    - When do you usually use your cell phone?
    - How do you carry your cell phone?
    - Where do you use your cell phone?

- What are your perceptions and experiences of cell phones?
    - Do you think of the risks associated with cell phones?
    - What are the convenient aspects of a cell phone? What circumstances apply as "emergency purposes"?
    - Do you have particular opinions about cell-phone uses and users?
    - Can you think of any instances that involving cell phones that were interesting?

- What are your observations on how people use their cell phones?
    - Do you observe any particular social or cultural group, such as ethnic or racial group, that uses the cell phones differently?
    - Do you observe any differences between female users and male users?
    - Do you think your age group uses cell phones differently than younger or older generations?
    - Where do you observe people using the cell phones?
    - How does the cell-phone communication differ from other modes of communications such as wired phones, E-mail correspondence, IM (Internet Messenger), etc?
    - Has cell phone communication change your relationship with family members and friends?
    - Are there any differences between cell-phone uses in State College / Shippensburg and other places?
    - What are the differences between cell-phone uses in the American and non-American contexts?

Researcher and participant interactions

As discussed in the previous chapter, qualitative methods such as interviews and other ethnographic methods need to include careful examination of how the identities of a researcher and research participants shape the research process and outcomes. For example, certain issues could arise in research that involve groups and individuals that are socially "marginalized" or "vulnerable" such as ethnic minority groups, people in poverty, young children, lesbian and gay youth, and elderly (e.g. Valentine, Butler, and Skelton 2001). The social group that I examined, university students and young adults, may not be perceived as "vulnerable" as young children who may be easily coerced into participating or may feel intimidated by the research process (Valentine 2001, 49). Yet, ethical considerations must be always taken into account in research that involves participants. Even though my topic of cell phone uses may not be a sensitive issue, I am going to briefly discuss some of the ethical implications of my research and my identities in relation to the participants.

One of the important ethical considerations that needs to be critically addressed is the question of "what are the consequences a research project could have for the participants and the group of people you are studying?" One must contemplate the ways that the participants may directly or indirectly "benefit," be "empowered" or even negatively affected. One agenda of my study is to include young adults—who are in the later transition period from "childhood" to "adulthood"—to be part of the discussion of young people's geographies. Geographers engaged in qualitative methods argue that one of the ways to "give back" to the participants is to give some kind of feedback by sending them a summary of one's findings and providing an

opportunity to respond (Valentine 2001, 50)**.** This process is seen to enhance the participants' presence and voices in one's research and offers them a chance to reflect on the findings and how they are represented in the study. I asked the interviewees if they were interested in a summary of the findings while I obtained their consent for the interview. The students who expressed interest provided me with their mailing address so that I can send the research findings after I have compiled the results. In addition, some students who completed the questionnaire and participated in the interview sessions commented that they enjoyed participating and / or it made them cognizant of certain activities and perceptions that they were not aware of through the participation.

Each interview session differed in terms of degree of openness and comfort level showed by respondents in revealing private aspects of their lives and this could be related to participants' age and academic status. In general, the older participants who were graduate students seemed more willing to talk about their personal lives, perhaps because they were closer to my age and were familiar with processes involved in social research. In some cases, I was ten years older than the participants which can create a "generational gap" between experiences. Aside from my age, my identity as a female, non-white, Japanese graduate student may have influenced participation of students. One of the identity issues that I was conscious of is my status as a graduate student and a teaching assistant. I have been a graduate teaching assistant at Penn State and I had the responsibility to grade papers and exams and instruct lab work. Because I recruited students primarily from Geography classes, including a class that I was a teaching assistant for, I tried to make sure that the participants realized that they were not obliged to participate in the study and that their participation (or non-participation) was confidential and would not affect their course grade. Overall, I feel that the participants were not intimidated by being interviewed because the recruitment process emphasized the voluntary nature and my positionality as graduate student that was relatively close to their age.

Another set of issues that I reflected on during and after the interviews and the distribution of questionnaires were those issues of gender, race, and nationality. For the questionnaires, by targeting general education classes, I was able to have participation from both female and male students. The major difficulty I encountered was in the recruitment for interviewees, especially male and minority (non-white American) students and because of this, there was a gender imbalance in terms participants for the interviews. The majority of the interviewees were females—very few males responded to my recruitment advertisements or chose to be interviewed (Table 4.2). During my research, I had a personal conversation with

another graduate student who was administrating questionnaires and he noticed that there was a gender imbalance in the respondent profiles for his study as well. He also noted that there were more females who were willing to participate. Without making any generalizations, I felt that it was easier for me to recruit female participants.

In addition, coming from Japan, racial / ethnic issues in United States were sometimes difficult for me to be fully receptive to, and, perhaps this could be one of the contributing reasons why I was not able to fully explore the ethnic / racial dimensions relating to cell-phone consumption. Furthermore, I did not ask all of my interviewees what their ethnic / racial background was because it seemed awkward to ask their ethnicity when the racial appearances did not suggest "minority" (i.e. white). Truthfully speaking, I felt it was easier to talk about race / ethnicity issues with minority students. This shows that category of "white" is sometimes hard to address since it constitutes the "norm" and comprises a majority of student population in my study sites.

Despite my non-American background, I have been studying in North America for over a decade. My spoken English is fluent enough to sustain an informal conversation with native speakers of English and I am familiar with North American university life. On the other hand, given my status as an international student, and not experiencing all of my youth in a North American context, I am situated as the "other" from the majority of students' perspectives. I regard my positionality as one that can be termed both as "insider" (studying at a North American institution) and "outsider" (older, non-white, international student) as a constructive aspect to my research since I can offer both the understandings and problematization of mundane aspects of North American university student's life. This idea of an "outsider" perspective contributing to giving alternate views towards "insiders" was also one of the reasons why I choose to include international students as my participants. That is, they might have slightly different perspectives and experiences from the majority of American university students and their observation and opinions may highlight certain characteristics of American university student's cell-phone uses. There were multiple international students that participated in the study, coming from ten countries. The interviews were conducted in English regardless of the non-Native speaker status—all of the interviewees were fluent in English. One exception was an interview with a Japanese student that was conducted in our own native language (Japanese), because both of us felt comfortable speaking in Japanese and some of the nuisances and details were much more easily conveyed to me in Japanese by this student. For this interview, I choose to take notes from listening to the tapes rather than transcribing in Japanese.

Interview transcription and analysis

The recorded interviews were transcribed using a transcriber and prepared using *Microsoft Word* on my personal computer. In the transcription, all the participants' names were disguised by assigning pseudo names in order to protect their anonymity and privacy. I was careful not to include details that may be linked directly to the individual in my description. For example, because there are very few international students in Shippensburg, exact nationality was disguised in most cases. I used the guidelines suggested by Dunn (2001) and Kitchin and Tate (2000) in selecting the transcribing codes. Some researchers including geographers such as Laurier (2001) call for the need of conversational analysis (set in ethnomethodological tradition) in examining interview texts that pays attention to the details of how the interviews were conducted and to how people uttered their voices. Recognizing that such methods have their benefits, I chose not to include the "pitch" of the conversation (e.g. how long the pauses were, etc.) since it entails an extremely time-consuming procedure to code into transcripts and also because I have concluded that such technical elements will hinder than help my analysis. Still, the transcribing process took more time than I anticipated. This may be due to the fact that this is the first time I have transcribed interviews and the fact that English is not my native language.

There is computer software, such as N*udist*, that is used to analyze interview transcription and other qualitative data. I have decided not to use such software for to several reasons. Aside from the financial burden of purchasing the software, my research time and resources were heavily "invested" into administrating data collection, learning how to use SPSS computer software, entering questionnaire data, and transcribing interviews. One of the more important reasons is that I felt more comfortable manually coding transcripts. One of the techniques that was helpful in the coding processes and identifying topics was to paste all the transcripts into one word file and use the "search" function of *Microsoft Word* for specific phrases used by students.

I also analyzed other qualitative data such as newspaper articles (discussed in the following section) and found that manually going through this material would give me more continuity in my coding process. After preparing the transcriptions, I printed most of the articles and marked multiple codes such as "examples of cell-phone use," "family," "gender," "driving," etc, in the margins of the transcriptions.

Textual analysis of media representation

Selection of "texts"

My third method utilized text analyses examining the voices and portrayals of young people and cell phones obtained from multiple media sources. Traditionally, researchers who are social constructionists have relied on sources such as newspaper reporting, political hearings, and government statistics to examine social problems or issues, and phenomenon. A "cultural turn" in social sciences has influenced geographers' research by focusing on the "intertextuality" of multiple texts and written texts, landscapes and images as sites of knowledge production and power negotiations (Duncan and Ley 1993; Rose 2001). "Places are intertextual sites because texts and discursive practices based upon texts are (re)inscribed in social practices, institutions and landscapes" (Duncan 2000). Therefore, many new cultural geographers' research has consisted of "deconstructive" and "semiotic" analyses of images, landscapes and institutions. Employing the idea of "intertextuality" also led to the widening of data sources to be examined. This trend also applies for those who are undertaking the social constructivist approach in studying social problems and everyday practices by examining popular media consisting of films, books, television shows, and magazines (e.g., Jenkins 1994).

The ubiquity of the cell-phone phenomena leads to endless possibilities of media sources to be examined. For instance, there has been a growing popularity of *weblogs* or *blogs* devoted and to cataloguing cell-phone issues and news (e.g., weblog by Emily Turrettini in Switzerland, Turrettini website 2004-2006). Also, because the topic of cell phone spans widely from market analyses, commentary on social etiquette, reporting on technological innovations to descriptions of governmental policies and health issues, there is an abundance of newspaper and magazine articles from different international, national, regional, and local sources. Running a simple search by typing in combinations of keywords such as "cell phone" and "young people" in general newspaper and magazine article databases such as *Lexis Nexis Academic Universe* yielded thousands of entries. It was therefore, necessary to identify and delimit the choice of "texts" for the purposes of my research. The newspaper and magazine article database that I utilized in my work was the *University Wire* data base accessed through *Lexis Nexis Academic Universe*. I retrieved "all available" articles by using the search term "cell phone" and "mobile phone" until around April 2005 (University Wire database website 2000-2006). University campus papers and magazine articles can be seen as one of the places where young people's perceptions and voices are reported and expressed. Through these articles, university students

participate in wider public debate such as regulations on driving and the etiquette involved in the uses of phones on campuses. The audiences of university publications are not comparable in size to the national news sources, but they are important places for students to voice their opinions and report their observations on cell-phone phenomena. This database however does not include all campus papers and magazines. The cell-phone articles from Penn State University's *The Daily Collegian* can be accessed through this database but Shippensburg University's *Slate* is not found using the database.

Analysis of "texts"

In analyzing written texts, the frameworks developed by sociologists and others are useful in situating the claim making activities—particularly in examining the social construction of "social problems." First, the process of *naming, typifying,* and *framing* the problem not only designates a thing or person to be the problem but suggests a specific angle of analysis (Best 1995, 8). Is the cell-phone technology itself the problem, or is it how particular consumers use it? Are uses of cell phones by young people moral, medical, criminal, cultural or political problems that affect the larger segments of society? Many articles on the cell-phone phenomenon framed various social issues as a matter of "etiquette" that could be remedied with a little bit of common sense. Others argue that there should be specific guidelines and rules to curb these "problems." Typification "is an integral part of a social-problem construction. Claims makers inevitably characterize problems in particular ways: they emphasize some aspects and not others, they promote specific orientations, and they focus on particular causes and advocate particular solutions" (Best 1995, 9). Furthermore, some orientations are converged into another's framings of another problem in another context (Jenkins 1994, 6). For example, the perceived problem of driving while talking has been presented in conjunction with the drinking and driving problem.

Secondly, the process of creating and designating villains, heroes, and victims is an important part of the claiming activities of social problems (Best 1995). For instance, teenagers with beepers became the epitome of the drug problem among young generations. Joel Best is one of those scholars who has focused on how children and adolescents become demonized and victimized in the process of social-problem makings, such as in the case of "child abuse" and "gang violence" (Best 1994; 1999). The perceived problem of cell-phone radiation is often seen as a problem for young people from the medical perspective (e.g., "Children and mobile phone use: is there a risk?" by Don Maisch (2001), Maisch website 2001). How we talk about young

people in terms of villains and victims reflect how we view childhood, youth, and adulthood. Generational misunderstandings can often lead to creation of villains. Gill Valentine and Sarah Holloway have been examining children's use of Internet-connected computers at home and the technophobic attitudes held and practiced by parents in the British context (Valentine and Holloway 2001b). Cell-phone technology is now praised for its usefulness but at the same time the ways it has been used (e.g., talking in classrooms, talking on the phone while driving, and walking down the street) are considered to be immoral and wrong. In my study, I am focusing on how young adults themselves talk about cell-phone uses by naming and typifying cell-phone phenomena.

Another concept used by contextual-social constructionists to examine certain social fears is the "urban legend." Joel Best and Gerald Horiuchi claim that urban legends are widespread beliefs that "are products of social tension or strain. They express fears that the complexities of modern society threaten the traditional social order" and can be seen as "unconstructed social problems" (Best and Horiuchi 1985, 492, 495). In her study of cell phones, Misa Matsuda examined the perceived problem of cell-phone radiation in the Japanese context using this framework. Her purpose is not to judge whether the radiation emitted by the cell phone is indeed harmful but to examine the status of such a claim in society (Matsuda 1997). Making analogies with past urban legends circulated in Japan such as "one will be infected by cholera through telephone use," she explores the rhetoric used to describe the social fear towards cell-phone radiation and speculates on the reasons why such claims come into existence. Thus, claims which do not achieve the status of social problems are also worthy of attention, to examine the social perceptions associated with technological devices. Various "cell-phone problems" are still in the process of construction and remain as "social issues" which are contested but not defined as a problem that needs immediate attention and solution. As I mentioned earlier, the term "etiquette" signifies that the issue remains outside of the domain of policy makers and legislators.

My focus is on how university students participate in the claim-making activities by commenting on the social issues and reacting to the debates on social problems. Therefore, in surveying the university publications, I paid particular attention on how students themselves named, typified, and framed the cell-phone phenomena as well as their reactions to the wider processes of problematizing social issues. Some of these issues concerned campus life and their observations and assessments of other students. These claims and opinions, found in university publications, add to the first-hand voices collected from personal interviews.

In addition to university campus publications, I collected, observed, and examined another set of "texts"—advertisements—that portray cell-phones use, particularly by young people. These included:

- Cell-phone advertisements and pamphlets collected from cell-phone retailers in State College and Shippensburg during 2001-2004;
- Collected advertisements from the newspaper and magazine article clippings; during 2001-2004, and;
- Cell-phone television commercials aired on television 2001-2004.

These visual images were not part of my central investigation, but were used to situate the voices and contextualize the cell-phone phenomenon in the American context. I loosely utilized the technique of "discourse analysis I" which uses "the notion of discourse to address the rhetorical organization and social production of visual, written and spoken materials" (Rose 2001, 162). By looking at these images, I gathered information on what was portrayed and "sold" as well as how the ideas concerning "family," "parenting," "gender," "youth culture," and "mobile technology" are embedded and perpetuated.

Triangulation of methods

I have primarily selected the methods of personal semi-structured interviews, questionnaires, and textual analysis of media representations from among the possible research techniques in order to collect and contextualize young people's views and experiences surrounding cell-phone uses. The nature of data that I decided to examine, and, techniques I have chosen to use, reflect my efforts to collect the experiences, perceptions and conversations generated by students from the "bottom-up." These include problematizations of social issues but also other perceptions associated with the technology that is celebratory, personal and / or mundane. As I discussed in the previous chapter, I combine the qualitative and quantitative inquiries and analysis in order to explore socio-spatial implications and to highlight the multiple voices as well as particular tendencies and mainstream views. Through *triangulating* the three techniques, some of the ways in which young people make meanings and associations can be highlighted. The triangulation of different data are presented throughout the following chapters (Chapters 5, 6, and 7) while contextualizing and theorizing meanings, processes, perceptions, and experiences associated with students' cell-phone uses.

Chapter 5—Cell-phone ownership among university students: emergency, family and campus connections

Introduction

> Though it was fifteen years in the making, the cell phone revolution seemed to happen all at once. Suddenly, every other person strolling down a city sidewalk seemed to be chattering away on a phone. High-school students began carrying them to school, and soon their little brothers and sisters were carrying their own to the playground as well. When a phone rang in a coffee shop, nobody peered in curiosity toward the source of the sound anymore; everyone instinctively reached toward his or her own pocket or bag (Murray 2001, 278).

The above description by James Murray (2001) in *Wireless nation: the frenzied launch of the cellular revolution in America* points to three aspects that are interesting about the mass consumption of cell-phone technology. One is how the history of developing cell-phone technology for masses can be considered to be what Barry Brown describes as "the history of non-development" (Brown 2002, 7). The first "primitive" form of cellular-telephone systems was commercially available in the 1940s. Yet it took more than thirty years to develop a mass market cell-phone system because of factors such as the "hesitancy of researchers to do cellular telephone research," and "the regulatory and business decisions made by the government and phone companies" (Brown 2002, 7-9). While the first mass-market of U.S. commercial cellular-phone system started in 1983, it took another fifteen years for cellular technology to be fully become integrated into majority of the population (Murray 2001, Brown 2002, 8).[7] Although such a history of non-development is an interesting one, an equally intriguing aspect is that once cell phones started to become mass-consumed, their popularity "suddenly" rose rather quickly. Wireless subscribers have increased rapidly since the mid-1980s and have moved through four classes of buyers. As cell-phone technology became widely available and affordable, cell-phone purchasing has moved from the innovators to the early adopters to the early majority and to the late majority in the late-1990s (Table 5.1) (Murray 2001). The popularity of cell phones has continued to grow into the 2000s and as of October of 2005, there were about 194.5 million U.S. subscribers. In other words, 65 percent of the total U.S. population owns a cell phone (CTIA wireless quick facts website, 2005-2006). Accordingly, ringing cell-phones heard in sidewalks,

[7] In comparison to the United States, the cellular telephone system was inaugurated in Japan in 1977 and in 1981 in Sweden (Roos 1993, 449; Brown 2002, 8).

schools, playgrounds, and coffee shops have become a ubiquitous phenomenon that is no longer intriguing for many.

Table 5.1: Four waves of cell-phone consumers Source: Murray 2001, P.210-212		
The first wave of buyers	The innovators	"The users who buy new gadgets as soon as they become available." Cell phones became available in 1983.
The second wave of buyers	The early adopters	"The users that sign up in the first two or three years after a new technology is available, while it's still an expensive niche product."
The third wave of buyers	The early majority	As prices fell, and phones became smaller, users started to buy in the mid to late 1980s.
The fourth wave of buyers	The later majority	"In response to increased usages, carriers experimented with lowering airtime rates," and more users started to buy cell-phones in the late 1990s.

The final notable aspect of cell-phone consumption is that it diffused through multiple social groups including the younger generation. My research was conducted after the fourth wave, or, "the later majority" began consuming cell phones in the late 1990s. By that time, not only were rich executives, doctors, drug dealers, and blue collar workers using phones, but common household members and students were as well. In 1999, Nina Dry, a reporter for *East Carolinian*, observed the popularity of cell phones on her East Carolina University campus. She wrote;

> [c]ellular telephones and digital pagers are found far and wide throughout campus. What began as an essential tool for business tycoons has expanded to the hands of students. Is this form of technology a commodity for communication or is it another trend that will soon fade as many tend to do? There are many students on campus who have cell phones and pagers, believing they are quite necessary for the modern student (Dry 1999)[8].

Since this observation was made, the popularity of cell phones has proven not to be merely a "fad" that would eventually disappear. Instead, they are now a popular communication tool used by university students on campuses nationwide. On the other hand, pagers have come to play a less prominent role for students who see cell phones as far more "convenient" and even more importantly, quite "necessary." Multiple newspaper articles in 1999 indicated how cell-phone consumption seemed to have become particularly visible and audible at many college campuses across the nation including Harvard University, Northwestern University, Iowa State University,

[8] University publications were accessed through University Wire database on Lexis Nexis Academic Universe (University Wire databse website 2000-2006). The page and section numbers are not indicated in this database. Therefore, my citations do not include specific page numbers where the quotes and information are found.

East Carolina University , Colorado State University, University of Wisconsin, University of South California, and University of South Dakota (Godar 1999; Jensen 1999; Mager 1999; Moreno 1999; Resnick 1999; Wu 1999). Cell-phone uses began to be an increasingly observable phenomenon on university campuses across the nation starting from around 1999-2000. For example, Ben Adkins of *Kentucky Kernel* described the "cell phones on the University of Kentucky campus" in 2000, they "have become a lot like squirrels—they're everywhere" (Adkins 2000). After several years, it now seems as if "everyone"'—from students, professors, staff members, and their families—have cell phones.

One of the central goals of this dissertation is to investigate cell-phone uses in American university contexts. Accordingly, this chapter begins by describing the multi-dimensional aspects of American university students' cell-phone ownership based on analyses of survey responses, interview transcriptions, and text analyses of cell-phone advertisements and university publication articles. My examinations of various forms of data from two university-campus settings involve discussions of cell-phone ownership ranging from individual to national contexts. In addition, I utilize Faculty Advisory Committee on Academic Computing (FACAC) surveys that were conducted on Penn State campuses (described in chapter 4) involving undergraduate students in 2001, 2002, 2003, and 2005, and compare my survey data findings with them where possible. After briefly describing the ownership level and general reasons for university students owning cell-phones, I explore three general themes relating to ownership in this chapter. First I contextualize the reason for ownership of cell phones relating to "emergency purposes." Secondly, I discuss communication technologies selected by students in relation to their economic considerations, the availability of technological connectivity in residences, and the placement of cell phones in daily routines. In doing so, my examination includes how cell-phone ownership relates to the realm of a "family" or household by exploring dimensions of gender relations, cell-phone bills, and cell-phone plans.

University students' cell-phone ownership

Ownership level

The popularity of cell phones today among American college students is reflected in the 81 % ownership level among the overall participants in my survey conducted in 2003. Ownership of cell phones among Penn State students was 82% while 80% of Shippensburg students owned cell phones. The FACAC student technology usage survey in November 2003, which was

conducted at about the same time as when my questionnaires were distributed, indicated even higher ownership level of 88% (Figure 5.1). These are much higher ownership levels than indicated by the PEW Internet & American Life project, which reported that cell-phone ownership among Generation Y (age 18-27) was 68% in 2005 (PEW Internet website 2005 a). Such higher ownership figures among my sample group points to the fact that cell-phone consumption by university students on campuses cannot be simply categorized under the broad term Generation Y, but rather, needs to be examined as a particular subgroup in specific social settings. In other words, cell phones have been intimately integrated into university settings and can now be considered as a communication technology heavily adopted by university students.

A majority of the students in the survey indicated that they acquired their phones after the year 2000. Among the cell-phone owners, 26.4% acquired cell phone *2-3 years* prior to taking this questionnaire, which was in the ballpark time frame of 2000-2001 and 23.9% of respondents stated that they acquired cell phones *less than a year* (around 2002-2003) (Figure 5.1). Fourteen percent responded they have acquired cell phone *more than 4 years* ago which is prior to 1999 (see Figure 5.1). The figures from FACC annual surveys show cell-phone ownership among Penn State undergraduate university students increased dramatically from 46% in 2001 to 67% in 2002 and 88% in 2003 (see Figure 5.2). This trend certainly shows how cell phones became a popular item relatively recently (after 1999-2000) and penetrated the student population very rapidly.

Figure 5.1: PSU Undergraduate student cell-phone ownership

Source: FACAC student technology usage survey (FACAC websites 2001, 2002, 2003, 2005)

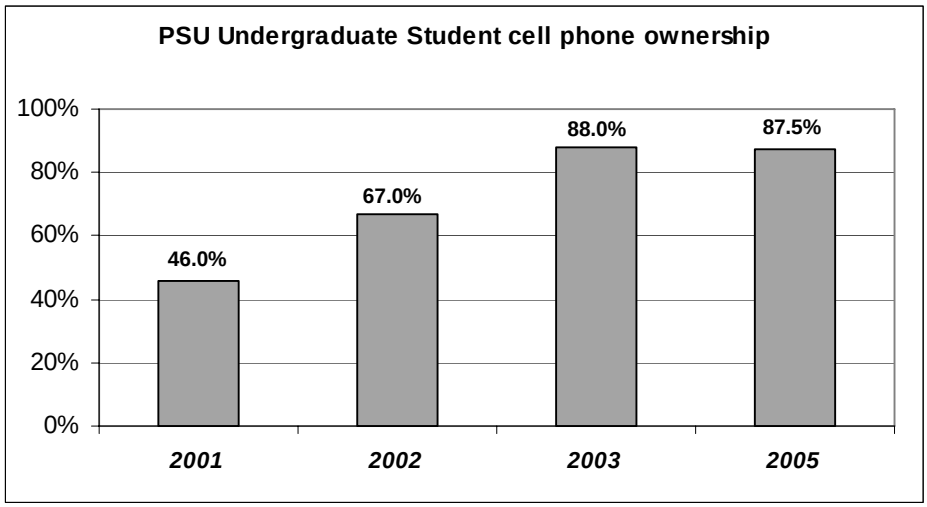
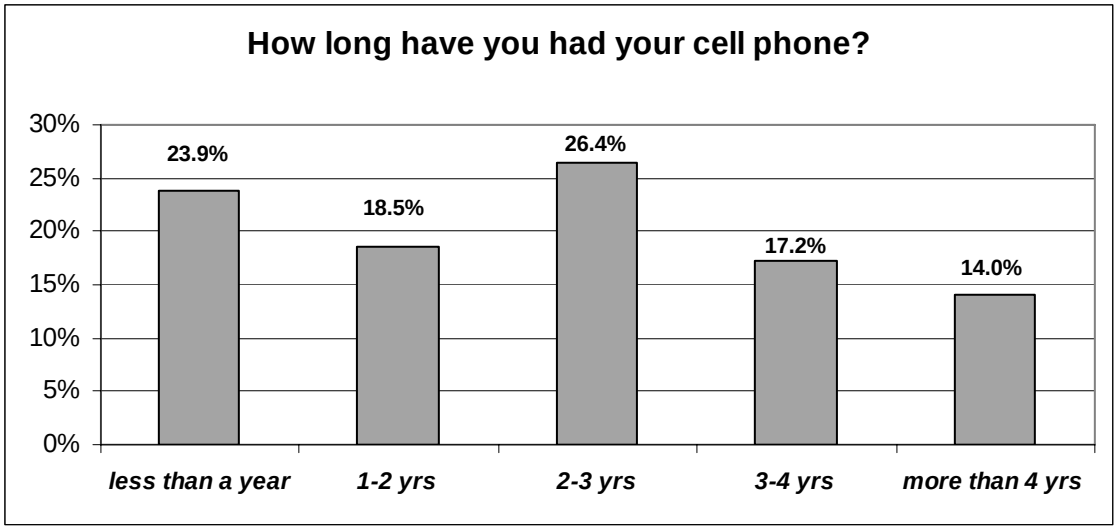


Figure 5.2: Length of cell-phone ownership among Penn State and Shippensburg students

Source: based on questionnaire data collected between Jan 2003-Dec 2003

N= 628



In order to determine whether there are statistically significant differences among different sub-groups within the overall sample in regards to cell-phone ownership (i.e. what % own cell phones), I conducted series of crosstab /chi-square analyses. There was no statistically significant difference between the Penn State and the Shippensburg students ($p = 0.501$) in terms of ownership level. This allowed me to conduct further analyses by combining the samples from two different campuses to explore other axes of identities and dimensions of ownership.

The strong statistical significance of $p< 0.05$ was found in the following two sub-groups as indicated in Table 5.2 and Table 5.3.

- Females tended to have cell phones (89.9%) more than male students (71.7%) with the significance level of $p < 0.001$. There were 360 female cell-phone owners, which is a higher figure than the expected count of 324.9. In contrast, there were only 268 male cell-phone owners compared to the expected number of 303.1 cell-phone owners. My findings corresponded with the FACC survey in 2002 which reported that female students tended to have cell phones more than male counterparts.[9]

[9] It also reported that among the 67% of cell-phone owners, 3rd and 4th year students and campus-college students "are most likely to own a cell phone than their counterparts" (FACAC website 2002).

- Off-campus residents were more likely to be cell-phone owners (84.1 %) compared to on-campus residents (78.3 %) and out-of-town residents (71.4 %) with the significance level of p = 0.044. There were more off-campus students than the expected count (326.5 students). On the contrary, on-campus (263) and out-of-town (25) students had less cell-phone owners than statistically expected (272.2 and 28.4 students respectively).

There were no statistically significant differences between white or non-white students (p = 0.481) and among the age groups of 18-19, 20-21, and 22-25 (p = 0.668). The reasons contributing to female and off-campus students tending to have higher ownership are explored in this chapter by examining various reasons for students to own cell phones.

Table 5.2: Crosstabulation count of ownership according to gender

Source: based on questionnaire data

N = 775		**Male**	**Female**
Owner	Count (Expected count) % within gender	268 (303.1) 71.7 %	360 (324.9) 89.8 %
Non-owner	Count (Expected count) % within gender	106 (70.9) 28.3 %	41 (76.1) 10.2%
Pearson Chi-square sig. (p = 0.001)			

Table 5.3: Crosstabulation count of ownership according to residency

Source: based on questionnaire data

N = 774		**On-campus**	**Off-campus**	**Out-of-town**
Owner	Count (Expected count) % within residency	263 (272.2) 78.3%	339 (326.5) 84.1%	25 (28.4) 71.4%
Non-owner	Count (Expected count) % within residency	73 (63.8) 21.7%	64 (76.5) 15.9%	10 (6.6) 28.6%
Pearson Chi-square sig. (p = 0.044)				

Reasons of ownership

The affordability and the availability of cellular technology nationwide is only one of the dimensions to why cell phones have retained their popularity and increased their prevalence across campuses since the late 1990s and the early 2000s. There are other factors and reasons that have led students to perceive and accept cell phones as a "convenient" and "necessary" everyday technology to carry out their daily activities and communications with various people. In fact, there are multiple reasons and combinations of factors to why university students initially decided to own a cell phone. To explore which reasons are more prevalent and / or important for each student, a section of the questionnaire asked the respondents to rank the importance of 15 pre-selected reasons for getting a cell phone (Q14). Students chose from 5 numbers associated with categories of importance in a ranking order: "0" were assigned as *not important,* "1" as *somewhat important,* "2" as *important,* "3" as *very important,* and "4" as *essential.* The overall mean for each reason can be compared to get a sense of how the overall sample ranked each reason, and Table 5.4 shows the ranked order of selected reason from highest to lowest mean—the higher the number, the reason was ranked as more important.

As a whole, students ranked the reasons of "for emergency purposes" and "to keep in touch with family members" generally as between *essential* or *very important* (between the values of 3.0-4.0). Other reasons that were ranked above *important* (between 2.0-2.99) "to keep in touch with friends," "the service is affordable," "because cell phones are convenient," "includes free long distance plan," and "to keep in touch with your spouse or significant other." The reasons that were somewhat important (between 1.0-1.99) included "for fun / entertainment," "your family purchased for you," "to replace home phone / answering machine," "recommended by someone" and "for work." The reasons that were the least important were those beyond purposes of voice communication—such as being "trendy and fashionable" and "text message system," and "paging proposes."

I used a non-parametric test—Kruskal-Wallis H or k-independent test—to assess whether there are tendencies in how different sub-groups ranked their reasons for getting a cell phone. Tables 5.5, 5.6, 5.7, 5.8, 5.9, and 5.10 indicate the significances of the rank mean for each reason compared between each of the following subgroups: gender, campuses, residency, ethnicity / race, age group, and length of ownership. The tables are sorted in the order of significance level. There are two interesting patterns relating to the ranking of selected reasons between subgroups that are explored in this chapter to contextualize university students' cell-phone ownership.

Table 5.4: Ranked importance for pre-selected reasons for getting a cell phone Source: based on questionnaire data			
Rank	**Pre-selected reasons**	**Mean rank**	**N**
1	*For emergency purposes*	3.4734	602
2	*To keep in touch with family members*	3.4288	597
3	*To keep in touch with friends*	2.9733	600
4	*The service is affordable*	2.8998	599
5	*Because cell phones are convenient*	2.8783	600
6	*Includes free long distance plan*	2.8275	603
7	*To keep in touch with your spouse / significant other*	2.4704	591
8	*For fun / entertainment*	1.8121	596
9	*Your family member purchased for you*	1.5973	591
10	*To replace the home phone / answering machine*	1.3782	595
11	*Recommended by someone*	1.0000	593
12	*For work*	1.0000	592
13	*For use of text message system*	0.9583	599
14	*For paging purposes*	0.7648	591
15	*Because cell phone are trendy and fashionable*	0.6844	602

First, there are place ($p = 0.030$) and gender ($p < 0.001$) differences in how "emergency purposes" was ranked important (Tables 5.5 and 5.6). Shippensburg and female students ranked it higher than their counterparts (Penn State and male students respectively). There is no significant difference between gender composition of two campuses ($p = 0.103$). This means that such trend was detected not because of the skewed gender composition between the two campuses. With the higher ownership level of cell-phones among female students compared to male students, the significances detected between them are equally interesting. For example, male students tended to rank "replacing home phone / answering machine" ($p = 0.002$), "for work" ($p = 0.034$), and "paging purposes" ($p = 0.039$) higher than female students. Although these reasons are not ranked high as emergency purpose by the overall sample group, they indicate the gendered dimensions of cell-phone ownership.

Second, in addition to an emphasis by Shippensburg students on "emergency purposes," there are few notable differences in how Penn State and Shippensburg students ranked three other reasons (Table 5.6). The reasons "includes long distance plan" ($p < 0.001$) and "replacing home phone / answering machine" ($p = 0.002$) are ranked higher by Penn State students, whereas "for use of text messaging system" ($p = 0.047$) is ranked higher by Shippensburg students. These three reasons are related to aspects of students' communication infrastructure. Interestingly, strong

significance was detected in regards to the system of connectivity of “includes long distance plan” ($p = 0.004$) and “replacing the home phone / answering machine” ($p < 0.001$) with off-campus students ranking them both higher compared to on-campus and out-of-town students (Table 5.7). Compared to off-campus students’ emphasis on infrastructural aspects of communication, on-campus and out-of-town students have a tendency to emphasize family relationships. On-campus students ranked higher “your family member’s purchased for you” ($p = 0.001$) and out-of-town students ranked higher “keep in touch with your spouse / significant other” ($p = 0.029$) than their counterparts. There is a concentration of off-campus students at Penn State compared to Shippensburg, which had more out-of-town students (Table 4.1). Therefore, residency factors may be contributing to the differences in Penn State and Shippensburg students’ ways of ranking particular reasons. The patterns associated with residency are interesting to explore because, as shown earlier, off-campus students tended to have cell phones more than on-campus or out-of-town students. Moreover, exploring various aspects of communication infrastructure shed light on how cell-phones are picked up by university students and how they have contributed to their high ownership.

In the next section, I contextualize “emergency purposes”—a reason that is ranked high by the overall sample group but also by all sub-groups. I explore how it is particularly significant for female and Shippensburg students. Then, I describe the “infrastructural” and “family” connections associated with students’ residency—living on campus, off campus or commuting from out-of-town. Along with “emergency purposes” and residency aspects, I recognize that there are other patterns detected in how different sub-groups ranked various reasons. For example, there are tendencies in how a younger age group (18-19) ($p = 0.041$) and non-white students ($p < 0.001$) tended to emphasize the reason “because cell phone are trendy and fashionable” (Tables 5.8 and 5.9). Younger students also tended to emphasize “your family purchased for you” as important reason ($p < 0.001$). Moreover, there is a tendency for students owning their cell phones longer to score their reasons either higher or the same than students who have owned cell phones for a shorter period (Table 5.10). While some of these tendencies are also explored in this chapter, the analyses of reasons for getting a cell phone are extended into the following two chapters, as part of aspects of identity negotiations associated with cell-phone consumption.

As a final note, I did not include the subgroup based on nationality (American or International) in my statistical analysis. To determine any statistical significance, a crosstab / chi-square analysis requires that each cell has an expected count of greater than 5 people. Because of small sample size of 22 international students, almost all analyses involving international students

ended up with cell(s) with expected count of less than 5. Although statistical significance was not taken into factor, I include the examination of international students' ownership or non-ownership through the qualitative analysis of interview transcripts in order to shed light to how cell-phone consumption are taking place in the American college campuses. Eleven out of twenty-two students who took the questionnaire and 6 out of 13 students interviewed had cell phones. There were varying reasons for having and not having a cell phone. Some of the students, especially those from European and East Asian countries, were already a cell-phone owner prior to coming to the United States, but not all of them were cell-phone owners at the time the interviews were conducted. Others decided to purchase cell phones for the first time in the United States because cell phones were seen to facilitate their communication needs.

Table 5.5: Ranked importance for pre-selected reasons for getting a cell phone compared between male and female students
Source: based on questionnaire data

		Male	**Female**	
Selected Reasons	**N**	**Mean rank**	**Mean rank**	**Sig.**
For emergency purposes	**602**	**3.2752**	**3.6221**	**< 0.001**
To replace the home phone / answering machine	**595**	**1.6071**	**1.2099**	**0.002**
For work	**592**	**1.1548**	**0.8853**	**0.034**
For paging purposes	**591**	**0.8889**	**0.6726**	**0.039**
Your family member purchased for you	591	1.4680	1.6921	0.058
Because cell phones are convenient	600	2.7860	2.9475	0.073
For fun / entertainment	596	1.7165	1.8830	0.133
To keep in touch with family members	597	3.3929	3.4551	0.151
Because cell phone are trendy and fashionable	602	0.6512	0.7093	0.236
To keep in touch with friends	600	3.0157	2.9420	0.343
The service is affordable	599	2.8359	2.9475	0.349
To keep in touch with your spouse / significant other	591	2.4348	2.4970	0.499
Recommended by someone	593	0.9646	1.0265	0.625
For use of text message system	599	0.9844	0.9386	0.843
Includes free long distance plan	603	2.8450	2.8145	0.984

Table 5.6: Ranked importance for pre-selected reasons for getting a cell phone compared between Penn State and Shippensburg students Source: based on questionnaire data				
		Penn State	**Shippens-Burg**	
Selected Reasons	**N**	**mean rank**	**mean rank**	**Sig.**
Includes free long distance plan	**603**	**3.0433**	**2.6442**	**< 0.001**
To replace the home phone / answering machine	**595**	**1.5824**	**1.2050**	**< 0.001**
For emergency purpose	**602**	**3.3782**	**3.5535**	**0.030**
For use of text message system	**599**	**0.8509**	**1.0494**	**0.047**
For fun / entertainment	596	1.7070	1.9009	0.072
Because cell phone are trendy and fashionable	602	0.5978	0.7577	0.091
To keep in touch with friends	600	3.0292	2.9264	0.152
To keep in touch with family members	597	3.4599	3.4025	0.202
Your family member purchased for you	591	1.5037	1.6749	0.204
Recommended by someone	593	0.9556	1.0372	0.324
Because cell phones are convenient	600	2.9130	2.8488	0.348
For work	592	0.9704	1.0248	0.356
The service is affordable	599	2.8905	2.9077	0.558
For paging purposes	591	0.7059	0.8150	0.659
To keep in touch with your spouse / significant other	591	2.4207	2.5125	0.778

Table 5.7: Ranked importance for pre-selected reasons for getting a cell phone compared between on-campus, off-campus and out-of-town students Source: based on questionnaire data					
		On-campus	**Off-campus**	**Out-of-town**	
Selected Reasons	**N**	**mean rank**	**mean rank**	**mean rank**	**Sig.**
To replace the home phone / answering machine	**595**	**0.9363**	**1.7594**	**0.9130**	**<0.001**
Your family member purchased for you	**591**	**1.8826**	**1.3969**	**1.3043**	**0.001**
Includes free long distance plan	**603**	**2.7052**	**2.9817**	**2.0435**	**0.004**
To keep in touch with your spouse / significant other	**591**	**2.3133**	**2.5580**	**3.0455**	**0.029**
To keep in touch with friends	600	2.9522	3.0338	2.4348	0.057
Because cell phones are convenient	600	2.9084	2.8834	2.4545	0.075
To keep in touch with family members	597	3.4378	3.4537	3.0000	0.080
For emergency purposes	602	3.5259	3.4128	3.7391	0.116
Because cell phone are trendy and fashionable	602	0.7500	0.6319	0.6522	0.117
For fun / entertainment	596	1.8434	1.8235	1.3478	0.223
The service is affordable	599	2.9841	2.8519	2.6957	0.242
For paging purposes	591	0.7854	0.7321	1.0000	0.615
Recommended by someone	593	1.0484	0.9595	1.0435	0.664
For use of text message system	599	0.9600	0.9415	1.1739	0.672
For work	592	1.0120	1.0000	0.8636	0.717

Table 5.8: Ranked importance for pre-selected reasons for getting a cell phone compared between age groups Source: based on questionnaire data					
		18-19 year olds	**20-21 year olds**	**23-25 year olds**	
Selected Reasons	**N**	**Mean rank**	**Mean rank**	**Mean rank**	**Sig.**
Your family member purchased for you	**591**	**1.9837**	**1.5616**	**1.0696**	**< 0.001**
To replace the home phone / nswering Machine	**595**	**1.0585**	**1.4897**	**1.6174**	**0.001**
To keep in touch with family members	**597**	**3.4545**	**3.4897**	**3.2373**	**0.004**
Because cell phone are trendy and Fashionable	**602**	**0.8148**	**0.6475**	**0.5678**	**0.041**
The service is affordable	599	2.9947	2.9147	2.7119	0.071
Because cell phones are convenient	600	2.9681	2.8915	2.7009	0.118
For fun / entertainment	596	1.9355	1.7959	1.6552	0.174
For emergency purposes	602	3.5479	3.4628	3.3814	0.213
For use of text message system	599	1.0794	0.8737	0.9744	0.232
To keep in touch with friends	600	3.0532	2.9558	2.8898	0.238
Recommended by someone	593	1.0757	0.9966	0.8879	0.271
For paging purposes	591	0.8370	0.7079	0.7931	0.394
To keep in touch with your spouse / significant other	591	2.3904	2.4724	2.5965	0.562
For work	592	1.0486	0.9830	0.9646	0.576
Includes free long distance plan	603	2.7778	2.8480	2.8559	0.831

Table 5.9: Ranked importance for pre-selected reasons for getting a cell phone compared between white and non-white students Source: based on questionnaire data				
		White	**Non-white**	
Selected Reasons	**N**	**Mean rank**	**Mean rank**	**Sig.**
Because cell phone are trendy and fashionable	**602**	**.6288**	**1.0366**	**< 0.001**
Includes free long distance plan	**603**	**2.7692**	**3.1928**	**0.002**
Your family member purchased for you	591	1.6419	1.3125	0.074
Because cell phones are convenient	600	2.8497	3.0617	0.083
To keep in touch with friends	600	2.9439	3.1566	0.098
For paging purposes	591	0.7368	0.9487	0.101
To replace the home phone / answering machine	595	1.3437	1.6000	0.116
To keep in touch with family members	597	3.4172	3.5000	0.132
The service is affordable	599	2.8837	3.0000	0.187
For use of text message system	599	0.9210	1.2000	0.214
For emergency purposes	602	3.4547	3.5904	0.232
For work	592	0.9668	1.2125	0.252
Recommended by someone	593	0.9786	1.1375	0.540
For fun / entertainment	596	1.8023	1.8750	0.684
To keep in touch with your spouse / significant other	591	2.4597	2.5366	0.722

Table 5.10: Ranked importance for pre-selected reasons for getting a cell phone compared between students' length of cell-phone ownership Source: based on questionnaire data					
		Less than a year	**1-3 years**	**3 years or more**	
Selected Reasons	**N**	**mean rank**	**mean rank**	**Mean rank**	**Sig.**
Because cell phones are convenient	**600**	**2.6000**	**2.9033**	**3.0591**	**< 0.001**
For emergency purposes	**602**	**3.3041**	**3.4684**	**3.6162**	**0.001**
To keep in touch with family members	**597**	**3.2245**	**3.4494**	**3.5628**	**0.002**
For fun / entertainment	**596**	**1.6939**	**1.7105**	**2.0546**	**0.016**
For use of text message system	599	0.8851	0.8652	1.1522	0.057
For paging purposes	591	0.5500	0.7556	0.9405	0.075
Your family member purchased for you	591	1.4861	1.5133	1.8043	0.084
For work	592	0.8392	0.9737	1.1639	0.096
To keep in touch with your spouse / significant other	591	2.3681	2.4151	2.6319	0.182
To keep in touch with friends	600	2.9189	2.9176	3.0973	0.249
Recommended by someone	593	1.0966	0.9737	0.9615	0.386
The service is affordable	599	2.9726	2.8993	2.8432	0.461
To replace the home phone / answering machine	595	1.3958	1.3233	1.4432	0.645
Because cell phone are trendy and fashionable	602	0.6351	0.6679	0.7473	0.767
Includes free long distance plan	603	2.7838	2.8141	2.8817	0.792

Emergency connections

Security blanket on the road

Not surprisingly, “emergency purposes” was ranked the most important reason for acquiring a cell phone among my questionnaire sample group (Table 5.4). Cell phones were initially considered to be a novelty item for doctors and business executives. Twenty years later, they are an essential communication tool in professional settings but they have also attained a reputation that they are particularly useful, if not essential, in the times of crisis. Murray (2001) claims that “by the late 1980s, newspapers were reporting scores of unhappy incidents in which cell phones saved the day” and “the cell phone industry gained tremendously from misfortune” such as “heart attacks, hurricanes, assaults, auto accidents” (Murray 2001, 212). At the time I conducted my surveys and interviews, a series of national crisis such as the terrorist acts of September 11, 2001, and the high school shootings in Columbine, Colorado in 1997 were still in the nation’s recent memory. In addition, in the fall of 2002, the coverage of the random sniper-style shootings in the Washington D.C. area was filling the local, regional, and national news (Baltimoresun.com Sniper shooting coverage). In association with these events, multiple newspaper articles described how cell phones took on stronger connotations of “security” measures for contacting family members, friends, and rescuing agents (Copsey 2001; Richards 2001). As the quote of a female student from Boston University suggests stating “my cellular phone definitely became more important to me after Sept.11,” the attacks and other “terror ”events were especially implicated in solidifying the notion of “necessary safety item” and also contributing to the overall increase in cell phone sales (Alloway and Gilbert 1998; Karlin-Resnick 2001; Lordy 2002). Thus, I initially speculated that these episodes of national crisis had great influence on the popularity of cell phones and I intentionally explored the notion of “security” issues in the interview sessions.

As in the questionnaire responses, the majority of interviewees strongly emphasized the “emergency purposes” as one of the most important reasons for initially getting a cell phone. However, as I explored the notion of “emergency purposes”, recent national crises were not clearly articulated by a majority of the interviewees as significant factors among the things that constitute “emergency” and that propelled them to own cell phones. For instance, Nick’s perception of a cell phone is a “safety thing” as shown in the interview dialogue below:

Nick, 23, senior, Penn State	
Interviewer:	Ok, what are some of the, then, positive perceptions, you think it's a fashion trend or
Nick:	Probably not fashion as much, I don't have a flashy phone with color and cameras and all that um, I think it's more, well, when I'm not around campus more of a safety thing, so safety convenience I would say would be major ( )
Interviewer:	Can you elaborate on the safety, what are you, for example
Nick:	Well if I'm walking somewhere and I trip and break a leg, I can call for help [laugh]
Interviewer:	Ok [laughingly], right
Nick:	Or help, I'm on the road and if I get into an accident
Interviewer:	Right, without cell phones you will be ( )
Nick:	Right without a phone I have to wait for someone to come along or
Interviewer:	Ok, any others, like things that might or had happened or?
Nick:	Um, I have been into an accident where I called for a help but
Interviewer:	With the cell phone?
Nick:	With my phone
Interviewer:	So you kinda appreciate that
Nick:	Yeah it wasn't, wasn't an emergency call but I called you know the police and what other people um [thinking] yeah just um it's just ah comforting you know you can get always get to someone no matter where you are

As the above statements suggest, cell phones are useful in the context of "unforeseeable" accidents such as "breaking a leg." The "emergencies" can constitute multiple non-life-threatening scenarios, that is, reflect more of a convenience factor that is associated with cell phones. It is convenient because if Nick breaks his leg, he can call for help right away instead of waiting for someone to walk by or trying to find a pay phone somewhere to call for help. He also used his cell phone when he needed to notify the authorities. It is "comforting" for him to have that convenience to be able to call help "no matter where he is."

Other respondents also spoke of "emergencies" that may affect students in their everyday contexts. These consisted real scenarios from coordinating their rides home from / to school, to being locked out of their houses, to forgetting something at the house and arranging for it to be delivered to them, to asking roommates to run errands, to being reachable because a family member is in a hospital. In many cases then, the fourth overall ranked "because it is convenient" overlaps with "emergency purpose" since "convenience" and "emergency purposes" are very broad terms that can be applied to uses in many circumstances. In fact, there is a fine line between the two as Olivia illustrates in her following comments:

Olivia, senior, 20, Penn State	
Olivia:	Um but I think, I think the majority of the people will have'em just because they are convenient and like when I know like you're picking the kids and stuff, like try to find friends trying to do stuff like that, it's a safety feature, stuff like that
Interviewer:	What do you mean by safety features?
Olivia:	I like when I go out with my friends like one of us make sure we have a cell phone that way something happens we can call emergency, call each other, if we get separated, we can find each other, like just I, like that, around here [State College] especially

It is particularly useful in a big campus such as Penn State to be able to contact one's friends and the campus police. Students must walk a distance or take a campus bus that loops around from their residences, parking lots, and various buildings to get to the place where classes and activities are held as well as where wired phones (office phones, pay phones, free campus phones, safety phones) are located. Several interviewees mentioned that cell phones are convenient in locating friends when they are separated or meeting up in crowded places such as bars and football games.

Among various possible "emergency" scenarios, one that was almost always brought up in the interview sessions was emergencies on the road. In fact, automobile travel was one of the main themes that was recurrent throughout my research. In the United States, from the beginning, cell phones had a strong association with automobile travel—as car phones used in the case of road emergencies. Into the early 1990s, "the term 'car phone' was still used as a catch-all phrase" (Murray 2001, 214). This automobility and the relationship with cell phones is not unique to the United States. For instance, Roos comments on the fact in Finland in 1991, 75% of overall cell-phone users had car phones and 25% portable phones that could be carried by individuals (Roos 1993, 452). For Finns, car phones served as a basic aspect of security—"being able to get help quickly" (Roos 1993, 454). In recognizing usefulness in the context of automobile travel, emergencies on the road was a reason that was expressed by some of the international students, like Mary, who are currently non-cell-phone owners, but that are considering getting a cell phone in the United States:

Mary, 23, sophomore, Shippensburg, International student	
Mary:	I think you should own a cell phone if you have like some business contacts like, some business going on or if you own a car
Interviewer:	Ok
Mary:	That's one thing I say, I'm like ok, I'm not really worried about cell phones now but I think if you own a car you, you definitely need a cell phone
Interviewer:	You own a car, car or
Mary:	Nope, not yet so

As mentioned in Chapter 4, compared to Penn State, Shippensburg University can be considered as a commuting campus. Many students come from a driving distance and their commuting can range from everyday, during weekends, to just a few times a semester. On the other hand, many Penn State students live in the borough, on- and off-campus residences and walk or utilize the CATA bus to go to school. Some student-oriented apartments offer complimentary bus service to and from university and their residences. Also, many Penn State students use Greyhound bus service to visit their "home" during the holidays and semester breaks.[10] Because of commuting practices and the strong association between cell phones and cars, this may be a significant factor in Shippensburg students ranking emergency purposes higher than Penn State students (Table 5.6). During everyday commuting by automobile, cell phones can give a sense of security for many students, as suggested by Sophie:

Sophie, 21, senior, Shippensburg	
Sophie:	Once you start driving, maybe doing commutes like I do, then I think, it's not necessary I guess but, it's more calming state of mind knowing that [if] something did happen

Similarly, when I asked Gabrielle whether owning a cell phone transformed her daily activities, she stated the following:

Gabrielle, 24, taking classes for her teaching certificate, Shippensburg	
Gabrielle:	It hasn't really change but I do, you know it does, it's kinda like a, I almost want to compare it to *security blanket* cause you're somewhere, and you feel better cause you know it's with you, because you feel like, if I get stuck by the side of the road, or if I realized I forgot something, I can always call and you know it would be [Edit]
Interviewer:	Right yeah, do you drive a lot around here or
Gabrielle:	Um not as, not as much as I did when I first moved out to this area of Pennsylvania and I was working as a reporter 'cause I had like a half hour commute and that was another reason to, you know a half hour can be, (in) kinda of an old beat up car, you know you never know, when you're gonna need some help by the side of the road
Interviewer:	So you do think of that as a security ( )
Gabrielle:	Yeah
Interviewer:	So you keep it on, or bring it with you
Gabrielle:	Yeah I tried to always bring it with me when I go somewhere especially if going somewhere, you know outside, you know if I was just going down to the grocery store, I'm not gonna be too concerned about grabbing it but if, I'm going anywhere like maybe out of 10 or 20 mile radius, I make sure to grab it, just you never know

[10] There is also Greyhound bus service that stops once a day in Shippensburg. From my personal observation, the bus service is not used frequently by Shippensburg students compared to Penn State students. There are multiple bus services throughout the day that come to State College that connect to the surrounding region.

Like Gabrielle, other students pointed out that cell phones would give them security depending on the perceived condition and the age of their cars as well as road conditions and distance to be traveled. For instance, commuting was the major reason for Aidan to get a cell phone:

Aidan, 22, senior, Shippensburg	
Interviewer:	And do you have a cell phone
Aidan:	Yeah
Interviewer:	Yeah [chuckles] ok, how long have you had it
Aidan:	Um [thinking] just 3 years
Interviewer:	3 years, what were the reasons behind getting the cell phones
Aidan:	The first one was, cause a vehicle wasn't, terribly, um [thinking] uh, what's the word I'm looking for, reliable
Interviewer:	Ok
Aidan:	And I, I wanted to have one, 'cause I commuted, I went to Millersville **[**about 80 miles west of Shippensburg, near Lancaster**]** my first year
Interviewer:	Ok
Aidan:	And I commuted from home, so I drove 50 miles a day
Interviewer:	Wow ok
Aidan:	So I wanted to have in case, and then I, AAA [American Automobile Association] coverage to tow me back the the whole way home if I need it
Interviewer:	Right
Aidan:	So if the cell phone, AAA, I'd be covered ( )

Contrary to Aidan's concerns for possible car problems, a female Shippensburg student who commuted to campus three times a week argued that she doesn't need cell phones for car emergencies because she has a reliable car—a relatively new Toyota Corolla—and the commute was on average only twenty minutes each way. Other students also mentioned that during the winter time, the bad road conditions caused by ice and snow storms raise concerns on the road. In addition, some students, like Rachel, commented on the experience of driving on the Interstate 81:

Rachel, graduate student, 23, Shippensburg	
Rachel:	Yes and the reason why I have it, (..) is because or at the time, I had a really, *really*, like bad car, like I was having a lot of problems
Interviewer:	[Chuckles] right
Rachel:	And just to be safe on the road
Interviewer:	Mm-hmm
Rachel:	Um, it ( ) definitely beneficial for me to um use it in case for emergency
Interviewer:	Ok
Rachel:	So, in case my car broke down and whatever and also at the time I was traveling back and forth for my internship which was, about an hour and ( ) minutes away from here
Interviewer:	Ok
Rachel:	So traveling I-81 [Interstate 81] like you know is very dangerous [laughingly]
Interviewer	[Laughingly] yes I do

I-81 is the major highway connecting Shippensburg to the outer region and is heavily traveled especially by both cars and tractor trailers. There is not much lighting along the highway and there is a presence of "roadside call boxes" but they are placed far apart. Sometimes one must walk considerable distance to get to those phones. In fact, it has become even harder to locate them since over a hundred boxes were removed on the Interstate 81 in Pennsylvania in 2004 because of the recent proliferation of cell phones and cutting maintenance expenses (Copeland 2005). Thus, a cell phone becomes a security blanket as students negotiate the general and unforeseeable experiences of traveling on the road.

Parenting tool

The association of cell phones with automobile travel was also evident in the comments made by interviewees for initially getting their phones. Some students mentioned actual incidents that prompted them to get their cell phones such as getting into or witnessing accidents. In addition, the encouragement of recommendation of parents also seemed to be an important factor. Maya stated:

Maya, 19, sophomore, Shippensburg	
Interviewer:	Ok, um, do you have a cell phone
Maya:	Yes!
Interviewer:	Yes, ok, how long have you had it or when did you get it
Maya:	I was 16, it was on my 16th birthday
Interviewer:	Ah ok
Maya:	Well I've gotten in a really bad accident, my um sophomore year high school
Interviewer:	Oh
Maya:	So ever since then, we didn't have a cell phone to call
Interviewer:	Right
Maya:	So ever since then, they're like you're getting a cell phone, you know what I mean, so I've had one, I had ( ) cell phones [chuckles] [Edit]
Maya:	I didn't really ask for one, they were just like, here, and I, you know, I would've been, eventually I wouldn't gotten one on my own but they're just like you know we want you to have it so

Maya emphasizes that it was her parents that wanted her to have a cell phone, especially after a "bad accident." In the United States, it has become almost a rite of passage for many families to equip young drivers with a cell phone when they acquire their driving licenses—usually about when one turns sixteen or seventeen. This is indicative from when Faith and Helen acquired their cell phones:

Helen, 19, sophomore, Shippensburg	
Helen:	It was it was, when we bought it was, I was you know, not quite 17, so it was awhile ago and it was mostly just because I got my driver's license and you know if I, that way like if I'm out with my friends they can call home and be like, I'm gonna be late

Faith, 19, sophomore, Shippensburg	
Interviewer:	How long have you had it?
Faith:	Um, I had it for [thinking] maybe 2 years
Interviewer:	2 years
Faith:	No more than that. Right when I started driving, that's when I got it
Interviewer:	Oh, ok, so that's when you got your license as well?
Faith:	Mm-hmm, yeah
Interviewer:	So were you back home or were you here?
Faith:	I was back home
Interviewer:	Back home
Faith:	Yeah, I live ah up by Scranton [located in Northeastern Pennsylvania; see Figure 4.1]
Interviewer:	Ok
Faith:	So, yeah so
Interviewer:	Wow, ok
Faith:	Yeah, so it's kinda far but um
Interviewer:	Wow it's very far
Faith:	Yeah, so three and a half hours, I got mainly, I mainly originally got it for emergency when I drove and if anything happened, I would have like be able to call, 'cause we live in the middle of nowhere [starts laughing]

Just like Helen and Faith, Emily acquired cell phones because of safety precautions when she started driving. Her cell phone was purchased by her father:

Emily, 20, sophomore, Shippensburg	
Interviewer:	How long have you had it?
Emily:	Urr, about 3 years
Interviewer:	3 years, so when you got here, did you get it or?
Emily:	I got it a little before in high school
Interviewer:	Ok, what were the reasons for getting it or how did you
Emily:	'Cause I was driving, so my dad got it for me
Interviewer:	Ok
Emily:	Yeah
Interviewer:	Was it pretty popular by then or was it something that your dad considered
Emily:	It was pretty popular but like he thought, he didn't buy it for popularity reasons, he bought it for um, safety precautions
Interviewer:	Right ok, um, and that's when you got your license kind a thing or
Emily:	Yeah
Interviewer:	Ok and then you just kept it since?

Emily: What?
Interviewer: You just kept it
Emily: Yeah

Other students also mentioned that it was mostly or partly "mom's" and / or "dad's" idea for them to own cell phones.

There were significant differences in how the various age groups ranked "your family member purchased for you" as an important reason for getting a cell phone (Table 5.8). For these differences, the reason was ranked highest by youngest age group (18-19 year olds), while the older age group (23-25) ranked it the lowest. The non-parametric Kruskal-Wallis H test was significant at $p < 0.001$. It is also noteworthy to mention that there was a weak significance detected ($p = 0.058$) between male and female students (Table 5.5). Female students ranked the "your family member purchased for you" slightly higher than male students.

These patterns that teenage and female students tended to rank "family purchased for you" higher than their counterparts supports the thesis that cell-phone ownership relates to parenting concerns over young people's mobility. As discussed in chapter 2, young people's mobility has been theorized by scholars such as Valentine(1996a, 1996b, 1997a, 1997b), Katz (1993, 1998), and Vanderbeck and Johnson (2000). They point out the spatial range and experiences of young people's mobility—especially in public spaces—is related to young people's social identities such as age, gender, class, and social contexts. One of the big influences in determining young people's mobility is parenting practices. Parents often determine their children's competence level of negotiating "danger" in public space and their perceptions often lead to restriction son their children's mobility. Valentine and Katz argue that that parenting concerns in public spaces varies with both gender and age, where generally, younger and / or female children are seen to need more "protection" and restriction in public spaces.

In the United States, one of the public places where young people need protection is on the road. With a general lack of public transportation outside of major cities, automobile travel is part of American daily life. This is underscored by the fact that ninety percent of the population over age 16 (93% of men and 87% of women) had driving licenses in 2001(2003 U.S. Department of Transportation figure quoted in Hanson 2004, 19). In a society that relies on automobile travel, cell phones are used as a parenting tool, to keep their children safe, especially as they enter late teens when their mobility increases as they and their friends start driving. Grace's comments illustrate how her mothers' concern over her child—who just started driving—translates into utilizing cell phones while traveling:

Grace, 21, senior, Penn State	
Grace:	And um, and now she [Grace's mother] makes my, my younger sister who (lives at), 16, and she just got her driver's license
Interviewer:	Oh yeah
Grace:	So every time she goes anywhere, she has to take this trakphone[11] [laugh] so
Interviewer:	Is it just when she's driving or does she just have to carry it around
Grace:	Oh no, usually just when she's driving

General safety concerns for their children, whether being on the road or just out and about, contribute to parents and family members' desire to provide young people with cell phones. The theme of "protection" associated with cell phones was also pointed out by Rakow and Navarro(1993) in their cell phone study that focused on suburban women. At the time of their article, there were less than one tenth the number of cell-phone subscribers compared with mid-2000 (about 13million subscribers versus about 194 million subscribers in 2005) (CTIA.org website a). They argued that women in their study utilized cell phones to manage their responsibilities for home and children. But another gendered dimension pointed out by the authors was the fact that some women's "husbands believe the women are in special need of protection" and husbands often provide their wives with cell phones (Rakow and Navarro 1993, 144). This gendered aspect of cell-phone ownership seems to persist a decade later and also extends into cell-phone ownership of younger cohorts, as female students tended to rank the importance of "emergency purposes" and "family member purchased for you" as reasons for acquiring cell phones higher than male students.

Moreover, the automobile is a gendered technology (Domosh and Seager 2001), and cell-phone uses associated with automobiles also is gendered. For instance, cell-phone advisements can tap into and perpetuate the idea of "vulnerable" female drivers as seen in the portrayal of young female in a dress calling for roadside assistance with a concerned expression on her face (see Figures 5.3). The underlying assumption of such images is that female drivers need more help than male drivers because of a stereotypical suggestion that they lack the requisite knowledge and skill to fix their cars and that they are prone to more danger when they are stranded on the road. Yet, I am not suggesting that one should jump to the conclusion that cell phones are mostly an emergency tool and used solely by female drivers. The other two examples of cell-phone advertisements in figure 5.3 illustrate that roadside assistance is needed by both female and male drivers and moreover, not just for young drivers. As Samuel states below,

[11] Trackphones refers to a type of pre-paid phones that do not need any annual contract or monthly payment. Pre-paid phones are discussed later in this chapter.

parents can still be concerned about their children who are not female or are no longer a teenage because they drive:

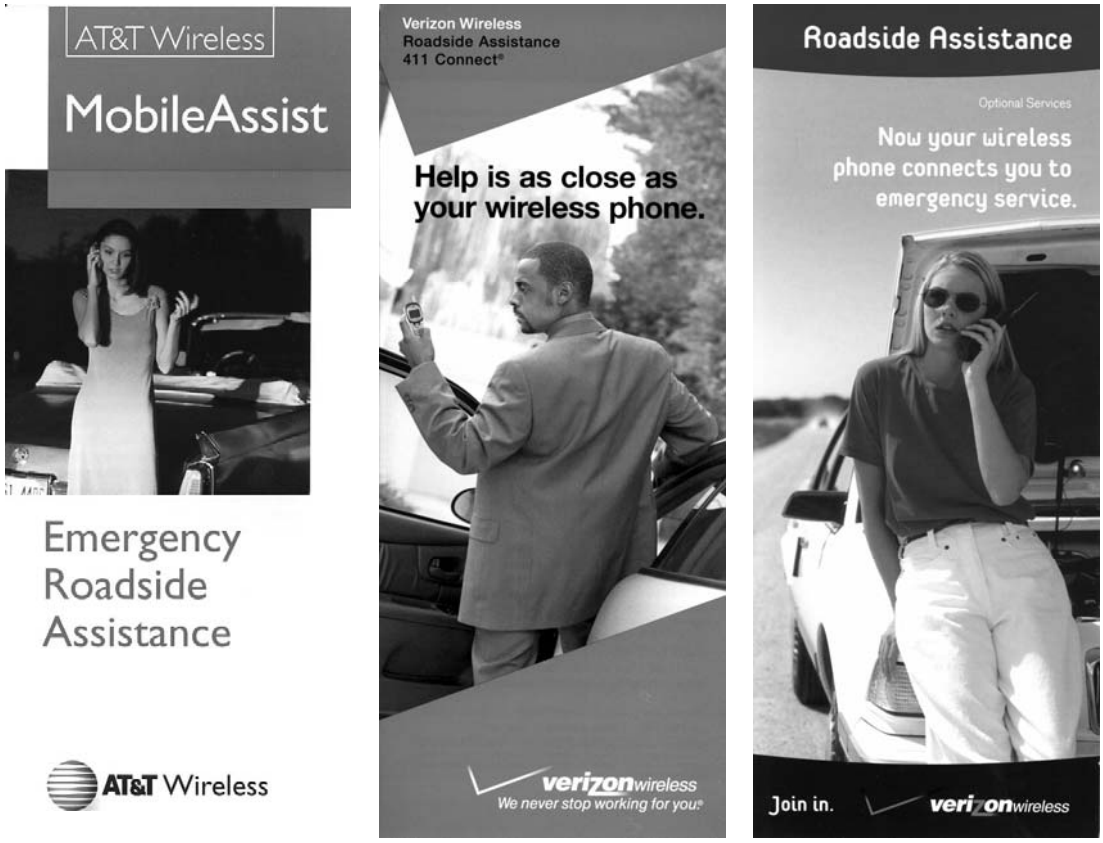
Samuel, 22, senior, Penn State	
Interviewer:	I see, I see, ok [chuckle], do they [your parents] say that you should have one or
Samuel:	No, they don't, well actually
Interviewer:	[Laugh]
Samuel:	I think my mom wants me to have one, she always makes me take hers with me when I drive somewhere far, or somewhere that I don't know where to go, um, or like if I go out, last New Year's eve
Interviewer:	Mm-hmm
Samuel:	When I was going out, she said that you have take it, because, in her mind, there's too many people driving after they've been partying
Interviewer:	That's true
Samuel:	So she's like, you have, she ( ), I didn't want to but she made me take it

What is interesting about Samuel's case is that he does not own his own cell phone. But his mother has a common perception of what it is like to be driving during New Year's Eve—that is, surrounded by people who may be drinking, under the influence, and / or acting in a rowdy manner. Therefore, she persuaded her son to take her cell phone, even though Samuel did not want to do so. Cell phones are seen as a safety blanket and a parenting tool for both female and male students. The safety concern or "for emergency purposes" was ranked as the highest reason by both female and male students for acquiring a cell phone. And, as the interview transcripts show, the association between cell phones and driving safely was brought up by both male and female students.

But there is also evidence that supports the gendered dimensions of university students' cell phone ownership. Multiple studies in different national contexts point to the fact that cell-phone ownership is gendered because cell phone users have long been identified with middle-aged male workers (Roos 1993). On the contrary, among university students in the age group of young adults (represented by my questionnaire and FACAC survey samples), female students have higher ownership levels than male students. This may be due to the fact that cell phones have a strong connotation of security, and female students, whether due to their own perception or their parents', put disproportionate emphasis on this reason for ownership (Table 5.5). Roos (1993) pointed out there are three general uses for cell phones—work, emergencies, and social use. Overall my sample group ranked emergencies and social uses far more important than for work. Yet, although it was not a highly ranked reason, when compared between male and female students, male students ranked practical and work-related reasons such as "to replace the home phone / answering machine," "for work," and "for paging purposes" higher (Table 5.5). The

statistical analyses of questionnaire response point to the overall disparities of emphasis on the reasons for having a cell phone, especially for "emergency purposes." Such disparities may be due to male students showing their "masculinity" in which they not want to claim or admit the connotation of having to be "protected"—but instead they tend to emphasize the masculine images of cell-phone uses associated with "workers."

Figure 5.3: Three examples of drivers in cell-phone advertisements (2001)



In addition, the association of cell phones as "car phones"—as protection for young and / or female drivers—has also been evident in how some students, such as Helen, leave their cell phones inside their cars:

Helen, 19, sophomore, Shippensburg	
Interviewer:	Ok, ok do you carry it [cell phone] around everywhere?
Helen:	I pretty much just leave it in my car
Interviewer:	So do you turn it off or you just don't bring
Helen:	I just, yeah, I leave it in a car

Interviewer:	Ok
Helen:	Like so that if I get into an accident or if my car breaks down, I have it there, so I can call, if there's something going on at home like last week, my grandfather was in the hospital then I carried my cell phone with me
Interviewer:	Right yeah
Helen:	In case my mom needed to get in touch with me right away

Helen's case shows how she considers her cell phone as primarily for security purposes in the context of driving. What is also interesting about her statement is that the "mobility" of the cell-phones can change due to their cell phones' portability. A circumstance such as family member's medical emergency altered how, where, and when Helen carried the device. For her, when her grandfather became ill, it no longer was a security measure but rather an important communication tool between her and her mom that provide the possibility of immediate contact. Thus, examinations of cell-phone ownership and uses intersect not only with discussions on automobility and parenting concerns, but also with conceptualization on experiences associated with personal mobility.

Cell phones can easily become more than car phones by being carried around by individuals beyond automobile travel. For instance, Isabelle also relies on being able to contact her dad while she is walking:

Isabelle, 18, freshman, Penn State	
Isabelle:	I used to um, I used to work here in the HUB [student union building] at night a lot and um when I've be walking home, I talk, my dad call me because he wanted to make sure that I got home, into my room ok
Interviewer:	Right sure yeah
Isabelle:	So I would just talk like the whole entire time ( )
Interviewer:	Oh, do you feel safer
Isabelle:	Yeah, I feel safer when I have, like, him on the other end, 'cause it's like he is my dad you know

Isabelle's statement on how she relies on cell phones to provide a sense of security illustrates the gendered experiences of walking in pubic spaces at night (see Valentine 1989; 1992 for examinations of women's fear attached to public spaces). At the same time, cell phones provide Isabelle's father with a means to help Isabelle negotiate the experience of walking home at night from the student union building [HUB]. This is also an example of the gendered aspects of cell-phone ownership since "emergency purposes" may mean more than just for dealing with unforeseeable events on the road for female students. Some female students were not afraid of walking at night or concerned about general safety of being on campus but there were several students that gave examples of using cell phones to protect themselves "just in case" while in

public spaces. On the other hand, the male interviewees did not emphasize the emergencies outside of driving contexts. The conceptualization of young people's cell-phone ownership as well as mobility therefore, involves a discussion of the relationship among family members, especially between parents and students, and their experiences in, and perceptions of, public spaces.

Family connections

Family-based cell-phone ownership

Cell phones can be considered to be more "personal" than conventional wired phones since each cell phone has a different phone number and is often assigned to individual family members. Yet, cell phones can still be considered as "domestic" technology since they are purchased, owned, shared, and negotiated by family members in a household. Cell phones mediate family communication—running errands, reporting one's whereabouts, relaying important news, or just chatting. In fact, university students' ownership has various dimensions of "family connections." One of these connections is that the selection process of acquiring cell phones is often set in a domestic arena, since decisions are often made by students' parents. Consequently, many university students have already acquired their own, or occasionally used their parents', cell phones prior to entering university, especially for the purpose of an emergency on the road.

Entering college is about a new life stage as many university students are away from "home"—their families and friends—for the first time in their lives. As Figures 4.1 and 4.2 illustrate, most of my respondents come from within Pennsylvania, a minority from surrounding states, and relatively few from around the country and the world. Another aspect of "family connection" associated with cell-phone ownership is that students use phones to satisfy vital communication needs of getting in touch with their family and friends while attending university. This is reflected in the top-ranked reasons for getting a cell phone as indicated in Table 5.4. For example, the second, third, and seventh overall-ranked reasons for getting a cell phone are to keep in touch with family members, friends, and significant others. In order to facilitate this, many students rely on the affordability and availability of cell-phone infrastructure as suggested by the fourth ranked "the service is affordable" and the eighth ranked "includes free long distance plan."

A cell phone is a convenient way for university students to contact their family and friends who may be located long-distances apart. Cell-phone companies offer unlimited free long

distance minutes during certain hours (e.g. during late evening hours and weekends). Penn State's 2003 FACAC found that among the 88% of university students that were cell-phone owners, 71% used them primarily for long-distance calls and 23% for emergencies only or only infrequently (FACAC website 2003). These statistics indicate that cell phones are more than just a security blanket but constitute a common method of social communication. Jason Safide, reporting for the George Washington University, also states that one of the reasons for the students on his campus to own cell phones is because of the inclusion of free long distance calls as part of most cell-phone plans. He describes the cost-effective aspects of cell-phone service that make it appealing for the students.

> Even if a student is placing long distance calls to one person, such as a girlfriend or boyfriend in another state, a cell phone could dramatically reduce the price of an expensive necessity to keep in touch. Affordable long distance is a feature offered by many cell phone service providers. Digital technology has dramatically reduced the cost of placing a call anywhere in the United States, making long distance charges virtually nonexistent on most plans. The ease of keeping in touch with mom, dad, and others near and far also makes portable phones an attractive option (Safdie 2001).

The fact that the cost difference between the long and the local distance calls is erased assists students with keeping in touch with friends and families located anywhere in the nation.

One of the major factors that facilitate family communication through cell phones has been the marketing of "family"-based cell-phone plans. Cell-phone companies offers what is termed "family-shared" cell-phone plans in which a monthly bill statement is prepared that reflects the use and cost of both of the primary phone and any additional lines. When you subscribe to such plans, the customers are not individual family members but a "family unit" comprised of several individuals. These plans are, as an advertisement of family-shared cell-phone plan offered by Verizon wireless reads, "affordable phone options for the entire family" (Figure 5.4). It costs much less to subscribe to a family plan than subscribing to individual cell-phone plans per family members. For example, the Cingular advertisement emphasizes that it only costs $9.99 per additional line (Figure 5.5).

My interviewees mentioned how they are part of these family-shared plans and that they are economically beneficial for the entire family. These plans offer different features such as free long distance, free roaming charges, and free calls between subscribers of a particular company (e.g. among the Cingular customers) (Figure 5.4 and 5.5). Free long-distance plans also could be a reason for a family member, especially parents, to introduce cell phones into a household for contacting their children who have started to drive or have moved away to college. Family-plan

advertisements have been emphasizing a parent's concern of keeping in touch with their children. One of the latest (January 2006) slogan used in a television ad for the Cingular's "family talk" plan highlights how cell phones are an essential parenting tool. This advertisement shows a girl who appears to be in her late teenage years being followed by her protective father wherever she goes. Then, she holds up a cell phone and says, "dad, you know how you'd like to be everywhere I am? Now you can be."

Figure 5.4: An example of family shared-plan advertisement 1 (2002)

Source: collected from a retailer

Figure 5.5: An example of family shared-plan advertisement 2

Source: *The Washington Post* July11, 2004, A10

Cell phones have been a popular gift during the December holidays and birthdays. They are also an "accessory" that is purchased related to life stages such as entering college, or, even just going back to school after the semester break. A 2002 Verizon advertisement, for example, states that the cell phone is "the ultimate back-to-school accessory" (Figure 5.4) (Alloway and Gilbert 1998; Karlin-Resnick 2001; Safdie 2001; Lynott 2002). The long-distance service provided by cell phones is also useful to contact other extended family members and close acquaintances that household members keep in touch with on a regular basis that live in places outside of the local-calling area. Moreover, within the "family," these plans permit free calls

between the phones under the plan. In Olivia's case, she, her sister, and her father are part of the family plan:

Olivia, senior, 20, Penn State	
Interviewer:	Do you, were there particular things that you looked for when your, your father [looked for a plan]
Olivia:	Uh, we looked for the plan, long-distance plan, I live in the country[side], um in Maryland, so when we first got the plan it had to be one that went to a big distance because we live in a "country," so we don't really have a lot of towers, like my cell phone network is inside his house
Interviewer:	Oh ok
Olivia:	It doesn't have any towers
Interviewer:	Right
Olivia:	But um, we looked for one like that and then I knew I was coming to Penn State, so I looked for one that will go into Pennsylvania
Interviewer:	Ok
Olivia:	So that was our original thing, now it's big um, we also looked for like a (extra) minute like if I call his phone, we don't get charged for them because it's the same plan, like family share so
Interviewer:	Family-share plan, so is that you and your father and
Olivia:	It's me and my dad and my sister
Interviewer:	3 of you
Olivia:	Yeah
Interviewer:	Ok, ok, that's that work, do you share the minutes or how does it work?
Olivia:	Um, you don't really share the minutes but if I call my sister's phone and I only, if if you have to keep the conversation small, like we talk for 20 minutes they're not gonna give us 20 free minutes, but if we talked, if I call her for like 3 minutes and say where are you they won't subtract the minutes or they won't like deduct you for those minutes
Interviewer:	So that's convenient
Olivia:	Yeah, it's convenient right
Interviewer:	For you sister at back home?
Olivia:	Yeah, she is still in high school
Interviewer:	Ok, so you call her with her cell phone?
Olivia:	Once in a while yeah
Interviewer:	At night time?
Olivia:	Yeah, ( ) it's just to say hi or whatever

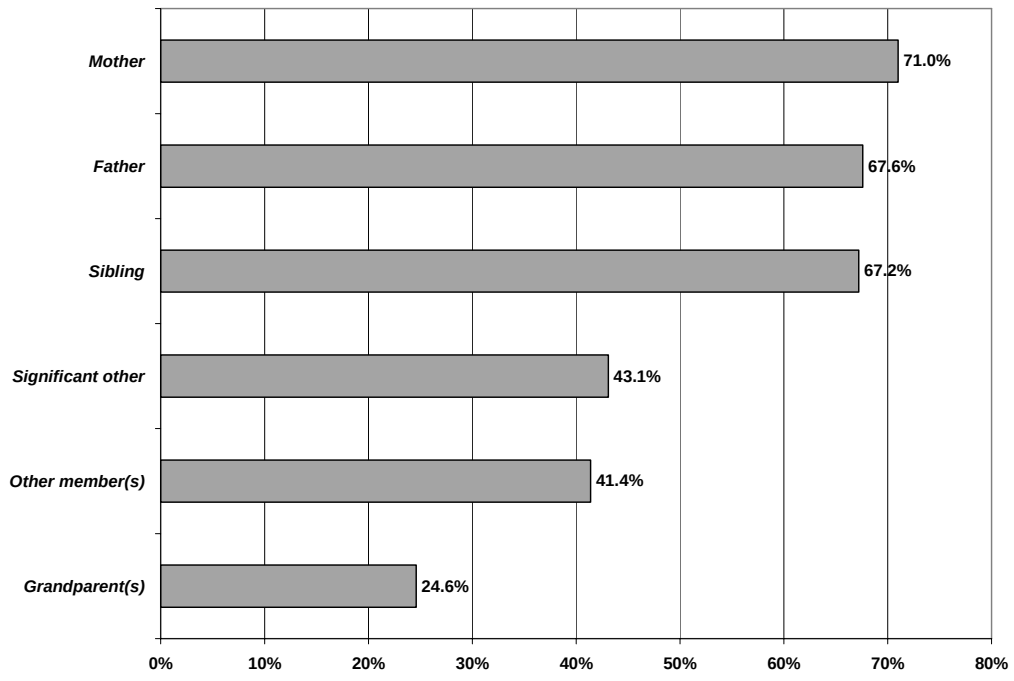
Since Olivia was moving to Penn State from her home in Maryland, inclusion of "free long distance," and being able to call for free between phones on the plan allows Olivia's family members to communicate with one another.

One of the indications of how cell phones are a domestic technology can be explored by examining who owns a cell phone in a student's family. In the questionnaire, I asked all the respondents, whether they are owners or non-owners, and, which family members own cell phones. Figure 5.6 shows the percentage of students that indicated whether each family member

owned a cell phone. My questionnaire did not take into consideration the fact that each student does not necessarily have both parents, siblings, grandparents, a significant other and / or other family members. However, it still does give an indication of the extent to which cell phone are owned by other family members. The majority of students' mothers (71.0 %), fathers (67.6 %), and siblings (67.2%) owned cell phones. The overall cell-phone ownership of mothers was higher than that of fathers.

Figure 5.6: Family member's cell-phone ownership

Source: based on questionnaire data (N = 732)



Furthermore, a series of crosstab / chi-square analyses shows that students' cell-phone ownership corresponds generally with family members' ownership. This can be seen as an indication of the family-based ownership that students are part of. For example, those students who have their mothers ($p < 0.001$), siblings ($p < 0.001$), significant others ($p < 0.001$), and other family members that own cell phones ($p < 0.001$), were also more likely be cell-phone owners. This trend can be seen from the fact that there were higher counts of students owning cell phone when mothers, siblings, significant others, and other family members also owned phones compared to statistically expected counts (Tables 5.11; 5.12; 5.13; 5.14). On the other hand, interestingly, fathers ($p = 0.113$) and grandparents ($p = 0.117$) were not statistically significant. It

is interesting that students' fathers' ownership is not significantly tied to students' ownership. One possible reason for this trend of mothers' ownership relating to student's ownership is that, as suggested by Rakow and Navarro's study (1993), mothers are more likely to use cell phones for parenting purposes. Mothers who have cell phones may subscribe to a family plan so as to include their children under their plan. Also, a few students mentioned the selective nature of who is part of the family plan. Some students stated that a father already has a cell phone through his work; therefore, he is separate from the family plan. Others stated that their parents are divorced and they are part of a cell-phone plan with one of the parents.

Table 5.11 Crosstabulation of mother ownership according to student ownership

Source: based on questionnaire data

N = 732		**Cell phone owner**	**Cell phone non-owner**
Mother owns a cell phone	Count (Expected count) % within students' ownership	466 (448.6) 78.1%	84 (101.4) 62.2%
Mother does not own a cell phone	Count (Expected count) % within students' ownership	131 (148.4) 21.9%	51 (33.6) 37.8%
Pearson Chi-square sig. ($p < 0.001$)			

Table 5.12: Crosstabulation of sibling ownership according to student ownership

Source: based on questionnaire data

N = 732		**Cell phone owner**	**Cell phone non-owner**
Sibling owns a cell phone	Count (Expected count) % within students' ownership	448 (425.0) 74.9%	73 (96.0) 54.1%
Sibling does not own a cell phone	Count (Expected count) % within students' ownership	150 (173.0) 25.1%	62 (39.0) 29.2%
Pearson Chi-square sig. ($p < 0.001$)			

Table 5.13: Crosstabulation of significant other ownership according to student ownership Source: based on questionnaire data			
N = 732		**Cell phone owner**	**Cell phone non-owner**
Significant other owns a cell phone	Count (Expected count) % within students' ownership	300 (272.4) 50.3%	34 (61.6) 25.2%
Significant other does not own a cell phone	Count (Expected count) % within students' ownership	297 (324.6) 49.7%	101 (73.4) 74.8%
Pearson Chi-square sig. ($p < 0.001$)			

Table 5.14: Crosstabulation of other family member(s) ownership according to student ownership Source: based on questionnaire data			
N = 732		**Cell phone owner**	**Cell phone non-owner**
Other family member(s) own a cell phone	Count (Expected count) % within students' ownership	355 (336.1) 59.4%	57 (75.9) 42.2%
Other family member(s) do not own a cell phone	Count (Expected count) % within students' ownership	243 (261.9) 40.6%	78 (59.1) 57.8%
Pearson Chi-square sig. ($p < 0.001$)			

It is also noteworthy to mention the patterns in how family members' cell-phone ownership varied according to some of the sub-groups within the sample. There was no statistical significance ($p < 0.05$) detected between the two campuses or by gender in terms of which family members owned cell phones. On the other hand, there were statistically significant differences detected between family members' cell-phone ownership according to age groups and racial / ethnic groups. Tables 5.15; 5.16; 5.17; 5.18; 5.19; 5.20 show the following tendencies:

- Younger (18-19 year olds) age group's mothers ($p = 0.002$) and fathers ($p = 0.001$) and grandparents ($p = 0.006$) tended to be cell-phone owners (Tables 5.15; 5.16; 5.17). Older age groups' (20-21 and 23-25 year olds) mothers, fathers, and grandparents had higher counts of non-cell-phone ownership than statistically expected.

- There were levels of statistical significance associated with non-white student's family members' ownership. Non-white students' mothers (p = 0.019), fathers (p = 0.010), and other family members (p = 0.230) tended not to be cell-phone owners (Tables 5.18; 5.19; 5.20). On the other hand, white students' mothers, fathers, and other family members had higher counts of cell-phone owners than statistically expected.

Table 5.15: Crosstabulation of mother ownership according to age groups

Source: based on questionnaire data

N = 732		**18-19 year olds**	**20-21 year olds**	**23-25 year olds**
Mother owns a cell phone	Count (Expected count) % within age group	185 (168.3) 82.6%	267 (271.2) 74.0%	98 (110.5) 66.7%
Mother does not own a cell phone	Count (Expected count) % within age group	39 (55.7) 17.4%	94 (89.8) 26.0%	49 (36.5) 33.3%
Pearson Chi-square sig. (p = 0.002)				

Table: 5.16: Crosstabulation father ownership according to age groups

Source: based on questionnaire data

N = 732		**18-19 year olds**	**20-21 year olds**	**23-25 year olds**
Father owns a cell phone	Count (Expected count) % within age group	179 (160.8) 79.6%	254 (258.1) 70.4%	91 (105.1) 61.9%
Father does not own a cell phone	Count (Expected count) % within age group	46 (64.2) 20.4%	107 (102.9) 29.6%	56 (41.9) 38.1%
Pearson Chi-square sig. (p = 0.001)				

Table 5.17: Crosstabulation grandparent(s) ownership according to age groups Source: based on questionnaire data				
N = 732		**18-19 year olds**	**20-21 year olds**	**23-25 year olds**
Grandparent(s) owns a cell phone	Count (Expected count) % within age group	73 (58.4) 32.6%	92 (94.2) 25.5%	26 (38.4) 17.7%
Grandparent(s) does not own a cell phone	Count (Expected count) % within age group	151 (165.6) 67.4%	269 (266.8) 74.5%	121 (108.6) 82.3%
Pearson Chi-square sig. (p = 0.006)				

Table 5.18: Crosstabulation of mother ownership according to race / ethnicity Source: based on questionnaire data			
N = 731		**White**	**Non-white**
Mother owns a cell phone	Count (Expected count) % within students' ownership	484 (474.6) 76.6%	65 (74.4) 65.7%
Mother does not own a cell phone	Count (Expected count) % within students' ownership	148 (157.4) 23.4%	34 (24.6) 34.3%
Pearson Chi-square sig. (p = 0.019)			

Table 5.19: Crosstabulation of father ownership according to race / ethnicity Source: based on questionnaire data			
N = 732		**White**	**Non-white**
Father owns a cell phone	Count (Expected count) % within students' ownership	463 (452.3) 73.1%	60 (70.7) 60.6%
Father does not own a cell phone	Count (Expected count) % within students' ownership	170 (180.7) 26.9%	39 (28.3) 39.4%
Pearson Chi-square sig. (p = 0.010)			

Table 5.20: Crosstabulation of other family member(s) ownership according to race / ethnicity Source: based on questionnaire data			
N = 732		**White**	**Non-white**
Other family member(s) own a cell phone	Count (Expected count) % within students' ownership	345 (355.4) 54.5%	66 (55.6) 66.7%
Other family member(s) do not own a cell phone	Count (Expected count) % within students' ownership	288 (277.6) 45.5%	33 (43.4) 33.3%
Pearson Chi-square sig. (p = 0.023)			

There are two possible explanations that can be made relating to the difference in cell-phone ownership among parents of different age groups. One is that younger students tend not only to have younger parents but also younger grandparents. Younger parents and grandparents may be either more receptive to relatively new technology such as cell phones or they may use cell phones for work-related purposes. Secondly, as discussed earlier, parents who have younger children may be keener to own cell phones because of a parenting concern of "protecting" children in everyday contexts.

It is harder to make speculations about why "non-white" students' family members tended not to indicate family-ownership. For American minority students, it may be due to the socio-economic status of the family members, since generally speaking, the non-white population in the United States is economically disadvantaged compared to the white population. Also, international non-white students tend not to subscribe to family-based cell-phone plans when their families are most likely not located in the United States. Yet, it is difficult to make any kind of generalization when the interviewees have such diverse social backgrounds since they were not recruited according to their racial / ethnic backgrounds. However, the statistically significant difference between the white and the non-white students suggests that for the typical non-minority (white) students, cell-phone ownership is strongly tied to the family ownership.

To further explore the dimension of family ownership of cell phones, I conducted a cluster analysis using a binary measure of cell-phone ownership by family members as variables and Ward's method as the clustering technique. The resulting dendrogram indicated three groupings (see Appendix B for the actual dendrogram). Next, I used crosstab /chi square analysis between the three groupings and each family member (mother, father, sibling, significant other,

grandparents, and other family members), plus the respondent, to determine the characteristics of each group. Siblings' ownership was not statistically significant (p = 0.114) between the three groups. I have summarized the characteristics of the three groupings of family ownership in Table 5.21. The first group consisted of those students who tended to have almost all of their family members owning cell phones, including the students themselves (full-ownership). The second group was made up of students who tended to have their immediate family members—mother, father, and significant other—and students themselves own cell phones but not their grandmother, and other family members (selective-ownership). The third group's make up tended to be students whose family members, as well as themselves, owned cell phones at lower rates (less ownership). The three general groups of family-based ownership—full, selective, and less—point to the fact that student ownership has strong relationship with overall family ownership.

Table 5.21: Three groups of family ownership

Source: based on questionnaire data

	Group 1 (N= 167) Full ownership	**Group 2 (N =328) Selective ownership**	**Group 3 (N=237) Less ownership**
Student (respondent) (p = 0.001)	More owner	More owner	Less owner
Mother (p < 0.001)	More owner	As expected	Less owner
Father (p < 0.001)	More owner	As expected	Less owner
Grandparents (p < 0.001)	As expected	Less owner	Less owner
Other family member (p < 0.001)	More owner	Less owner	Less owner
Significant other (p = 0 .054)	More owner	More owner	Less owner

*note: Sibling were not statistically significant (p = 0.114). "More" indicates there was more count of owners than statistically expected count. "Less" signifies there was less count of owners than statistically expected count. "As expected" refers to the fact count of owners matched with statistically expected count of owners. See Appendix C for the series of crosstab /chi square tables for exact and expected counts for each category of family members.

The extent of family-based ownership is based on various aspects of domestic settings—from family size, family structure, household members' jobs, as well as life events affecting family members such as moving to college, parents' divorce, getting married, or getting a job. For

example, Alyssa's statements below highlights how family-based cell-phone ownership is intertwined with her and her family members' needs and life stages:

Alyssa, 21, senior, Shippensburg	
Interviewer:	Do you have a cell phone
Alyssa:	I do [laugh], I have it on my purse
Interviewer:	Ok, when did you get it and what were the reasons for getting
Alyssa:	Um, I got it last April, so I guess I had it a little over year, a yeah and a half and I first got it because I was I got an internship in Harrisburg and I have been commuting, my cars kind of older
Interviewer:	Ok [laugh]
Alyssa:	Um I just got it for safety reasons because if my car would break down, I can get a hold of my parents or AAA [American Automobile Association] and then they were getting a family plan
Interviewer:	I see
Alyssa:	Because I have a younger sister and they're always, she rides horse, so, so it's hard to call somebody and reach them if they are at the horse barn
Interviewer:	Right
Alyssa:	So like my parents were getting a plan and I just went with them
Interviewer:	Ok, so your sister would have it and just near by, so if something happens
Alyssa:	Mm-hmm
Interviewer:	She can use it
Alyssa:	Yeah, if there were some kind of emergency or if my mom and dad need to get a hold of each other, so everyone in the family has one now
Interviewer:	One now, ok, is it working out, is there like an issue or everybody's happy that you have one
Alyssa:	Yeah, I actually have my own plan now with my fiancé but
Interviewer:	Oh separate from your family plan
Alyssa:	Separate from my family yeah
Interviewer:	Ok, so you share a plan with your fiancé
Alyssa:	Right, now I do

What is also interesting about Alyssa's case is that it shows how her family connection has shifted from her parents and sister to her fiancé. This is an example of how a "family" in a family-shared cell-phone plan is a "fluid" entity since the situation may shift relating to who is part of the cell-phone plan. In fact, various individuals—related or not related—can be part of the "family plan." Family can entail married or non-married couples, parents, and children, or even friends that are not immediate family members. During the interviews, there were few students who were part of the family plan with their significant other (fiancé and boyfriend / girlfriend). In addition, there was a case in which a male international graduate student added an additional line for his friend who is also an international student, because it was hard for his friend to get his own cell-phone plan due to lack of credit.

Cell-phone payment

The fact that many students are part of the family-shared cell-phone plan means that "family connections" are sustained even after arriving at college. For many students, their cell-phone ownership has ties to their families "back home." Moreover, for half of the students in the age group of 18-25 in my survey, it is also a technology tied to their family—financially. As Table 5.22 shows, 40% of the students said they pay their own cell-phone bill but the majority of the students (60%) indicated that someone else pays their cell-phone bill. In terms of payment, among those who indicated "other than myself," the majority (93%) were paid by their parents. 14 students answered "parents and myself" as students made contributions to paying the cell-phone bill. The remaining 12 students indicated that the bill is paid by others, mostly by family members.

Table 5.22: Count of who pays their cell-phone bill

Source: based on questionnaire data

Who pays cell-phone bill	**% of students**	**# of students**	**N=627**	
Myself	40 %	251		
Other than myself	60%	376	Parent(s)	350
			Parent(s) and myself	14
			Other family member	4
			Significant other	4
			Significant other's parents	2
			Friend	1

This dimension of parents fully or partially paying students' phone bills has interesting implications in terms of the meanings and uses associated with cell phones. Cell-phone ownership and use involves negotiation between family members—especially between students and their parents. One of the negotiations involved is the decision-making process of acquiring a cell phone in the first place. The decisions to own cell phones often rest in the hands of parents, because they

are the primary cell-phone owners in a family-shared plan. For instance, Lucy's statements below illustrate that the extent of family ownership depended on her father's shift in perceptions towards cell-phone service which lead to family-based cell-phone ownership:

Lucy, 18, Freshman, Penn State	
Interviewer:	Ok, what were the (reason), just you wanted one or?
Lucy:	Um, my dad, was really for a while he was like anti-cell phone
Interviewer:	Ok
Lucy:	But then um, we went to cell-phone store and the guy just convinced him, that like cell phone's are better and now like we use cell phones in our house more than our actual house phone
Interviewer:	Really?
Lucy:	Yeah
Interviewer:	That's really interesting
Lucy:	[laughs]
Interviewer:	So what are some of the selling point like you bought into
Lucy:	Well, because he knew that I was gonna go away to college, and it's like free long distance and I live 3 and a half hours from here, so it's still long distance, I have family in South Carolina, it was like that, and just that it's the family plan, because it was like me, my dad and my grandfather and my mom that all had their cell phone so we can talk for free with each other wherever we were
Interviewer:	That's neat, ok, are you the only sibling
Lucy:	Um-hum, the only child

Lucy's dad had a change of heart towards cell-phone technology after understanding the benefits of having a family-shared plan. He recognized that Lucy would be away from home, but also saw the advantages of communicating by cell phone with family in South Carolina using the long-distance feature. Initially, he was resistant to having a cell phone because, according to Lucy, "he doesn't like fads" and cell phones were seen by him as something that was merely an "in-thing" that everyone had. But intriguingly, it was later brought up in her interview that Lucy negotiated with her father to get herself a cell phone:

Lucy, 18, Freshman, Penn State	
Lucy:	Well, I always, like I wanted one for a long time, bugging him
Interviewer:	[Laughs]
Lucy:	He's like no, no way, and after he like got sold of the idea, he was like family ( ) [starts laughing]
Interviewer:	So you did negotiate for a while
Lucy:	Yeah

In contrast, for Mia, moving to college contributed to her parents' decision in taking a cell phone away from Mia. She then, also had to convince her parents in order to get her family a cell-phone plan:

Mia, 19, freshman, Penn State	
Interviewer:	Um, do you have a cell phone is my question
Mia:	Yeah, yeah
Interviewer:	When did you get it and what were the reasons for getting it?
Mia:	Ok, the first cell phone that I ever got was (…) [thinking] um, let me think [thinking] when I was um, for um, when I was 16 for my birthday
Interviewer:	Ok
Mia:	And then when I came to college, my parents were like you don't need a cell phone in college, it's too expensive, so, they just you know cut off my plan
Interviewer:	Oh they did?
Mia:	Yeah
Interviewer:	That's interesting
Mia:	I know
Interviewer:	OK, then do you have it now, so?
Mia:	Yeah, because I was like um, I wrote for the newspaper for *The Collegian* [*The Daily CollegianI*], for a semester, and it was really hard to write stories when you don't have a cell phone, 'cause I would tell people to call my dorm, but I was never in my dorm
Interviewer:	That's right
Mia:	So, I told my parents, just like "I need a cell phone" and my brother said the same thing, so
Interviewer:	Is he older or younger?
Mia:	Yeah, 2 older brothers, so, for Christmas, we bought ourselves a family plan and we each got a cell phone
Interviewer:	I see
Mia:	So I have one now
Interviewer:	Ok, for one semester you were without it and you just found it very difficult, is it because of Penn State, or is it because you are doing *The Collegian*?
Mia:	Um, I think it was *The Collegian* and like all my friends had a cell phone, they were always like "give me your number" and I was like "I don't have one," so [Laugh]
Interviewer:	That's really interesting that your parents decided that college you don't need it
Mia:	I know
Interviewer:	What were some of their arguments, just expensive but
Mia:	They just figured since [thinking] I don't know that I can just call them with the calling card
Interviewer:	I see, ok
Mia:	So they give me calling cards
Interviewer:	It's not like ( ) they give you something else, ok
Mia:	They just figured that I don't need it around campus, but [thinking] I did, so, I think it is because when I was at home, I was driving you know to work and (back), so it was for emergency purposes, so when I came here, I didn't have a car, so they'll like "you don't need one"

Her example shows that student's cell-phone ownership is not necessarily fixed but could change with various circumstances. After not having a cell phone for a semester, Mia and her brothers negotiated with their parents to acquire a family-based cell-phone plan. Family-shared plans

allow students to have access to the wireless technology that often they could not otherwise afford by themselves. In Jasmine's case, she discussed with her mom the idea of getting a cell phone but cost was the major reason they decided not to:

Jasmine, 20, junior, Shippensburg	
Interviewer:	Right, ok, so does your parents say that you should have a cell phone or is it not
Jasmine:	Um, like I said, my mom and I discussed it and right now, I need to start working more, [chuckle] I couldn't afford one even I did have one and my parents would not
Interviewer:	Right
Jasmine:	Would not put me up, they buy me phone cards and they're like, so they know how much the money their spending but
Interviewer:	Oh I see ok
Jasmine:	But
Interviewer:	So they do buy the phone card for you
Jasmine:	Yeah
Interviewer:	Oh that's very
Jasmine:	Well they're usually like Easter presents, Christmas presents, Birthday presents so
Interviewer:	( ) very nice though, yeah, ok
Jasmine:	But that's how they do it, because they know, they couldn't afford the bill that I would come up with and I couldn't either, so a money is, is an issue

Affordability associated with cell phones is one of the important factors in the decision-making process involved in cell-phone ownership for families. Jasmine's case may be an example of where students' family's non-ownership corresponds with students' non-ownership.

In order to further investigate the dimensions of financial issues relating to cell-phone ownership, I utilized crosstab / chi square analysis to explore whether there are differences between subgroups in terms of who pays their cell-phone bills. There was no statistically significant difference detected between Penn State and Shippensburg students ($p = 0.146$). There were statistically significant differences ($p < 0.05$) identified in regards to cell-phone payment in the following subgroups:

- Gender ($p = 0.031$) (Table 5.23). More male respondents (120) than statistically expected (106.9) indicated they pay their own cell-phone bill. On the other hand, there were more female students (229) that did not pay their own cell-phone bill than statistically expected (215.9).
- Age groups ($p < 0.001$) (Table 5.24). The youngest age group (18-19 year-olds) had more students (137) that had "others" paid for their cell-phone bill than statistically expected (118.1). On the other hand, more students (69) in the oldest age group (23-25 year-olds) paid their own cell bill than expected (48.4).

- Race / ethnicity (p = 0.004) (Table 5.25). There are more minority students (47) than statistically expected (34.8) that paid their own cell-phone bill.
- Residency (p < 0.001) (Table 5.26). There were more on-campus students (185) than statically expected (157.5) that had someone else pay the bill. Whereas, off-campus and out-of-town students tended to pay their own cell-phone bill.

Table 5.23: Crosstabulation count of who pays the bill according to gender

Source: based on questionnaire data

N = 627		**Male**	**Female**
Myself	Count (Expected count) % within gender	120 (106.9) 44.9%	131 (144.1) 36.4%
Others	Count (Expected count) % within gender	147 (160.1) 55.1%	229 (215.9) 63.6%
Pearson Chi-square sig. (p = 0.031)			

Table 5.24: Crosstabulation Count of who pays the bill according to age groups

Source: based on questionnaire data

N = 627		**18-19 year olds**	**20-21 year olds**	**23-25 year olds**
Myself	Count (Expected count) % within age group	60 (78.9) 30.5%	122 (123.7) 39.5%	69 (48.4) 57.0%
Others	Count (Expected count) % within age group	137 (118.1) 69.5%	187 (185.3) 60.5%	52 (72.6) 43.0%
Pearson Chi-square sig. (p < 0.001)				

Table 5.25 Crosstabulation count of who pays the bill according to ethnicity / race Source: based on questionnaire data			
N = 627		**White**	**Non-white**
Myself	Count (Expected count) % within ethnicity / race	204 (216.2) 37.8%	47 (34.8) 54.0%
Others	Count (Expected count) % within ethnicity / race	336 (323.8) 62.2%	40 (52.2) 46.0%
Pearson Chi-square sig. (p = 0.004)			

Table 5.26 Crosstabulation count of who pays the bill according to residency Source: based on questionnaire data				
N = 627		**On-campus**	**Off-campus**	**Out-of-town**
Myself	Count (Expected count) % within residency	78 (105.5) 29.7%	154 (135.5) 45.6%	19 (10) 76%
Others	Count (Expected count) % within residency	185 (157.5) 70.3%	184 (202.5) 54.4%	6 (15) 24%
Pearson Chi-square sig. (p < 0.001)				

These statistics also add to the other evidence of the major contribution of parents to university students' cell-phone ownership. I have already mentioned that females and the younger age group (18-19) tended to rank "family purchased for you" higher than their counterparts (Table 5.5 and 5.8). For the female and younger students, Tables 5.23 and 5.24 also show that students' cell-phone ownership is financially maintained with the help of their parents. In addition, minority students tended to pay their own cell-phone bill. This corresponds with the aforementioned patterns in which minority students' family tended not to be cell-phone owners and probably not part of family-based cell-phone ownership. The fact that on-campus students tended to have their parents pay for their cell bill may be related to the fact that the younger age group also tended to live in campus residences. But there are more factors behind this trend of students' ownership associated with residency than a simple correlation with students' age. In the next section, I delve

into a discussion of how students' residency (on-campus, off-campus, or out-of-town) is related to cell-phone ownership by situating cell-phone ownership in relation to the on and off campus communication infrastructure and settings.

Campus connections

Cell-phone services

Although cell phones are no longer considered to be exclusively an economic status symbol, their affordability is undoubtedly a key issue that is considered by university students in their decision to own and use cell phones. The overall questionnaire sample ranked "the service is affordable" as *very important* and the fourth among the reasons of getting a cell phone (Table 5.4). It is reasonable to assume that the economic affluence of students may be related to cell-phone ownership. In my questionnaire, however, I did not have any variables that attempted to measure students' "social-economic class" such as the income level of their household. As university students, many are not working at all, or, taking only part-time jobs. In this sense, their incomes do not necessarily reflect their "true" economic status. Also, the income levels for their parents cannot be easily used as an indicator for student's financial situation when students move away from their "home." It is beyond the scope of my study to assess the extent of parent(s) financial assistance to their children while they are in university. Yet, I have so far made evident one of the aspects of parents' financial support—their role in purchasing and maintaining students' cell-phone ownership. On the other hand, it is important to note that there were 40% of the students who paid their own cell-phone bill and are unlikely to be part of family-based cell-phone plans (Tables 5.21 and 5.22). Cell-phone consumption is not only about purchasing the telephonic device. The costs associated with cell-phone usage are one of the important issues many university students grapple with while considering and maintaining ownership, whether they are financed by family members or by the students themselves. One of the important aspects of cell-phone ownership is not about economic status of students *per se*, but students' considerations and evaluations of costs associated with cell-phone ownership in relation to their communication needs.

Students' cost-assessments of cell-phone ownership involve the consideration of various aspects of phone services including the particular wireless provider as well as charges and restrictions associated with various types of cell-phone plans. According to the 2003 FACAC survey, the Penn State undergraduate students subscribed to cell-phone plans from "Verizon

Wireless (40%), AT&T Wireless (34%), Sprint PCS (7%), Cingular Wireless (6%), Nextel (3%)," and other providers (5 %) (FACAC website 2003).[12] During my interview session, Shippensburg students also mentioned subscribing to the above wireless providers. Several interviewees described how different companies have advantages and disadvantages due to the quality of reception and types of cell-phone plans offered. Competing cell-phone companies offer services with varying degrees of wireless network coverage and costs. Cell-phone plans are priced according to:

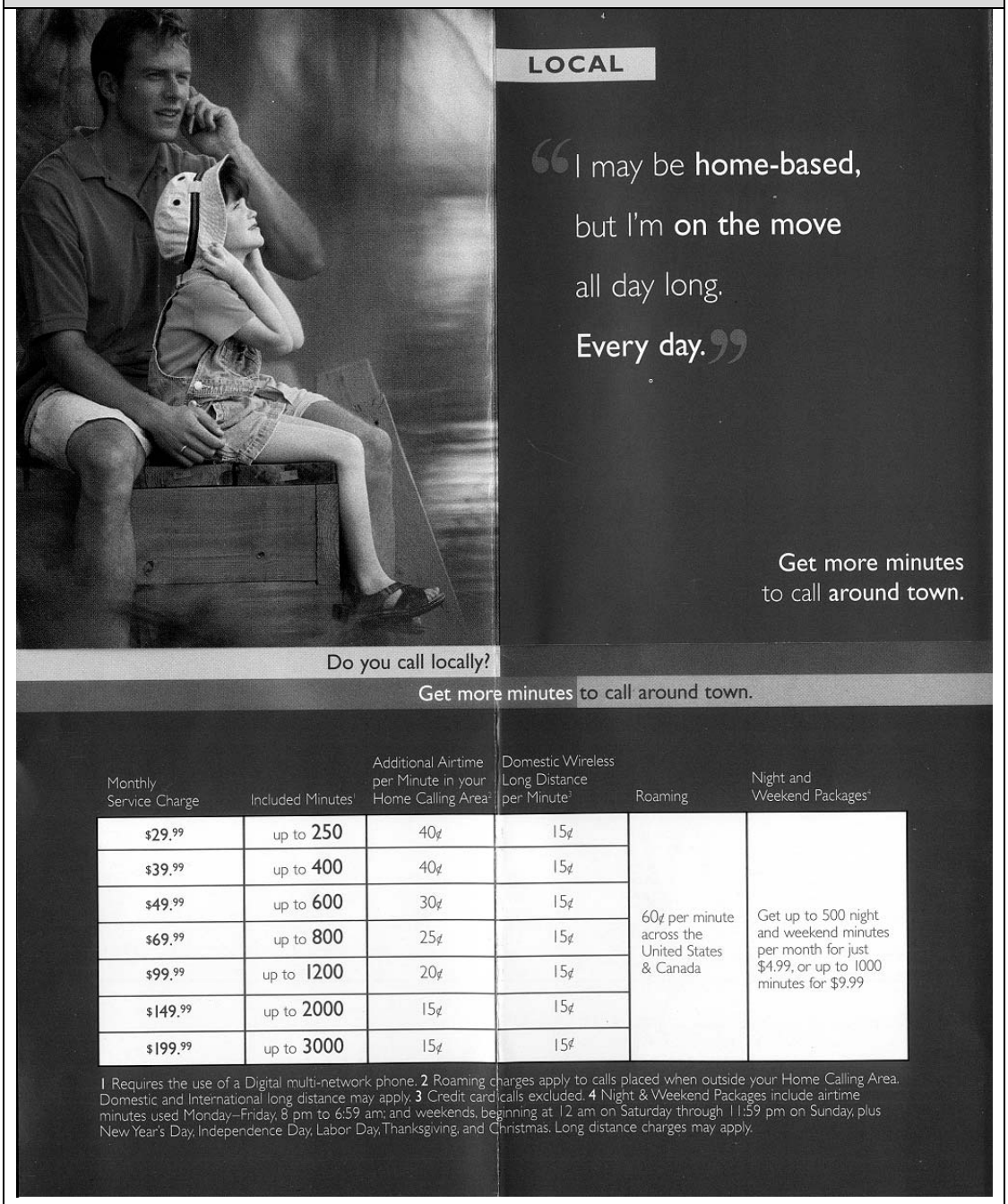
- The extent of the region where a cell-phone owner can make and receive a call within the country without being charged extra cost (e.g. nation-wide, regional, local, etc.). When a cell phone is used outside the designated region, one will be subjected to "roaming" charges—a rate (usually higher) per minute and / or subjected to an additional connection fee.
- The time restrictions associated with allocated "air-time" minutes—the maximum number of minutes of calls (made or received) allowed without paying extra fees. When one goes over the allowed minutes during a particular time (e.g., before 9 p.m. on weekdays), consumers are charged generally a high rate per minute for those calls.
- The ability to talk for free between customers on a same cell-phone service provider and / or among those who are part of the family-shared plan.
- The features such as long distance, text messaging, customizing ring-tones, Internet connectivity, etc.

In general, the monthly cost of ownership is priced higher when there are fewer restrictions on where calls can be made and received as well as when there are more "air-time minutes." Figure 5.7 is a basic cell-phone plan from 2002 for customers who use their cell phones while they are in the local area of State College / Altoona. It shows that the monthly charge ranges from $29.99 to $199.99 depending on how many "minutes" are included in the plan. It documents also that there are additional charges for roaming (60 cents per minute) and fees when a customer exceeds the included minutes in their plan or wants to have extra benefits.

[12] During the mid-2000, AT&T wireless merged with Cingular and Sprint and Nextel also merged.

Figure 5.7: An example of cell-phone plan for central PA consumers (2001)

Source: collected from a cell-phone retailer



LOCAL

"I may be **home-based,**
but I'm **on the move**
all day long.
Every day."

Get more minutes
to call **around town.**

Do you call locally?

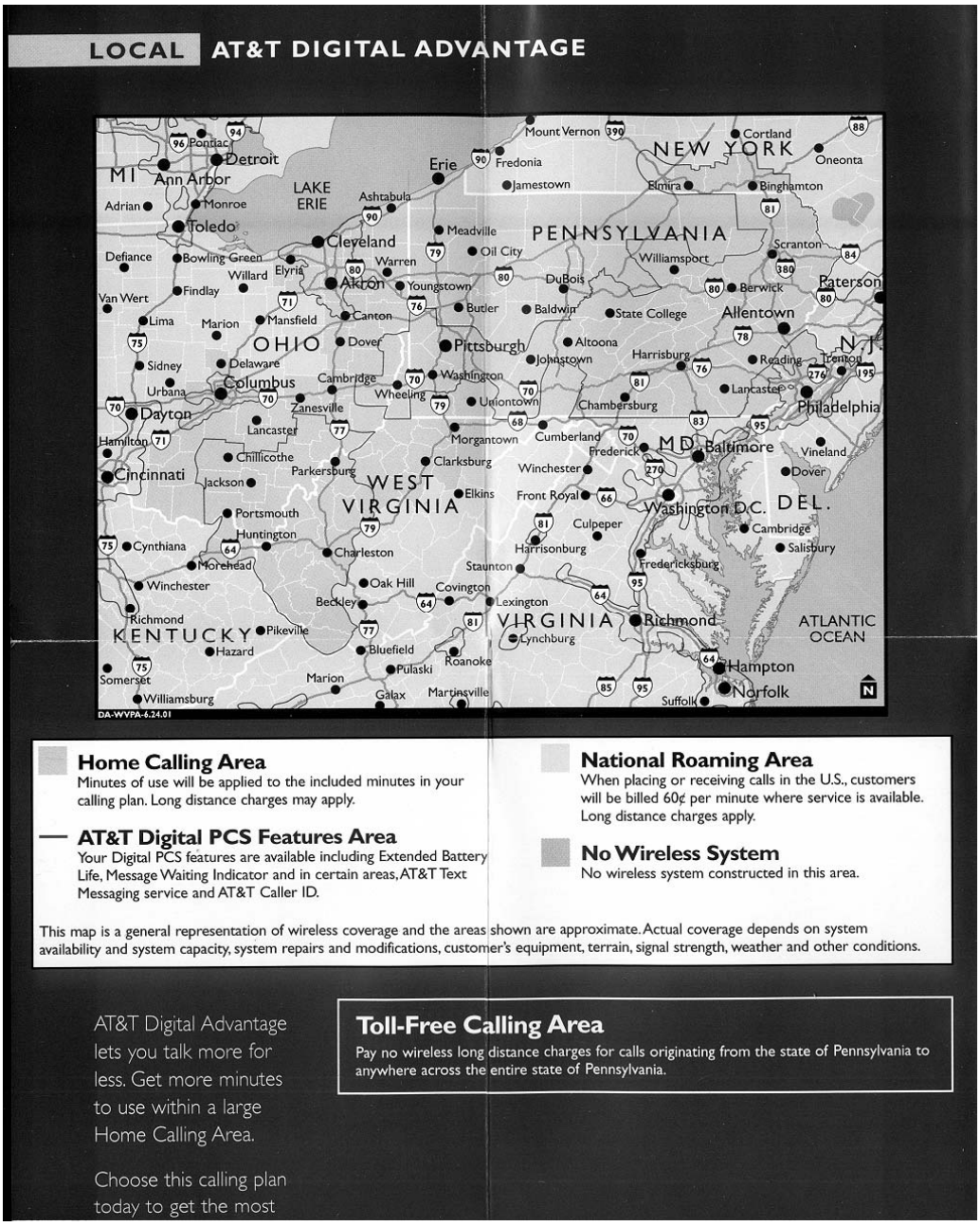
Get more minutes to call around town.

Monthly Service Charge	Included Minutes[1]	Additional Airtime per Minute in your Home Calling Area[2]	Domestic Wireless Long Distance per Minute[3]	Roaming	Night and Weekend Packages[4]
$29.99	up to 250	40¢	15¢	60¢ per minute across the United States & Canada	Get up to 500 night and weekend minutes per month for just $4.99, or up to 1000 minutes for $9.99
$39.99	up to 400	40¢	15¢		
$49.99	up to 600	30¢	15¢		
$69.99	up to 800	25¢	15¢		
$99.99	up to 1200	20¢	15¢		
$149.99	up to 2000	15¢	15¢		
$199.99	up to 3000	15¢	15¢		

1 Requires the use of a Digital multi-network phone. 2 Roaming charges apply to calls placed when outside your Home Calling Area. Domestic and International long distance may apply. 3 Credit card calls excluded. 4 Night & Weekend Packages include airtime minutes used Monday–Friday, 8 pm to 6:59 am; and weekends, beginning at 12 am on Saturday through 11:59 pm on Sunday, plus New Year's Day, Independence Day, Labor Day, Thanksgiving, and Christmas. Long distance charges may apply.

An example of cell-phone plan for central PA consumers

[contd.]



As also seen previously from the examples of family-shared plans (Figures 5.4, 5.5), many of the recent calling plans include unlimited free nation-wide calling after 8 or 9 pm on weekdays and all weekend long. For Emma, the long-distance package included in her plan was the "selling point" for getting a cell phone while she studied at Penn State:

Emma, 20, junior, Penn State	
Interviewer:	Ok, how long have you had it, and what were the reasons for getting it?
Emma:	Umm [thinking] I had it for [thinking] about a year and a half and [pause] I got it mainly because of the long distance plan and so I can talk to my family back home
Interviewer:	In [a name of state in out west, omitted for privacy]?
Emma:	Yes.
Interviewer:	Oh, cool.
Emma:	[Laugh]
Interviewer:	So it does cover (there) as a long distance
Emma:	Yeah
Interviewer:	So it's not like a special case or anything?
Emma:	No
Interviewer:	It is also cheap?
Emma:	Yeah, it is just because I mean it is still part of the fifty states, so, it's included in the nation-wide.

When cell-phone plans include free-long distance calling, it means that there is no differential cost between local- and long-distance calls. What matters is where you originate your call (in addition to the time of day) rather than where you are calling to within the country. Figure 5.7 is marketed for customers who are "mobile" in the home calling area located mostly in Pennsylvania. For example, these plans are useful for many students who are from Philadelphia, since they can use their cell phones not only while they are in State College or Shippensburg, but also, when they return to the city during the holidays and semester breaks. Nick, who comes from a town halfway between State College and Philadelphia, is an example of students subscribing to such plan:

Nick, 23, senior, Penn State	
Interviewer:	What are some of the coverages, the eastern part or national coverage?
Nick:	My personal coverage is the local, right now throughout Pennsylvania, New Jersey, and up the Eastern coast of New England

Similarly, Austin, who is from the Harrisburg region, thinks that a local plan would cover his communication needs:

Austin, 20, sophomore, Shippensburg	
Austin:	Ah as far as services, national plans, local plans, um, I didn't feel the need that I've be out of you know my local calling area that I need to use actually use it you know, you know out of state
Interviewer:	Right right
Austin:	So I've got Pennsylvania and New Jersey and little bit of Maryland
Interviewer:	Ok
Austin:	So you know if I go to the beach in the summer

Interviewer:	Right sure
Austin:	You know go to New Jersey or whatnot, I can still use it
Interviewer:	Ok
Austin:	You know locally but, I mean if if I got to California, probably not gonna use it
Interviewer:	Or you can't use it or if you use it it's very expensive
Austin:	Right, it's very expensive yeah ( ) [chuckles]
Interviewer:	Ok, so you're home is still long distance or, is it within Pennsylvania, but if you have to call, it's a long distance?
Austin:	No, I can call, that's what's great I can call anywhere in the state of Pennsylvania for free
Interviewer:	For free
Austin:	Yeah
Interviewer:	Ok
Austin:	I get 250 anytime minutes during the day for free, and then 2000 night and weekend minutes

In contrast, those who may be traveling out-of-state, those who make frequent trips—visiting friends and families across the nation and / or making personal trips—may consider different types of plans (regional or national) that allow them to make calls in a multi-state area or wherever they are in the country. Christopher travels frequently; therefore, he subscribes to a nation-wide plan:

Christopher, 25, graduate, Penn State, International	
Christopher:	I also travel a lot because
Interviewer:	Oh
Christopher:	I just come back form California, I go to Pittsburgh, I go to Philadelphia, I go to New York sometimes
Interviewer:	So you have a cell phone that you can use everywhere
Christopher:	Yeah, yeah, I can use it everywhere
Interviewer:	Ok, is there places that you couldn't use?
Christopher:	Um, outside of the country but in the United States, everywhere
Interviewer:	Oh ok
Christopher:	United States and Puerto Rico

Thus, students' mobility is related to the decision making processes of cell-phone ownership. Some of this mobility is residential and seasonal mobility such as students moving to college or temporarily taking an internship or seasonal job. Other types of mobility are weekly and daily that affect the extent of the geographical area where students originate their call. As explored earlier, this varies according to mobility patterns related to commuting and long-distance travel, but students may also include the consideration of how often they return to their residences during the course of the day (Lynott 2002). The statement used in a pamphlet describing a local cell-phone plan (Figure 5.7) is an interesting one: "I may be home-based, but

I'm on the move all day long every day." Some students may have a lifestyle that corresponds with such a statement since their daily activities may not be based in a particular area of town, a building on campus, or their homes since they attend multiple classes, have jobs, and / or are engaged in various activities.

The restrictions of services and plans are important in understanding how cell-phone technology is being accepted, used, and negotiated by American consumers. For example, in Japan, it is free to receive both local and long distance calls but there are charges involved in making them from a cell phone. Just like calls originating from a wired phone, cell-phone calls are also subjected to higher charges for long distance calls. In addition, it costs more for a caller to reach cell phones from a landline. Thus, in Japan, there are differential costs between the call that is made from / to landline or cell phone, between the call that is considered long or local distance, and according to whether one is a caller or receiver. Additionally, because text messaging is much cheaper per call than actual telephone calls, many people utilize text messaging to communicate. In comparison, the cost structure is different in the United States. The most notable aspects are that local calling from a land-line is usually free and unlimited as long as you pay the monthly fee. On the other hand, one must get an additional long-distance service / connection to a land-line phone from the same provider as the local connection or another long-distance provider. Generally speaking, it is a considered a local call between telephone numbers that have the same area code—either cell phone or land line connection.[13] Therefore, when students acquire a cell phone from the Philadelphia region and receive a call from a phone number with the same area code, it is considered a "local" call, regardless of where the call originates (as long as it is made within the home calling area). But, if a student who may attend school in State College receives a call from a friend who has the area code of 814 (area code for State College), then such call is considered as a long-distance even though both the student and the caller are located in State College. In this way, cell phones can sometimes rearrange the notion of local and long distance calling in a perplexing way since the area code does not necessarily correspond with where (e.g. residence, office) the connections are located but to a phone that can move between different area codes.

Since cell phones often do not distinguish between long and local calls in terms of fees, cell-phone consumers must work with the "minutes" that are counted while they are using the

[13] This is not necessarily a straight forward formula that can be applied. For example, it is considered a local call if one calls from Chambersburg (about 15 miles away) to Shippensburg since both towns are designated with the same area code (717). But, it is considered long distance when calling from Shippensburg to Chambersburg.

phone connection, rather than the distance between the callers. It requires that consumers carefully consider their consumption patterns since talking beyond a plan's included minutes or roaming can result in significant extra costs. Daniel who subscribes to a nation-wide plan, describes how he deals with such time restrictions as he calls both the friends who are located across the county and in-town:

Daniel, 24, graduate, Penn State, International	
Interviewer:	Ok, ok, so what were some of the um, things that you looked for when you got your mobile phone, did you have particular features or particular coverage area that you were looking for or
Daniel:	Mmmm, I got the national plan
Interviewer:	Yeah
Daniel:	Because I have a lot of friends across the United States
Interviewer:	Oh great, ok
Daniel:	Ah, that's one reason and reason is um, for, um, I'm I'm looking for unlimited calling time at weekends
Interviewer:	Right
Daniel::	And after 9
Interviewer:	( ) yeah, so do you call your friends primarily with your cell phones or
Daniel:	Um, yeah
Interviewer:	Yeah, and within State College, does, people call you?
Daniel::	Quite a lot [chuckle]
Interviewer:	Quite a lot, um, is that your other Chinese friends or
Daniel:	Other Chinese friends and international friends
Interviewer:	International friends
Daniel:	Yeah
Interviewer:	Um, and during the day too, do they call you on the cell phone or?
Daniel:	Um, yeah, um, because we all know that, uh after nine, it's almost free, so we often talk quickly at day time

For Daniel and his friends, the length of conversation varies depending on whether it is in the daytime or after nine p.m. because of the differential costs associated with cell-phone plans according to the time of a call.

In addition to the time restrictions, there are places where cell-phone service is not offered by cell-phone providers as seen in the areas designated as "no wireless system" in Figure 5.7. Although wireless technology has improved over the years and continues to be updated, several students commented on how wireless connections are not reliable in some "spots." Cell-phone users must work with the "system" which is made up of the combination of a geography of wireless network, company policies, and affordability. Moreover, cell-phone service, plans, technology, and companies have been rapidly changing which contributes to the nature of cell-phone ownership. For instance, Ethan's phone was originally provided by his mother because of safety concerns that she had, but since then, he has acquired multiple cell phones. The dialogue

below shows the different circumstances and considerations that were made by Ethan during the course of his cell-phone ownership:

Ethan, 21, junior, Penn State	
Ethan:	Yeah, so I guess it'll be like my 4th or 5th year like having one
Interviewer:	Three cell phones
Ethan:	Yeah
Interviewer:	Different cell phones
Ethan:	Yeah
Interviewer:	Actual, what's the, why did you change it, just the features that
Ethan:	Um, well the 1st one was an old analogue phone
Interviewer:	Oh
Ethan:	And digital came out
Interviewer:	Yeah, yeah
Ethan:	And, I didn't, oh I remember what happened now, actually it was um Cellular one, which they changed to I guess Verizon or something
Interviewer:	Right
Ethan:	And, their terms of their contracts changed, and like I used to get free nights and weekends
Interviewer:	Right
Ethan:	And then it changed so that it wasn't free anymore
Interviewer:	You had to pay
Ethan:	So I discontinued my service because they changed the contract, so I decided I didn't want'em anymore
Interviewer:	Ok
Ethan:	And then, the 2nd one was a pre-paid phone
Interviewer:	Mmm
Ethan:	And I didn't like that one because after 3 month, um, you're minutes would run out unless you renewed before that, and I didn't
Interviewer:	Oh, even you had some minutes left
Ethan:	Yeah, and I didn't wanna have to do that
Interviewer:	Oh no
Ethan:	And, what happened was, like the one time, they had told me like when you order your minutes, they gave you a date that you have to order again by
Interviewer:	Right
Ethan:	And they told me a date and I wrote it down on my calendar and then the one day I want to use my phone, and it didn't have any minutes left on it, like they erased them all, and, it really made, so I just decided to go with the regular plan
Interviewer:	Right
Ethan:	Instead of the prepaid thing so, with that, a new phone, a new phone came with it
Interviewer:	Came with it, which is little bit better than the pre-paid maybe or?
Ethan:	Um, they looked pretty similar
Interviewer:	Similar [laugh]
Ethan:	I just took it ( )
Interviewer:	Yeah ok
Ethan:	So now I just have a plan where I get so many like night and weekend minutes and I never go over it, so
Interviewer:	Ok
Ethan:	It's like 20, 27 dollars a month I think

Interviewer:	Ok, oh
Ethan:	And then I use that for (both) my long distance
Interviewer:	Ok, is this, is this what your mother gave, still bought you, or this is
Ethan:	I bought it myself
Interviewer:	Yourself
Ethan:	Yeah
Interviewer:	Is this from the university or just or recently, did you just
Ethan:	Um, I bought it last [pause] last year, last summer
Interviewer:	Ok
Ethan:	Because my job involves a lot of driving
Interviewer:	Oh
Ethan:	And I wanted to have it for that and I also wanted to keep in touch with my friends, long distance and like it's easier to pay 27 dollars a month than (…)

Ethan's narrative about cell-phone ownership reveals that since he got his first cell-phone, he has adjusted his cell-phone contracts not only to aspects of his mobility and communication needs but modified various aspects of cell-phone service. There were other students who had multiple cell phones and plans, or were in the processes of switching their providers and phones due to expiry of cell-phone contracts, inadequate service, and / or disputes arising with customer service.

Rapidly changing service agreements and cell-phone technology has implications for students' ownership because they concern students' acceptance of technology and patterns of use. Since I began my research, there have been improvements in the overall quality of cell-phone service across the nation including the elimination of many roaming charges and "free" long-distance as standard features of most cell-phone packages. Also, just as Ethan did not like how the minutes vanished after a few months, some plans were not beneficial from the consumers' point of view. Cingular has recognized one of the downsides to consumers and has introduced "roll over minutes" (Figure 5.5). With this service, the minutes that are not used up during the course of one month will accumulate into the account rather than simply vanishing (Figure 5.5). Due to the competition between the providers, some of these new benefits and standards add to the quickly transforming nature of students' cell-phone ownership and uses.

Moreover, in addition to monthly plans, there are phones without contracts. There are pre-paid and pay-as-you-go phones that can be purchased without committing to a contract. In these cases, the purchase of a phone includes pre-paid minutes, or one pays for the amount of minutes they have used that phone at the end of the month. Pre-paid phones provide control over the parameters of how much one can spend and whether student or parents pay. In order to purchase a cell phone one needs to have a decent credit history and cannot be a minor (Safdie 2001; Lynott 2002). These issues can be obstacles to young people purchasing cell phones. Phones with non-contract bases are popular among customers that do not want to or cannot

commit to typical cell-phone contracts, do not use cell phones on a daily basis, or use them only for limited and particular purposes such as driving (Figure 5.8 and 5.9). Murray describes the particular demographic that these phones have catered to:

> Pre-paid phones drew hordes of new uses in 1997 and 1998, appealing especially to younger users, customers with bad credit, phone addicts and cash-based businesses (including drug dealers). For carriers, prepaid phones protected them from getting stuck with unpaid bills and brought them a whole new class of customers they might ordinarily shun as potential dead-beats—college students, for example. Ads for the service went unabashedly after this demographic. With no contracts, no unexpected bills and the ability to buy a phone on impulse, prepaid phones goosed user numbers even higher (Murray 2001, 288).

Figure 5.8 is a 2005 pamphlet explaining the Cingular's pay-as-you-go phone plan and Figure 5.9 is an advertisement for a 2002 Verizon's pre-paid phones. Both images portray young people and how these phones are particularly attractive options for them. These plans also include other options such as text messaging, customized ring tones, and games that may be also attractive to a younger clientele.

In my survey, 17 % (106 out of 625 students) of the cell-phone owners indicated that they had pre-paid phones. I conducted crosstab / chi square analyses on this data and there were no statistically significant differences detected between sub-groups based on gender ($p = 0.822$), age groups ($p = 0.543$), or the two campuses ($p = 0.515$) in terms of who had pre-paid phones. But interestingly, there was a statistically significant difference ($p = 0.009$) between on-campus and off-campus[14] students (Table 5.27). There tended to be more on-campus students who use pre-paid phones (56) than the statistically expected count (44). On the other hand, there were fewer off-campus students who have pre-paid phones (49) than expected (61). This means that pre-paid phones are used by university students regardless of gender, age, and the two-campuses but their use seems to relate to residential circumstances. This finding leads to the examination of how students' cell-phone ownership is related to where students live in relation to campus, which I discuss in the next section.

[14] There were cells with expected count of less than 5 for out-of-town students. I have combined the off-campus and the out-of-town students for the purpose of analyzing the differences between students who live on-campus and who do not.

Figure 5.8: "Pay as you go" cell-phone advertisement (2005)

Source: collected from a retailer

go phone®

PAY AS YOU GO

cingular raising the bar

- No annual contract or credit check
- No bills to pay or age requirements
- Unlimited Calling to **over 51 million** Cingular customers on select plan

Choose the Option That Fits Your Style

Cingular Wireless gives you a choice in service options so you can use your phone the way you want. Think about how you'll use your phone. Then decide which option is best for you.

RATE PLAN	ANYTIME MINUTES	MOBILE TO MOBILE MINUTES
Unlimited Mobile to Mobile **BEST VALUE**	10¢ per minute	Unlimited Calling to **over 51 million** Cingular customers
	All for $1/day access charge **only** on the days you use your phone	
25¢ per minute **Simple Plan**	25¢ per minute	25¢ per minute

No long distance or roaming charges on our national network.

Both Options Include:

- Voicemail* *upon request*
- Text and Instant Messaging† *5¢ per message sent/ received*
- International Text Messaging† *20¢ per message sent/ 5¢ per message received*
- MEdia™ Net† and Multimedia Messaging† *1¢/KB*
- Downloadable Ringtones, Graphics and Games†* *as low as $1.99 each*
- Caller ID
- Call Waiting*
- Call Forwarding*
- 3-Way Calling*
- International Long Distance* *additional charge per min.*
- Nationwide Long Distance *includes Puerto Rico, U.S. Virgin Islands, Guam, Mariana Islands*
- 24/7 Account Replenishment

†*Compatible phone required.*
**Airtime and other charges apply.*

Figure 5.9: Pre-paid cell-phone advertisement (2002)

Source: collected from a retailer

Table 5.27 Crosstabulation count of pre-paid according to residency

Source: based on questionnaire data

N = 625		On-campus	Off-campus and Out-of-town
Use pre-paid	Count (Expected count) % within residency	56 (44) 21.4%	49 (61) 13.5%
Do not use pre-paid	Count (Expected count) % within residency	206 (218.0) 78.6%	314 (302.0) 86.5%
Pearson Chi-square sig. (p = 0.009)			

Residential connectivity

There are three types of connections that are typically present in most student residences to facilitate communication—local phone connection, long-distance phone service, and an Internet connection. The hardware for these connections can include cell phones, wired conventional telephones, and personal computers. Aside from connecting students to families and friends back home, a telephone connection is a "must-have" technology for students to communicate with various people in everyday contexts. They are used for arranging appointments, chatting with friends and family members for work purposes, calling information hotlines, leaving messages with someone's voice mail, and contacting and being reached by social contacts as well as university and governmental organizations. Some of these communications are now facilitated through Internet-based communication and students contact various people via E-mail and Instant Messenger (IM). The semester registration processes and personal banking needs used to be facilitated through automated-telephone systems in the late 1990s, but now it is more common to complete registration processes and manage your bank account through on-line systems. Internet-connected computers are now considered "essential" for students for the purposes of learning, communicating, and personal entertainment. The contextualization of the communication set up in residences allowing three types of connections is needed in order to understand the issues contributing to university students' high cell-phone ownership.

The availability of communication infrastructure for students heavily depends on the existing residential connections when students arrive on campus and move into their residences. There is a variation in how the infrastructure is arranged according to where students live in relation to campus—on-campus or off-campus. For example, on-campus rooms have utilities such as Internet connectivity, a local-phone connection, electricity, heating, and water, which are included in their semester residence bill. There might be variations across the nation but many campuses including Shippensburg, and dorm rooms as well as offices have phone connections that allow students to call other campus phones without a charge, but calls to off-campus locations often are not. Penn State students can call on-campus and locally for free (Misthal 2001). Lucy, who lives on-campus and acquired a phone through her father three years ago, perceives her cell phone as her primary phone while on campus. However, she uses her room phone to contact friends who also live on-campus:

Lucy, 18, Freshman, Penn State	
Lucy:	Now, I use it [cell phone] just I don't, cause here I live in a dorm
Interviewer:	Right
Lucy:	And we have to have like a calling number code to like use the outside ( ) so I use my cell phone to call like that's my primary phone
Interviewer:	Ok
Lucy:	And people call me on it they don't really use my room phone at all
Interviewer:	That's interesting, even local you don't call ( )
Lucy:	Well, uh, local like my friend from campus will use it, cause it's it's free you know you just (dial like 2) or whatever but other than that, it's always like I use my cell phone

Lucy's dorm room phone is designated for only calling locally on campus because it is already connected and free.

Since the early 2000s, there has been a growing number of students who arrive on campus already equipped with cell phones. Like Lucy, many university students who live on campus across the country are using the national calling plans for long distance that come with cell-phone plans. Consequently, telephone connections in dorms are being altered across the country. For example, at the University of Michigan, it was reported in 2001 that "the number of students using the long-distance services provided in the residence halls is down, which may be due to the fact that 77 percent of incoming University of Michigan students brought cell phones with them"(Misthal 2001). Since 2002, other universities including Brown University, Dartmouth College, Iowa State University, Kansas State University, Kent State University, Northern Illinois University, Ohio State University, Penn State, Syracuse, University of Texas at Austin, and University of Alabama also reported a similar phenomenon of students choosing cell-phone plans over the universities' long-distance services (Mason 1994; Adams-Price, Henley, and Hale 1998; Canham 2001; Cramer 2002; Goldstein 2002; Leif 2002; Lombardo 2002; Staff-Editorial-The-Crimson-White 2002; Nanamaker 2003; Lash 2004; Smith 2004). Moreover, in addition to the heavy use of cell phones, calling cards are also competing with the dorm-based long-distance connections. Like cell phones, these cards often give university students cheaper ways to call "home" (Misthal 2001; Bieganski 2002; Cramer 2002; Lombardo 2002). Calling cards are not just cheaper but "more versatile, working at any phone not just on campus" (Staff-Editorial-The-Crimson-White 2002). As long as you have a local connection, one can call a toll free 1-800 number to connect to the calling card service. In fact, in 2004, "Penn State terminated its 10-year contract with AT&T" and "students were unable to dial long distance from their dorm room without a calling card" (Lash 2004).

Furthermore, some university newspapers suggested that it was not just cell phones and calling cards that contributed to the decline of universities' long-distance phone service. For instance, the University of Alabama's telecommunications department estimated that in 2002 that student-owned cell phones as well as E-mail and Instant Messaging had cost "the department an annual 5 percent to 10 percent in revenue loss" (Mason 1994). Text-based communication, therefore, has been used among students in addition to phone communication. Universities are one of the hubs for Internet-connectivity in the United States, not only because students heavily utilize the Internet-connected computers, but also because the institutions support the Internet infrastructure by hosting computer servers. The fact that students can potentially always be on-line means that they can rely on the Internet-based communication. Amber, who lives in an on-campus residence, has a cell phone financed by her parents. But, her primary purpose of having the cell phone is for driving. She uses multiple communication connections to talk to her family and friends:

Amber, 19, sophomore, Shippensburg	
Interviewer:	Ok, ok, so how do you keep in touch with her [Amber's mother] like through just the wired phone at home or
Amber:	Yeah, like I use like a phone card and stuff to call her
Interviewer:	Ok, ok, um, ok [chuckles] so you'll use a phone card and she'll probably call you sometimes kinda thing
Amber:	Mm-hmm
Interviewer:	How about like, your friends at home, then you would use the cell phone or
Amber:	Maybe we'll just use Instant Messenger, we talk on-line a lot
Interviewer:	Ok
Amber:	That's not ( ) of today's time, Instant Messenger
Interviewer:	Right, yeah yeah, so that's that because the dorm has connection ( )
Amber:	Yeah, I think, I think if I didn't have constant connection, I would probably call my friends more
Interviewer:	Ok
Amber:	But
Interviewer:	So you, rather chat on-line
Amber:	Yeah, it's cheaper

Amber's economic choice reflects how students work within the system of communication infrastructure available to them in their residences.

Off-campus students also utilize three types of connection—local phone connection, long-distance calling, and Internet connection. Julia, who lives off-campus, has three roommates and they have the following arrangements:

Julia, 22, senior, Shippensburg	
Interviewer:	Do you have a home phone or
Julia:	Yes, but I just use that for people in town, because we don't, me and my roommates, I have 3 other roommates and we don't have a long-distance plan in the apartment, we just have our cell phones and then a local plan or town, but since we all have cell phones, it's easier, cheaper
Interviewer:	Ok, how about E-mail and IM, do you use that
Julia:	Yeah
Interviewer:	To communicate as well
Julia:	Yeah, I use it ( )
Interviewer:	( )
Julia:	Well, I usually I use E-mail for people who don't have cell phones, that live further away that I wouldn't talk to, or for professional reasons and stuff like that, and IM I just use on a regular bases [Edit]
Interviewer:	Mm-hmm, but cell phone is (then it seems like) a lot to do with long distance part of it
Julia:	Mm-hmm, yeah because I wouldn't, if I was just at home and if I was only talking to people at home, I don't think I find a use for it [cell phone] as much, 'cause you can just pick up the telephone, you know, but um, for long distance I usually
Interviewer:	You use [cell phone]
Julia:	Yeah
Interviewer:	Ok
Julia:	'Cause I mean if I call people in town here, I use my regular phone

In Julia's case, her local phone connection is used to call people around town and cell phones are designated for long-distance calling. Arrangements made between roommates (e.g., splitting bills) and economics and use of different "connections" are also important for off-campus students. On-campus residences are set up differently from off-campus residences in terms of how the utilities and communication connections are initially available when students move into their new surroundings. Most often, the local phone connection must be set up first, which most likely involves service charge (Smith and Marx 1994). Moreover, they need to have long-distance plans to get in touch with family and friends. For off-campus students then, they have more utility bills to manage on a monthly basis and to initially establish connections. Cell-phone plans offer the benefit of only having to pay one bill for the purpose of long and local distance calls and an Internet connection. According to Peter Ngo of *Cavalier Daily* (University of Virginia), students save more when the costs are compared between the land-line and cell-phone connections:

> Most monthly student phone bills run around $50 for local service, including state and local taxes. The long distance bill for students averages another $30 to $50. In addition, students often pay $ 12 or more for common extras like call-

> waiting, caller ID, and call forwarding. In the long run, going cellular can come out to be less expensive by as much as 50 percent (Ngo 2000).

Cell-phone plans and pre-paid phones come standard with features such as voice messaging that functions as an answering machine, caller ID (a caller's number is shown on a display as the call comes in) and call waiting (Chapin 2004; Waycaster 2004).

The monthly payments students pay for utilities also depends on how many roommates are living together and what they sorts of connections they decide to establish. For example, Ngo also describes the situation of a senior female student at University of Virginia.

> Before signing a lease, each of [her] 13 housemates opted to equip herself with an individual cell phone, as opposed to signing on for a regular Sprint ground line. Her housemates now never have to hassle over unknown calls when billing time comes around, or fuss around in drawers to find pens for taking down phone messages (Ngo 2000).

With the popularity of cell phones, there has been a trend among university students to pick up cell phones as an "increasingly attractive alternative to the conventional ground phone line" (Ngo 2000). University students' housing generally has a high level of residential mobility since they move into either on- or off-campus residence upon coming to college, move from one residence to another during the course of the time they are enrolled in college, have multiple roommate changes, and frequently take on seasonal jobs or internships that require that they move into temporary housings (Smith and Marx 1994; Khanna 2002). It is convenient for students to rely on cell phones for both local- and long- distance calls instead of establishing landlines every time they move into a residence, and many of the students have already acquired cell phones prior to moving into their new campus residences. Therefore, it is redundant to get a local phone connection. But for some students, like Emma, the transition of moving off-campus can become the right timing for acquiring cell phones:

Emma, 20, junior, Penn State	
Emma:	So I'm ( ) for that. And it is also convenient to have to meet up with friends or just, I don't know, I don't even have a house phone anymore, I disconnected it, so, I just use my cell phone
Interviewer:	Ok. Ok. So you live off campus now?
Emma:	Yeah, yeah
Interviewer:	So when you got here, that's when you got it or?
Emma:	Um (…) well (…) my freshman year, I didn't have it, and then um (…) I got it Christmas of my sophomore year, so, I lived for semester off-campus and then I decided to get it
Interviewer:	Ok.

The 2003 FACAC survey found that 63% of repspndents who onwed a cell phone said they "replaced all use of wired phones" (FACAC website 2003). The 2004 study by the Yankee Group—a research company—found that "approximately 12 percent of wireless phone users are ages 18 to 24 and have disconnected their landline phone service and use wireless exclusively" (A figure cited in Chapin 2004; Waycaster 2004). This applies particularly to the off-campus students because of the necessity to establish local connections in their residences and their effort to minimize the amount of their phone bill.

Another reason for off-campus students to own and use cell phones is to designate local-ground-line telephone service solely for Internet connectivity or subscribe to a cable-based "broadband" Internet connection (South 2003). The FACAC survey found that with regard to Internet access, 34.6% of their sample group said they used broadband connection off-campus, 21.6% of students said that used an off campus dial-up modem" and "6.6% used a wireless connection." Thirty-two point six percent of respondents used their resident hall connection and only 2.7% of respondents "said they have no Internet connection" (FACAC website 2003). This figure shows that most off-campus students have an Internet connection—either broadband or dial-up modem. Using a dial-up modem, students can be connected "on-line" using a local phone connection. But, when they are on-line, no phone calls can come in. Therefore, some students use their cell phone as the primary telephone used for all phone communication and designate dial-up connection for the Internet. Broadband connection using cable is higher priced than dial-up modem. However, with the convenience and faster Internet connection offered by broadband, many students are choosing non-dial up connections to go on-line. When students have broadband connections and own a cell phone, it eliminates the necessity to have a local connection—unless students call local numbers very frequently since local connection offers unlimited use for a single monthly charge. Moreover, when there are roommates, it becomes more affordable to get a broadband connection which can be connected to multiple computers through connecting cables and a wireless hub. By contrast, using a dial-up connection means that only one roommate can use the line at a time for either phone or Internet purpose.

The average monthly cell bill for my sample group was $41.66. The highest figure indicated was $200 and the lowest figure was $6.67. There were also respondents who wrote down the pre-paid phone charges. Moreover, 147 responses out of 622 total responses (23.6 %) answered that they did not know how much their monthly bills are. All but two students of those who answered that they were not aware of the magnitude of their cell-phone bill indicated that the bill was paid by others. This may mean that for students who do not pay their own cell-phone bill,

the affordability of cell-phone ownership is not much of a concern. I examined whether there were any differences in the magnitude of cell-phone bills between the sub-groups using a one way-Anova. There were no statistically significant differences detected between gender ($p = 0.172$), ethnicity / race ($p = 0.413$), or the two campuses ($p = 0.080$). In addition, there was no statistically significant difference detected in cell-bill mean whether the bill is paid by the students or by others ($p = 0.852$). There were statistically significant differences detected between students living on campus and off campus ($p < 0.001$) (Table 5.28) and among age groups ($p = 0.01$) (Table 5.29). Off-campus students tended to pay higher cell bills ($44.58) than on-campus students ($37.14) or out-of-town students ($38.33). Older students (22-25 year olds) paid, on average, a higher monthly cell bill of $47.06 compared to 20-21 year olds ($41.02) and 18-19 year olds ($38.56).

Table 5.28: Average cell-phone bill according to residency

Source: based on questionnaire data

*note: 147 students responded they don't know the monthly cell- phone bill

Residence One-way Anova sig. ($p < 0.00$)	**N**	**Cell-bill mean**
On campus	167	$37.14
Off campus	285	$44.58
Out of town	23	$38.33
Total	475	$41.66

Post-hoc tests	**Residency**	**Compared to residency**	**Sig.**
Scheffe	**On campus**	**Off campus** Out of town	**<.001** .955
	Off campus	**On campus** Out of town	**<.001** .268
	Out of town	On campus Off campus	.955 .268
Tamhane	**On campus**	**Off campus** Out of town	**<.001** .990
	Off campus	**On campus** Out of town	**<.001** .414
	Out of town	On campus Off campus	.990 .414

In order to further understand which of these groups were statistically different from one another, I used Scheffe and Tamahane[15] post-hoc tests. The tests showed there was a significant difference between on-campus and off-campus students (both tests had $p < 0.001$) (Table 5.29). The out-of-town students were not statistically different from on- or off-campus students. Also, there was a statistically significant difference between 18-19 year olds and 22-25 year olds (Scheffe sig. $p = 0.002$ and Tamahane sig. $p = 0.010$). But there were no significant difference between 20-21 year olds and 18-19 or 22-25 year olds. These tendencies also can be seen as indications that off-campus students tend to go "wireless" by replacing their home phone all together. Out-of-town students may have variations of the arrangements, but they may also live with their family and commute to school. Therefore they most likely have phone and Internet connection at home. Clearly then, there are differences of cell-phone ownership according to residency, in particular between on-campus and off-campus residences. It has been already pointed out that there was higher ownership among off-campus students compared to on-campus or out-of-town students in my sample group (Table 5.3). Moreover, there were fewer students who tended to have pre-paid phone among off-campus students compared to on-campus students (Table 5.27). This means that off-campus students need to rely more on their cell-phones regularly than pre-paid phones which are used only sporadically. Not surprisingly then, cell-phone bills are higher for off-campus students when they need to subscribe to a plan that has enough "minutes" to cater to their needs or their bills are higher because they go over their allowed minutes.

From my personal observation while studying in North American universities and conducting personal interviews, it generally seems that off-campus students tend to be in the older age group than younger age group. Freshmen tended to live on-campus initially, and, after finding a better residential option and roommates to live with, later move off-campus. Such differences may reflect some of the differences between the group of 18-19 year olds and 22-25 year olds. The middle cohort of students may live in on- or off-campus residences, and their cell-phone use, as reflected in their cell-phone bills, are not significantly different from whether 18-19 year old on-campus students and the other group of 22-25 year olds who live off campus.

[15] Tamahane test is used when the variance of the groups are unequal.

Table 5.29: Average cell-phone bill according to age groups

Source: based on questionnaire data

*note: 147 students responded they don't know the monthly cell- phone bill

Age group One-way Anova sig. ($p < 0.01$)	**N**	**Cell-bill mean**
18-19 year olds	127	$35.56
20-21 year olds	246	$41.02
22-25 year olds	102	$47.06
Total	475	$41.66

Post-hoc tests	**Age group**	**Compared age group**	**Sig.**
Scheffe	**18-19**	20-21	.451
		22-25	**.002**
	20-21	18-19	.451
		22-25	.017
	22-25	**18-19**	**.002**
		20-21	.017
Tamhane	**18-19**	20-21	.302
		22-25	**.010**
	20-21	18-19	.302
		22-25	.090
	22-25	**18-19**	**.010**
		20-21	.090

In addition to the growing popularity of cell phones across the nation, there has been another circumstance that has encouraged students (at least at Penn State) to own cell phones. There was a two-week strike by workers at Verizon—a phone company which provides State College's local phone service—at the beginning of the 2000 fall semester. Consequently, many off-campus students, as they moved into their State College residences were not been able to get phone service (Spinweber 2000). Not knowing when they would be connected to a phone line, and given the increasing availability and affordability of cell phones, prompted students to pick up cell phones (Spinweber 2000; also a personal conversation with a student). A similar situation at University of Michigan was experienced by an off-campus student that cell phones have "become a necessity for many students who are still waiting for telephone lines to be connected in their houses and apartment" because the local phone company could not simply keep up with demand of installing phone connections (Kaufman 2000). This unavailability of land-line connections also necessitates or justifies students to acquire cell phones despite the additional costs.

The justification of costs and "economic" choices made by students over the three types of communications are important factors leading to university students' cell-phone ownership. Among the non-cell-phone owners that I interviewed, there were students who consciously chose not to acquire cell phones because of the costs associated with ownership. Some students therefore decided that cell-phone connections are something they can live without or prefer not to have. For instance, Jack explains why he does not have a cell phone as follows:

Jack, 18, freshman, Shippensburg	
Jack:	I mean [sighs], in some ways they're convenient but at the same time like, I'm pretty frugal, so like you know
Interviewer:	Ok
Jack:	It's, it's just an extra expense to like I could use the money for something even better, so

Jack lives on-campus and he uses his campus phone to call his friends on campus and relies heavily on Internet-based communication to contact his more distant friends and family. He utilizes phone cards to call his folks if he needs to, but his parents call him in his room about once a week. Also, his girlfriend from back home has a cell phone that is part of a family plan. So she calls him every night and they talk for an hour. Even though he does not have a cell phone, he has been in contact with family and friends and on a frequent basis because his social "contacts" have the means to contact Jack. Some students that I interviewed mentioned how they communicate with their friends through a land-line because many of them do not check their cell-phone or E-mail messages regularly throughout the day. Moreover, there was a general pattern in the interview transcripts in which students from both on- and off-campus who do not own cell phones emphasized the fact that they were "on-line" all the time. They heavily used E-mail and IM to communicate with their families and friends. Therefore, the usefulness and cost-benefits of cell-phone communication can also depend on students' social contacts' three types of connectivity and the circumstances that students have relating to their families and friends. As discussed earlier, there is a strong correlation between students' cell-phone ownership and their families' ownership. But aspects of their friends' connectivity—whether they have a cell phone and Internet connectivity, and accessibility to landlines in their offices or residences—also matters in understanding the choice of which communication means are used.

The choice of whether to invest in cell phones was also a theme brought up by international students. Several international students who do not own a cell phone expressed in the interviews that they have a perception that it is a costly option which some described as an "unnecessary cost." Some of them have "shopped around" to look for cell phones and decided

that it was not a justifiable cost since they have access to wired phone connections, use Internet-based communication, and / or the U.S. cell-phone plans do not appeal to them. It is also sometimes more difficult for them to subscribe to cell-phone plans since international students often do not have a “credit” history. Moreover, the rates for international calls offered by cell-phone plans have been relatively expensive compared to those of international-calling plans from a land line or a calling card. A majority of the international students that I interviewed used a calling card sold via the Internet website that let them call international cheaply and could be used from a wired phone or a cell phone. Since most cell-phone plans do not offer competitive international calling rates, international students who have cell phones tend to use them because either they drive or travel domestically and / or they have friends and relatives across the United States. A twenty-two year-old exchange graduate student from Western Europe stated that he is only here for the semester and it was not worthwhile investing in a cell phone that he found highly priced. He had been a cell-phone owner as a college student back in his country, but in the U.S., he just uses his office and residence phone and relies on E-mails and IM. International students’ cost-assessments illustrate that cell-phone connections are particularly justifiable for long-distance connections within the country but not as a phone connection for local or out-of-the country.

Summary

This chapter explored the dimensions of university students’ ownership by showing the dominant patterns, tendencies within the sub groups, and highlighted the multiple aspects contributing to students’ decisions to acquire cell phones. Cell phones have become a popular communication tool for students since the early 2000s and concurrently have contributed to altering campus and residential connections. The high ownership level among university students does not necessarily imply that all of them have purchased cell phones for one particular reason. Instead, each student has his or her own reasons and circumstances for selecting a cell phone. These reasons are mostly related to the availability and affordability of communication infrastructure, various aspects of the student’s mobility, and the arrangements and relationships with the people they make contact with. Table 5.30 lists the multiple factors that can contribute to cell-phone ownership or non ownership that were discussed in this chapter. Combinations of these factors are part of each student’s family and residential circumstances and life events. These include episodes such as starting to drive, moving to college, traveling, and getting jobs. Whether

students live on-campus or off-campus contributes to cell-phone ownership since the initial communication infrastructures available to them vary according to residency. These issues also intersect with students' social identities such as gender, age, nationality, and race / ethnicity. For many university students, cell phones are a domestic technology that mediates family relationships and serves as a parenting tool. Additionally, cell phones convey and mediate gendered experiences associated with personal mobility. There were also statistical indications that there are slight differences in cell-phone ownership between white and non-white students.

Building on the factors contributing to cell-phone ownership listed in Table 5.30, the following dimensions of university students' cell-phone consumption warrant further analysis:

- Students' assessments and experiences of cell-phone technology as they intersect with young people's identities;
- Various identity negotiations associated with students' cell-phone consumption taking place in three notable settings—domestic, campus, and on the road;
- How cell phones consumption fit into the time geography associated with students' daily routines;
- The correspondence between students' desires to be "available" and the management of social connection, especially when students are on the move;
- The implications of students' preferences for types of communication such as voice (phone conversation) or text (Internet Messenger, E-mail, Text messaging system).

The next two chapters (Chapter 6 and 7) explore these issues.

Table 5.30: Factors contributing to cell phone (non) ownership

A: Communication Infrastructure: ***-local phone connection,*** ***-long-distance phone connection,*** ***-Internet connection***	a) Cost	• Cost of land-line local connection and / or long distance • Cost of Internet connection • Cost split by roommates? • Affordability of cell-phone plans • Who pays the cell-phone bill?
	b) Cell-phone service	• Types of plans (e.g. family shared, pre-paid phones, local, regional, national) • Nature of contracts (length, credit check) • Reception quality and availability of cell-phone towers

A: Communication Infrastructure [Cont.]:	c) Alternate communication connectivity to a cell phone	♦ Is land-line already installed to residence? ♦ Does residence have Internet connectivity? ♦ Use of phone card
B: Student's mobility	a) daily	♦ Distance traveled everyday ♦ Frequency of returning to residence in the course of a day ♦ Full-time or part-time job
	b) weekly	♦ Frequency of out-of-town travel (e.g. returning home, visiting friends and family)
	c) seasonal or residential	♦ Seasonal job or Internship ♦ Frequency of residency and roommate changes
	d) personal mobility and automobility	♦ Preference or necessity to drive ♦ Geographical extent of personal travel ♦ General perception of danger in public space
C: Contacts	a) Family members and b) friends	♦ Parenting concerns ♦ Cell-phone ownership among family members and friends ♦ Types of cell-phone plans they are part of ♦ Which company they subscribe to ♦ What is the area code of their phones? ♦ Where family members are located (local-calling area or long-distance calling area) ♦ Friends live on campus, local, or long distance? ♦ Availability and accessibility of Internet connectivity for family and friends
	b) Work	♦ Job requiring cell phones ♦ Job involves traveling

Chapter 6—Magnitudes of cell-phone consumption and students' management of communication practices

Introduction

Since the late 1990s, cell phones have been owned by university students—many of them financed by their parents—to carry as a security blanket, to facilitate communications between family and friends, and to replace the functions of a residential-fixed phone. So far, my analysis of the patterns of cell-phone ownership by students has primarily focused on the initial reasons that students acquire a cell phone. Building on those findings, in this chapter I examine how university students have utilized the technology in the early course of the mass diffusion of cell phones. Factors such as cost, accessibility, communication preferences, experiences, and perceptions towards technology can "steer" and / or contribute to students' decisions about how to utilize cell phones. Cell phones have become more than just a security tool in the context of driving and / or a designated phone to make long-distance calls. As students become accustomed to having and using cell phones, they appreciate and make greater use of the technology in its full capacity due to its convenience and portability. In addition, students have been adapting resourcefully to the rapidly changing nature of cell-phone technology. My aim in discussing cell-phone consumption is to show how students' actual uses relate to their initial intended uses, but also to show how university students have been making both creative and practical adjustments within their daily routines, communication needs, life styles, and their "desires."

There are two major aspects of cell-consumption that I explore. One is the aspect relating to quantifiable and qualitative dimensions of cell-phone consumption patterns. The other is the meanings associated with students' daily management of communication methods and practices. I begin by presenting the major findings on consumption patterns identified from my survey data and interview transcripts to illustrate the variety of ways in which students have been incorporating cell-phone technology into their lives. A series of quantitative analyses points to the fact there are variations in the intensity of uses among different subgroups. Through further qualitative findings, I illustrate that these variations stem, "in part," from students' negotiations of cell-phone technology and residential infrastructure. I also discuss how the nature of cell-phone consumption is understood in relation to other types of communication devices, since students choose to use particular combinations of communication modes in relating to various people. This also means that not all students use cell phones on a regular basis or perceive them to be suitable for their everyday communication needs. For others, cell phones are more than a wired phone and

the different features associated with them also add particular meanings and experiences with their utilization.

There are two major ways in which cell phones are used in spaces outside of their residences as a result of their "mobility." The first is to organize their activities and social relations. Cell phones allow students to arrange meetings with their friends, colleagues, and new contacts without being "fixed" in a particular space. They also serve as an "orienting" tool for students by helping them to coordinate with their friends, find their way when they are lost, organizing their contacts through an address book, and by using it as a primary clock. The second type of use relates to the personal customization of the spatial experiences while on the move by "filling" the mundane-transitional spaces with personal cell-phone conversations. Finally, I discuss how university students' cell-phone consumption is related to students' desires to be "available" to others. I emphasize that the dominant socio-spatial implication of students' cell-phone consumption is about their sense of self-control over their communication "connections" through their managements of their mobility, extensibility, availability, accessibility, and personalized uses.

Cell-phone usage patterns

Intensity of uses

There are several ways to assess the extent of university students' cell-phone consumption. The amount of monthly cell-phone bills may indicate one aspect of use intensity since it reflects students' investments towards cell-phone plans (Appendix A, Q #9). As I discussed in the previous chapter, analyses of cell-phone bill indicated that off-campus students tended to spend more in comparison with on-campus students because of their need to establish a phone line and Internet connections to their residences. Instead of paying for multiple bills for wired phone connections to connect both phone and Internet, cell phones, and cable-TV bills, many off-campus students have replaced the home phone with cell phones. Consequently, students invest in cell phones in order to meet the needs of phone communication in the absence of wired phones.

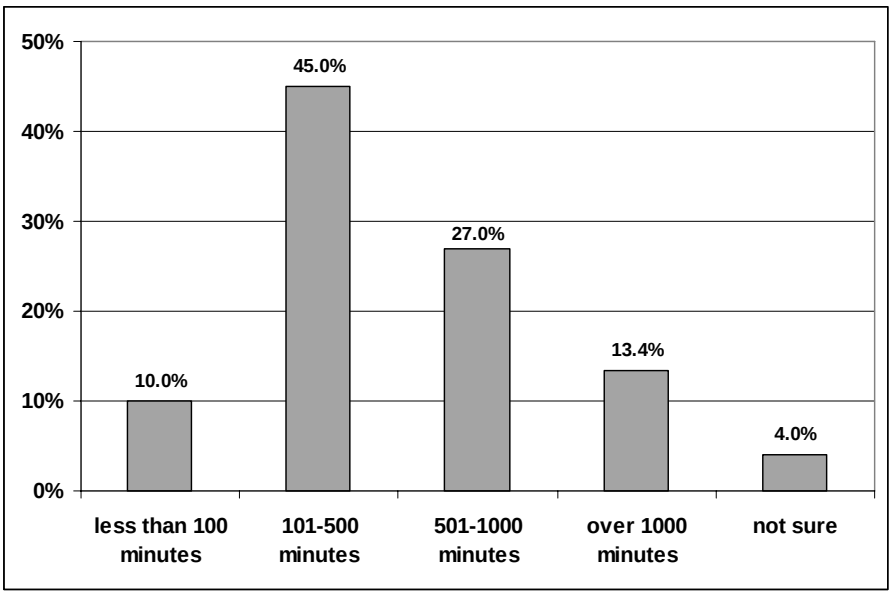
Cell-phone use can be also discussed in terms of how long students spend time on the phone. Figure 6.1 shows Penn State's student's per month cell-phone usage in 2003. Forty-five percent of the students responded that they use cell phones 101-500 minutes per month, 27% responded 501-1000 minutes per months, 10% answered less than 100 minutes, 13.4% answered

over 1000 minutes, and 4% indicated they are not sure. The cell-phone plan shown as Figure 5.7 indicates that a basic AT&T local plan offering up to 400 minutes costs $39.99, which generally corresponds with the average cell-phone bill of $41.66.[16]

Questionnaire respondents were asked about average amount of time they spend on their cell phone each day (Appendix A Q# 15). It is important to note that I used the word "spend" and not "talk" in my questionnaire. In addition to talking, students may have spent their time using text messaging, reading E-mail / Instant Messaging, listening to voice messages, and playing games. But it could be assumed that many students utilize cell phones primarily for voice communication, especially during the period of my data collection when other capabilities such as Internet-connectivity and built-in camera were limited in their availability and use (uses of various cell-phone features are discussed later). Among the cell-phone users, the majority (44.3%) of the students responded that they spend *less than an hour* a day (Figure 6.2). Twenty-eight point eight percent of students indicated that they use cell phones *1-2 hours* and 19.4% of students said they *don't use it everyday*. About 7% of students said they use it for *more than 3 hours*.

Figure 6.1: Penn State Students' per month cell-phone usage

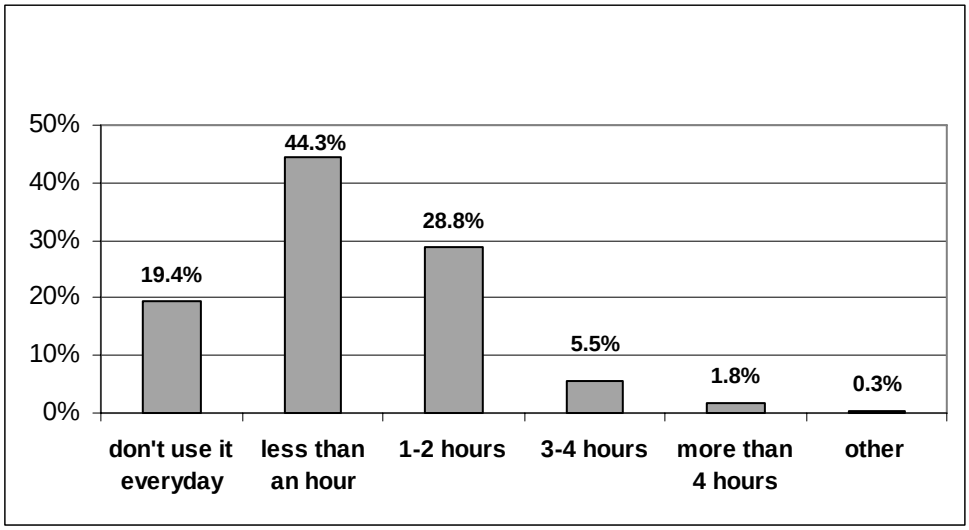
Source: 2003 FACAC survey (FACAC website 2003)



[16] The cell-phone bill may be more than $39.99 because there are often additional fees such as taxes and service fees.

Figure 6.2: Time spent using cell phone everyday

Source: based on questionnaire data (N = 619)



In order to analyze the trend within the subgroups of my sample, I collapsed the categories of talk time into *don't use it everyday*, *less than an hour*, and *more than an hour* and omitted the students who indicated *other*. I used crosstab / chi-square analyses to explore if there were any differences between age groups, and who pays for the cell phone. There were no statistically significant differences between the three age groups (18-19, 20-21, and 22-25) ($p = 0.635$) or who pays the phone-bill (myself or others) ($p = 0.097$). There were, however, statistically significant differences ($p < 0.05$) detected among the following subgroups.

- Male students tended to use cell phones *less than an hour* ($p = 0.029$) (Table 6.1). On the other hand, there were more female students (142) in the *more than an hour* category than expected (128.7). In the category of *don't use it everyday*, there were more female students (71) than expected (68.6), whereas there were fewer male students (49) than expected (51.4).
- There were more Penn State students (143) who answered that they spend *less than an hour* than expected (129.3) ($p = 0.025$) (Table 6.2). On the other hand, there were more Shippensburg students (121) who spend *more than an hour* than expected (181.9). There were also more Shippensburg students (75) who *don't use it everyday* than expected (63.4).

- There were more white students (110) that *don't use it everyday* than expected (103.9) and also more white students (244) than expected (237.3) who used their phone *less than an hour* (P = 0.006) (Table 6.3). In comparison, there were more non-white (minority) students (43) than expected (30.2) that indicated they used their phone *more than an hour*.
- Out-of-town students were harder to generalize because of the smaller sample size which resulted in an expected count that was less than 5. Therefore, chi-square analysis is omitted for out-of-town campus students. Instead, on-campus and off-campus students were compared (p = 0.001) (Table 6.4). There were more on-campus students (67) who *don't use it everyday* than expected (49.9). Off-campus students tended to have more students (156) who answered they use *less than an hour* than expected (148.4) and more students (131) who said *more than hour* than expected (121.5).
- There was also a statistically significant difference detected between students with various lengths of cell-phone ownership. As seen from the crosstab table (Table 6.5), there was a general tendency that the shorter the length of ownership, the more students who answered *don't use it everyday,* whereas students that reported longer ownership tended to use their phones for *more than an hour* (p = 0.009).

Table 6.1: Crosstabulation of length of time spent using cell phones according to gender

Source: based on questionnaire data

N = 619		**Don't use it everyday**	**Less than an hour**	**More than an hour**
Male	Count (Expected count) % within gender	49 (51.4) 18.5%	133 (117.3) 50.2%	83 (96.3) 31.3%
Female	Count (Expected count) % within gender	71 (68.6) 20.1%	141 (156.7) 39.8%	142 (128.7) 40.1%
Pearson Chi-square sig. (p = 0.029)				

Table 6.2: Crosstabulation of length of time spent using cell phones according to place Source: based on questionnaire data				
N = 619		**Don't use it everyday**	**Less than an hour**	**More than an hour**
Penn State	Count (Expected count) % within place	45 (56.6) 15.4%	143 (129.3) 49.0%	104 (106.1) 35.6%
Shippensburg	Count (Expected count) % within place	75 (63.4) 22.9%	131 (144.7) 40.1%	121 (118.9) 37.0%
Pearson Chi-square sig. (p = 0.025)				

Table 6.3: Crosstabulation of length of time spent using cell phones according to ethnicity / race Source: based on questionnaire data				
N = 619		**Don't use it everyday**	**Less than an hour**	**More than an hour**
White	Count (Expected count) % within ethnicity / race	110 (103.9) 20.5%	244 (237.3) 45.5%	182 (194.8) 34.0%
Minority	Count (Expected count) % within ethnicity / race	10 (16.1) 12.0%	30 (36.7) 36.1%	43 (30.2) 51.8%
Pearson Chi-square sig. (p = 0.006)				

Table 6.4: Crosstabulation of length of time spent using cell phones according to residency Source: based on questionnaire data				
N = 594		**Don't use it everyday**	**Less than an hour**	**More than an hour**
On-campus	Count (Expected count) % within residency	67 (49.9) 25.8%	108 (115.6) 41.5%	85 (94.5) 32.7%
Off-campus	Count (Expected count) % within residency	47 (64.1) 14.1%	156 (148.4) 46.7%	131 (121.5) 39.2%
Pearson Chi-square sig. (p = 0.001) * note 1 cell (out-of-town's don't use it everyday cell) have expected count less than 5. I decided to separate out off-campus and out-of-town because they do not seem to share the same characteristics in other analyses. This table shows the chi square analysis of talk time compared between on-campus and off-campus students only—out-of-town students were omitted from this analysis.				

Table 6.5: Crosstabulation of length of time spent using cell phones according to length of ownership Source: based on questionnaire data				
N = 619		**Don't use it everyday**	**Less than an hour**	**More than an hour**
Less than a year	Count (Expected count) % within length of ownership	36 (29.1) 24.0%	67 (66.4) 44.7%	47 (54.5) 31.3%
Between 1-2 yrs	Count (Expected count) % within length of ownership	28 (22.3) 24.3%	53 (50.9) 46.1%	34 (41.8) 29.6%
Between 2-3 yrs	Count (Expected count) % within length of ownership	35 (31.4) 21.6%	69 (71.7) 42.6%	58 (58.9) 35.8%
More than 3 yrs	Count (Expected count) % within length of ownership	21 (37.2) 10.9%	85 (85.0) 44.3%	86 (69.8) 44.8%
Pearson Chi-square sig. (p = 0.009)				

Another way to assess the intensity of cell-phone use is by examining how many phone calls students receive and make during the course of the day. Respondents filled in an average number of calls made and received per day (Appendix A Q.#16). The number of calls received and made ranged from 0 to 30 calls per day, indicating there are wide variations in use. The average number of calls made was 4.16 calls per day and received 4.02 calls per day. One of the most common responses was two calls received (16.9%) and two calls made (17.5%) per day. I used one-way Anova to compare the average number of calls made and received between the subgroups. There were no statistically significant differences between female and male students (p = 0.623 for calls made and p = 0.747 for calls received) and age groups (p = 0.304 for calls made and p = 0.427 for calls received). There were statistically significant differences detected among the following sub-groups.

- Penn State students had higher average of number of calls made than Shippensburg students (p = 0.032), but there was no statistically significant differences in regards to average number of calls received (p = 0.222) (Table 6.6).
- White students had lower averages of both calls made (3.99) and received (3.77) compared to the average number of calls made (5.29) and received (5.76) by minority (non-white) students (Table 6.7).

- There were no statistically significant differences by residency for both average number of calls made ($p = 0.002$) and received ($p = 0.020$) (Table 6.8). The post-hoc tests consisting of both Scheffe and Tamahane tests[17] indicated that there were differences between on-campus and off-campus students (significance value for Scheffe and Tamahane for both made and received was $p = 0.003$). On-campus students made and received significantly less calls than off-campus students for both calls made and received. Out-of-town students were not statistically different from on-campus or off-campus students.
- There was a general tendency detected among students with varying lengths of ownership for both average number of calls made ($p < 0.001$) and received ($p < 0.001$) (Table 6.9). On average, there is a tendency for a greater number of calls made and received with longer periods of cell-phone ownership. For the average number of calls made, the Scheffe test indicated there was a statistically significant difference between students who had cell phones for *more than 3 years* compared to students who had cell phones for less than a year ($p < 0.001$) and *between 1-2 years.* For the average number of calls received, there were statistically significant differences between students who had cell phones for *less than a year* and students who had cell phones for *between 2-3 years* ($p = 0.004$) and *more than 3 years* ($p < 0.001$). Thus, generally speaking, the students who have cell phones longer tended to make and receive calls more frequently compared to students who had their cell phones for shorter periods of time.

Table 6.6: Average calls made and received according to place

Source: based on questionnaire data

	Place	N	Mean value
Average # of calls made	*Penn State*	282	4.51
One-way Anova sig. ($p = 0.032$)	*Shippensburg*	315	3.84
	Total	597	4.16
Average # of calls received	*Penn State*	281	4.22
One-way Anova sig. ($p = 0.222$)	*Shippensburg*	313	3.83
	Total	594	4.01

[17] Tamahane is a post-hoc test used when the variance of the groups are unequal. It was used here because the number of out-of-town students (24) was significantly less than on-campus (247) and off-campus students (325).

Table 6.7: Average calls made and received according to race / ethnicity

Source: based on questionnaire data

	Race/ ethnicity	N	Mean value
Average # of calls made One-way Anova sig. (p = 0.006)	*White*	520	3.99
	Non-white	77	5.29
	Total	597	4.16
Average # of calls received One-way Anova sig. (p < 0.001)	*White*	519	3.77
	Non-white	75	5.76
	Total	594	4.02

Table 6.8 Average calls made and received according to residency

Source: based on questionnaire data

	Residency	N	Mean value
Average # of calls made One-way Anova sig. (p = 0.002)	*On campus*	247	3.59
	Off campus	325	4.67
	Out of town	24	3.33
	Total	596	4.17
Average # of calls received One-way Anova sig. (p = 0.020)	*On campus*	244	3.57
	Off campus	325	4.42
	Out of town	24	3.21
	Total	593	4.02

Post-hoc tests	Residency	Compared to residency	Sig.
Scheffe	**On campus**	**Off campus** Out of town	**.003** .953
	Off campus	**On campus** Out of town	**.003** .251
	Out of town	On campus Off campus	.953 .251
Tamhane	**On campus**	**Off campus** Out of town	**.003** .969
	Off campus	**On campus** Out of town	**.003** .102
	Out of town	On campus Off campus	.969 .102

Table 6.9: Average calls made and received according to length of ownership

Source: based on questionnaire data

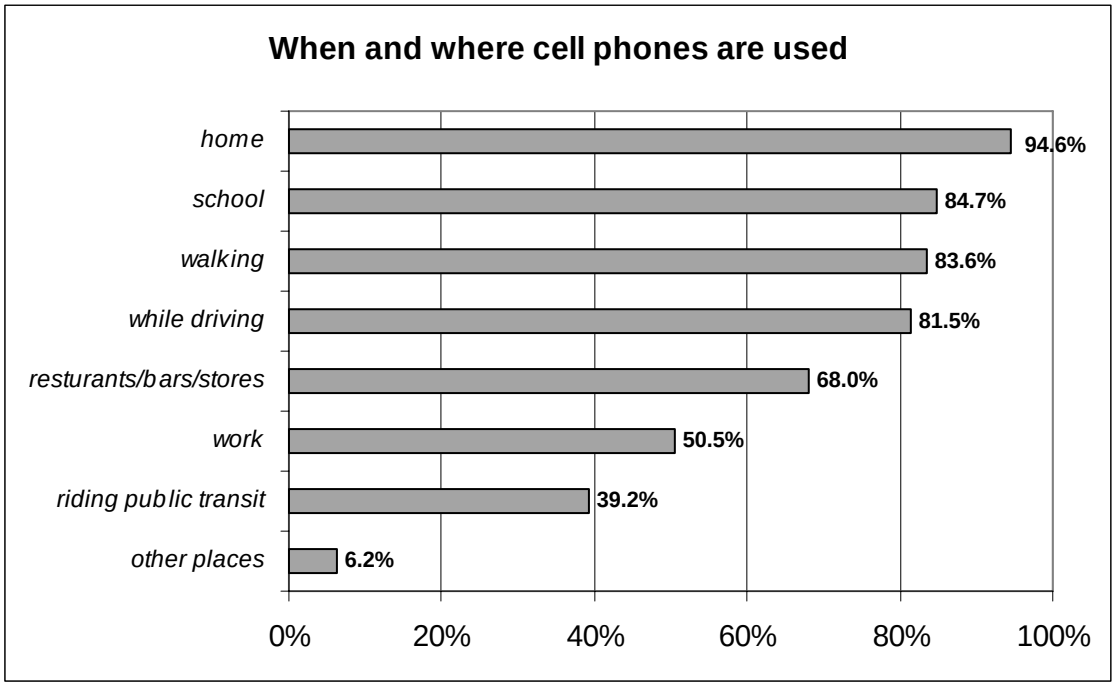
	Length of Ownership	N	Mean value
Average # of calls made	*Less than a year*	145	3.12
One-way Anova sig. ($p < 0.001$)	*Between 1-2 yrs*	108	3.31
	Between 2-3 yrs	157	4.31
	More than 3 yrs	187	5.33
	Total	597	4.16
Average # of calls received	*Less than a year*	144	2.73
One-way Anova sig. ($p < 0.001$)	*Between 1-2 yrs*	109	3.26
	Between 2-3 yrs	154	4.35
	More than 3 yrs	187	5.17
	Total	594	4.02

Post-hoc tests	Residency	Compared to residency	Sig.
Scheffe for Average # of calls made	***Less than a year***	1-2 yrs	.983
		2-3 yrs	.054
		3+ yrs	**<.001**
	Between 1-2 yrs	< 1 yr	.987
		2-3 yrs	.207
		3+ yrs	**<.001**
	Between 2-3 yrs	< 1 yr	.054
		1-2 yrs	.207
		3+ yrs	.093
	More than 3 yrs	**< 1 yr**	**<.001**
		1-2 yrs	**<.001**
		2-3 yrs	.093
Scheffe for Average # of calls received	***Less than a year***	1-2 yrs	.749
		2-3 yrs	**.004**
		3+ yrs	**<.001**
	Between 1-2 yrs	< 1 yr	.749
		2-3 yrs	.149
		3+ yrs	**.001**
	Between 2-3 yrs	**< 1 yr**	**.004**
		1-2 yrs	.149
		3+ yrs	.262
	More than 3 yrs	**< 1 yr**	**<.001**
		1-2 yrs	**.001**
		2-3 yrs	.262

An indication that cell phones became integrated into students' daily lives was illustrated by where cell phones were used (Figure 6.3). Cell phones were used in "transitional" settings since 83.5% of students used them *while walking* and 81.5% use it *while driving*. Cell phones were no longer designated as a communication tool for "just-in-case" emergencies scenarios, but are being used in everyday domestic, institutional, and public spaces. Ninety-four point six percent of the students in my questionnaire sample used their cell phones *at home* and 84.7% *at school*. Sixty-eight percent of students used cell phones in retail spaces such as *restaurants, bars, and store* and 50.5% used them *at work*. Only 39.2% of students used cell phones *while riding public transit*. This is reflected in the fact that not many students took public transit on a daily basis because of its limited availability and heavy reliance on automobile travel.

Figure 6.3: When and where cell phones are used

Source: questionnaire response



Furthermore, there was a general correlation between how students ranked the importance of reasons for getting cell phones and the intensity of various cell-phone uses. Groups of students were created based upon the reasons for getting a cell phone using hierarchical cluster analysis (employing the Ward's method as the clustering technique). The resulting dendrogram

showed three groupings (see Appendix D for the actual dendrogram). Then, in order to determine attributes of each group, I used the non-parametric Kruskal-Wallis H test (for comparing the rankings of reasons), one-way Anova (for comparing the means of cell-phone bills and of how many calls were made and received per day), and crosstab / chi square analyses (for comparing the count of students according to the time spend on cell-phones everyday, residency, age group, who pays the cell-phone bill, who uses the pre-paid cell-phone option, and where and when cell phones were used to the statistical expected counts).

There were no statistically significant differences between the three groups in how they ranked "emergency purposes," which means that owning a phone for security reasons was a critical issue for all groups. There were statistically significant differences ($p < 0.001$) for all other reasons (discussed further below). There were no statistically significant differences between the three groups in terms of gender composition ($p = 0.776$), whether they were Shippensburg or Penn State students ($p = 0.799$), racial / ethnic make up ($p = 0.508$), or length of ownership ($p = 0.273$). On the other hand, there were significant differences among the three groups in regards to average number of phone calls made per day ($p = < 0.001$) and received per day ($p < 0.001$), time spent on cell-phones everyday ($p < 0.001$), age group ($p =.001$), residency ($p = 0.039$), cell-phone payment ($p < 0.001$), and pre-paid minutes ($p = 0.043$). There was no significant difference between them whether cell phone was used *while driving* ($p = 0.250$). This shows how cell-phone use while driving was a prevalent and common activity among students, perhaps because cell phones were regarded as security measures on the road. There were significances for all the other categories including cell-phone uses *at home* ($p < 0.001$), *at school* ($p = 0 .016$), *at work* ($p < 0.001$), *restaurants / bars / stores* ($p = 0.001$), *while walking* ($p < 0.001$) and *while riding public transit* ($p = 0.002$). Table 6.10 summarizes the characteristics of each group by pointing out these significant differences.

The first group consisted of students who tended to rank most of the reasons higher compared to Group 2 and 3's rankings with just a few exceptions including "Family purchased for you," "Keep in touch with significant other" and "It is affordable" which were ranked in the middle compared to the other groups. Group 1 had made (5.18) and received (5.17) the highest number of calls per day on average. This group can be called "economically-dependent-heavy users" since the reason of "family purchased for you" was ranked higher than Group 2, and there was a higher count of students (125) that had their cell-phone bill financed by others. In addition, there were more 18-19 year olds (75) and on-campus students (87) than expected (57.3 for 18-19 year olds and 76.8 for on-campus students).

The second group included students who tended to rank “affordability” and “to keep in touch with significant other” highest among the three groups. All of the other reasons were ranked in the middle within the exception of “family purchased for you” which was ranked much lower than the other two groups. There were more students (114) in this group who paid their own cell-phone bill than expected (85.3). This group of students can be described as “self-sustaining economically-conscientious users” who tended to pay for their cell-phone bill and tended to put an emphasis on affordability. Group 2 made 4.13 calls and received 3.93 calls per day on average. These values are lower than Group 1, but higher than Group 3. In addition, Group 2 had more students who were 20-22 year olds (113) and 23-25 year olds (49) than expected (100.8 and 40.9 respectively) and tended to have more students who lived off-campus (130) than expected (112.4). Group 1 and 2 had about the same monthly cell-phone bill ($44.40 vs. $43.47) and both groups had higher numbers of students (78 for Group 1 and 84 for Group 2) who spent more than an hour on their phones everyday than expected (65.3 and 73.7 respectively).

The major differences between Group 1 and Group 2 were that Group 1 tended to have more younger students (18-19 year olds), more students who lived on-campus, and cell-phone payments were often made by their parents. On the other hand, Group 2 tended to have more students who were in the older age group, lived off-campus, and paid for their own cell-phones. Therefore, in addition to residency differences, the major factor that differentiated the two was how cell phones were financed. Another difference between Group 1 and 2 was based on where and when cell phones were used. Group 1 was made up of students who were heavy users because it had more students than expected in all categories. On the other hand, economically-conscientious users seemed to restrict or did not use cell phones in some settings. For example, there were slightly more students (200) than expected (195.2) who used cell phone *at home* and more students (175) than expected (172.9) who used it *while walking*. These differences were statistically significant at $p < 0.01$. On the other hand, they tended not to use cell phones at stores and *while riding public transit*. The students in this group who used it *at school* (174) and *at work* (106) were about the same number as expected (175.9 and 106.9).

In contrast, the third group of students ranked most reasons lower than the other two groups. Group 3 consisted of students who tended to have cell phones most likely because their family members purchased and financed them. In this group, there were more students (103) who had cell phones financed by others than expected (92.3) and more students (34) who used the pre-paid option than expected (25.4). Also they seemed to use cell phones less than the other groups as reflected in the fact the average cell-phone bill ($36.26) was significantly lower than both

Group 1 ($44.40) and Group 2 ($43.47). The lower cell-phone bill may also be related to the cell-phone plans utilized (such as a basic local plan with minimal allowed minutes, or, pre-paid options). Group 3 made (2.92) and received (2.81) significantly fewer calls than the other two groups. There were also more students (53) who did not use their cell phones everyday than expected (30.5). Many of these students may have cell phones for security purposes only, perhaps for safety on the road. Group 3, therefore, can be considered as "economically-dependent light-users." This group of light users also tended to use cell-phones less than expected in all categories of place and time. Such indicators also point to the fact that they use their cell phones more for security purpose on the road and not for daily phone communications. This group had about the expected number of students in each age group, but there tended to be more on-campus students (73) than expected (65.8).

I ran a series of across / chi square analyses between the three cluster groups and the frequency of talking to their parents(s), sibling(s), significant other, friend(s), friend(s) and people at work (addressed in Q#17, see Appendix A). To remove problems with low expected counts, I collapsed the frequency categories to *never*, *monthly / weekly*, and *daily*. There was no significant difference between the three groups in terms of how often they speak to their sibling(s) ($p = 0.539$). There were, however, statistically significant differences in the frequency of talking to significant others and people at work. Group 1 had more students (35) who talked to their significant others in the *weekly and monthly* category than expected (31.1) and more students (102) that spoke to their significant other *daily* than expected (97.3). There were also a higher count of students who talked to people at their work on *daily* basis (13) than expected (9.5) and *weekly / monthly* basis (75) than expected (67.5). Group 2, on the other hand, had more students (149) than expected who talked to their significant other on a *daily* basis. This was not surprising because they also ranked the reason of "keep in touch with significant other" higher than the other two groups. Group 2 also had a higher count of students who talked with people at their work on *weekly / monthly* basis (86) than expected (79.6). On the other hand, Group 3 had more students who *never* (69) talked to their significant other than expected (34.6) as well as more students (29) who talked to them on *weekly / monthly* basis (29) than expected (26.5). "The economically-dependent-light users" had a higher count of students (100) who *never* talked with people at work than expected (83.8).

In my overall sample, there were only 5 students who *never* talked to their parents and only 15 students who *never* talked with their friends. This resulted in few cells that had an expected count of less than 5. To explore whether there are differences among the three groups in

terms of the frequency of talking to their parents and friends, I omitted the category of *never* for the sake of comparison between those who talked to them *daily* and *monthly / weekly.* Interestingly, there was a significance level of p = 0.025 for frequency of talking to parents and p = 0.001 for talking to their friends. These differences show the strength of "family connections" facilitated by cell- phone communication as well as the use of cell phones to communicate with a range of people.

Group 1—Economically-dependent heavy users—who talked to their significant other and people at work on a frequent basis, also had a higher count of students (68) who talked to their parents than expected (57) and their friends (126) than expected on a *daily* basis. In the third group—economically-dependent-light-users—there were slightly more students (52) who talked to their parents on a *daily* basis than expected (49.6) but less students (70) who talked to their friends on a *daily* basis than expected (83.0). These patterns matched up with the fact that their cell phones were financed by their parents and they talked to their parents using cell phones and not much with other people (Table 6.14). Therefore, their cell phones were more for "family connections" based on relationships with their parents. But, unlike Group 1, cell phones were more for emergency purposes and less for daily communication with a range of people.

In Group 2—self-sustaining-economically-conscientious users—who talked with their significant other on a *daily* basis, there were more students (148) who talked to their parents and friends (92) on *monthly and weekly* basis than expected (134.6 for parents, 81.8 for friends). This group of students, then, was more focused in using their cell phones to relate to their significant other than to their parents and friends using their cell phones. There were several interviewees who mentioned that they used their cell phones to call their significant other who was in a long-distance region. Free long-distance calling plans allow students to communicate cheaply with their significant other on a daily basis. In some other cases, students were in a "family plan" with their fiancé, spouse, and or boyfriend / girlfriend. Group 2 had more students who were in the older age group which means that many of these students were in a different life stage than those of younger cohorts. For example, they had been away from their family for a while and were starting a new family of their own, or, their intimate relationship had shifted from their parents to their significant others.

The three cluster groups illustrate the variations and gradations with which students allocated their communication needs to their cell phones. The differences depended on who financed their cell phones and whom they communicated with using their cell phones, but also, on students' life stages.

Table 6.10: Three cluster groups of reasons for getting a cell phone

Source: based on questionnaire data

Group 1 (N = 182) Group 2 (N = 207) Group 3 (N = 157)			**Group 1 Economically-dependent-heavy users**	**Group 2 Self-sustaining economically-conscientious users**	**Group 3 Economically-dependent-light users**
"Family purchased for you" k-test sig. (p < .001)		k-test rank value	346.62	192.52	295.52
"Keep in touch with significant other" k-test sig. (p < .001)		k-test rank value	314.04	338.73	140.49
"Because it is affordable" k-test sig. (p < .001)		k-test rank value	280.51	296.63	234.88
Other reasons k-test sig. (p < .001)		k-test rank value	Most were ranked high compared to Groups 2 and 3	Most were ranked in the middle compared to Groups 1 and 3	Most were ranked lowest compared to Groups 1 and 2
Average # of phone calls made per day One way A-nova sig. (p < .001)			5.18 calls (Sig. from Group 2 and 3)	4.13 calls (Sig. from Group 1 and 3)	2.92 calls (Sig. from Groups 1 and 2)
Average # of phone calls received per day One way A-nova sig. (p < .001)			5.17 calls (Sig. from Group 2 and 3)	3.93 calls (Sig. from Group 1 and 3)	2.81 calls (Sig. from Groups 1 and 2)
Average amount of cell-phone bill One way A-nova sig. (p =.001)			$44.40 (Sig. from Group 3)	$43.47 (Sig. from Group 3)	$36.26 (Sig. from Groups 1 and 2)
Time spent on cell-phones everyday Chi square sig. (p < .001)	*≠ everyday*	Count (Expected)	21 (35.0)	31 (39.5)	53 (30.5)
	< 1 hr	Count (Expected)	81 (79.7)	88 (89.8)	70 (69.5)
	> 1 hr	Count (Expected)	78 (65.3)	84 (73.7)	34 (57.0)
Age group Chi square sig. (p = .001)	*18-19 year olds*	Count (Expected)	75 (57.3)	45 (65.2)	52 (49.5)
	20-22 year olds	Count (Expected)	79 (88.7)	113 (100.8)	74 (76.5)
	23-25 year olds	Count (Expected)	28 (36.0)	49 (40.9)	31 (31.1)
Residency Chi square sig. (p = .039)	*On-campus*	Count (Expected)	87 (76.8)	70 (87.4)	73 (65.8)
	Off-campus	Count (Expected)	89 (98.8)	130 (112.4)	77 (84.7)
	Out-of-town	Count (Expected)	6 (6.3)	7 (7.2)	6 (5.4)
Cell-bill payment Chi square sig. (p < .001)	*Myself*	Count (Expected)	57 (75.0)	114 (85.3)	54 (64.7)
	Others	Count (Expected)	125 (107.0)	93 (121.7)	103 (92.3)

Table 6.10: Three cluster groups of reasons for getting a cell phone [contd.]			**Group 1 Economically-dependent-heavy users**	**Group 2 Self-sustaining economically-conscientious users**	**Group 3 Economically-dependent-light users**
Pre-paid minutes Chi square Sig. (p = .043)	*Students who use*	Count (Expected)	30 (29.8)	25 (33.9)	34 (25.4)
At home Chi square Sig. (p < .001)	*Students who use*	Count (Expected)	179 (171.7)	200 (195.2)	136 (148.1)
At school Chi square Sig. (p = .016)	*Students who use*	Count (Expected)	165 (154.7)	174 (175.9)	125 (133.4)
At work Chi square Sig. (p < .001)	*Students who use*	Count (Expected)	113 (94.0)	106 (106.9)	63 (81.1)
At stores etc. Chi square Sig. (p = .001)	*Students who use*	Count (Expected)	142 (124.7)	138 (141.8)	94 (107.5)
While walking Chi square Sig. (p < .001)	*Students who use*	Count (Expected)	167 (152.0)	175 (172.9)	114 (131.1)
While riding public transit Chi square Sig. (p = .002)	*Students who use*	Count (Expected)	88 (70.7)	77 (80.4)	47 (61.0)
Frequency of talk with significant other Chi square Sig. (p < .001)	*Never*	Count (Expect.)	32 (40.6)	23 (48.8)	69 (34.6)
	Weekly / Monthly	Count (Expect.)	35 (31.1)	31 (37.4)	29 (26.5)
	Daily	Count (Expect.)	102 (97.3)	149 (116.8)	46 (82.9)
Frequency of talk with people at work Chi square Sig. (p = .023)	*Never*	Count (Expect.)	85 (96.0)	108 (113.2)	100 (83.8)
	Weekly / Monthly	Count (Expect.)	75 (67.5)	86 (79.6)	45 (58.9)
	Daily	Count (Expect.)	13 (9.5)	10 (11.2)	6 (8.3)
Frequency of talk with parents* Chi square Sig. (p = .025)	*Weekly / Monthly*	Count (Expect.)	101 (112.0)	148 (134.6)	95 (97.4)
	Daily	Count (Expect.)	68 (57.0)	55 (68.4)	52 (49.6)
Frequency of talk with friends* Chi square Sig. (p = .001)	*Weekly / Monthly*	Count (Expect.)	45 (68.2)	92 (81.8)	68 (55.0)
	Daily	Count (Expect.)	126 (102.8)	113 (123.2)	70 (83.0)

* The category "never" was omitted from the chi /square analysis for frequency of talk with parents and friends because of very small number of students in that category.

Just / more than a phone

Another dimension in understanding the magnitude of cell-phone consumption was to consider what sorts of cell-phone features were used by students. Cell phones are increasingly used for different types of communication, entertainment, and data storage. This fact has been recognized in the studies conducted in numerous national contexts such as Japan and Northern European countries since the late 1990s (Tomita, Fujimoto, Okada, Matsuda, and Takahiro 1997; Kawaura and Matsuda 2001; Brown, Green, and Harper 2002; Katz and Aakhus 2002; Okada and Matsuda 2002; Katz 2003; Ito, Okabe, and Matsuda 2005). Japanese scholars such as Okada and Matsuda (2002; also see Tomita, Fujimoto, Okada, Matsuda and Takahiro 1997) have taken the approach in their studies of defining a cell phone device and related technology as more than just a portable phone and as "multi-media." In many countries around the world, the text-messaging system has become a popular way to communicate and, therefore, cell phones have brought new types of communication that have dimensions of self-expression as well as unique ways of networking (Kasesniemi and Rautiainen 2002; Kim 2002; Ling and Yttri 2002; Ito, Okabe, and Matsuda 2005). In addition, there has been a big "hype" and multiple speculations about the "revolutionary" consequences of people consuming "IMODE" service offered by cell-phones as well as WAP [Wireless Application Protocol] enabled cell-phones in Europe (Brown, Green, and Harper 2002; Rheingold 2002; Ito, Okabe, and Matsuda 2005). These services allow users to browse Internet web sites and receive information such as geographical directions to a destination, news updates, weather forecasts, and daily horoscopes from various agencies and databases. Accordingly, which features were utilized or not used by students could reveal how students have been incorporating cell-phone technology in their everyday routine and lifestyles. Such an analysis assists in understanding the extent of university students' cell-phone consumption in the early course of mass diffusion—my study period—and how their uses may have evolved over time when examined at a later date.

Geoff Cooper (2002) points out that there are eight major features of the modern cell phones including sending and receiving phone calls either from landlines and other cell phones, listening and leaving message on voice mails (answering machine service), sending and receiving storing text, graphics and music, connecting to the Internet, using telephone book (address book) to store contact information, using calendar [date book] for daily planning, identifying callers through caller identification, and utilizing alarm clock, calculators and games (Table 6.11). Students' communicative uses could have varied from just sending and receiving telephone calls

to also using text messaging and Instant Messaging program through their phone. Some of the additional features that were standard at the time of my survey—such address book, alarm clocks, calculator and games—could be fully, partially, or never be utilized. Caller identification feature on cell-phones allowed students to see who was calling them before answering (as long as the numbers were listed in their telephone book) and allowed them to automatically retrieve numbers of incoming callers to be stored in their telephone book. Today, in addition to the online-data access through IMODE and WAP services, the latest cell phones allow users to view television clips, videos, and store music. These are referred to as "smart phones." "Blackberrys," the "T-Mobile sidekicks," the "Nokia 6620," and the "Motorola SLVR" are some examples of smart phones that are popular in the mid-2000s.

Table 6.11: The 8 different features of the modern cell phone outlined by Cooper Source: Cooper 2002, 6	
1	Send and receive telephone calls from / to land lines
2	Send and receive telephone calls from other cell phones
3	Telephone book and limited calendar functionality
4	Mobile short messaging of text, graphics and music (send and receive)
5	Alarm clock, calculator, games
6	Online data access through WAP or IMODE service
7	Caller identification with name recognition from telephone book
8	Personal voice mail with mobile access

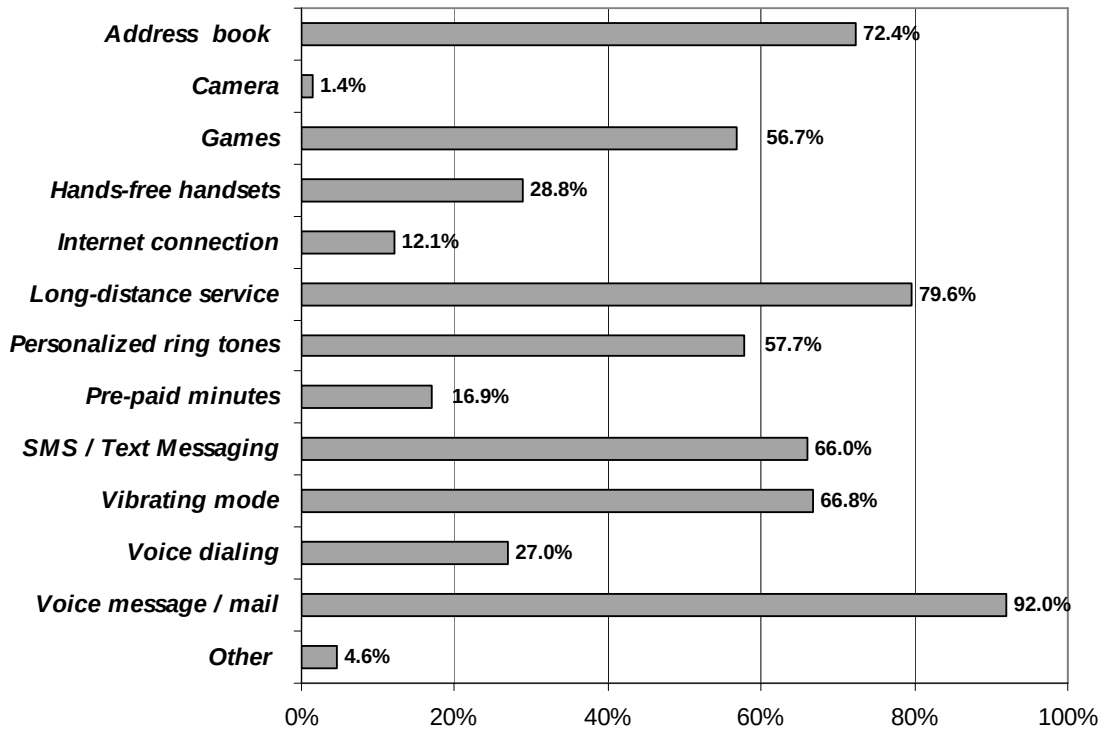
To explore the extent of cell-phone consumption, I listed common features that were available for cell phones at the time of my data collection (2003) and asked the questionnaire respondents which of the features they utilized (Appendix A, Q #11) (Figure 6.4). In addition to the eight features outlined by Cooper, I also added vibrating mode (when one receives a phone call a cell phone vibrates instead of rings), personalized-ring tones, hands-free handsets, pre-paid minutes, voice dialing, and camera function to my list. I did not include the caller ID function, since it was standard on cell phones.

The results showed some interesting patterns. The three most common features that were used were voice message (answering machine service) (92.0%), long distance service (79.6%) and address / phone book (72.4%). Sixty-six percent of students used text messaging systems and 66.8% of students used the vibrating mode. This might have depended on the type of cell phones students had since there were some students who had older version phones that did not have the vibrating mode option. Also, some of my interviewees indicated that text messaging option meant "extra" costs and some students mentioned how they could receive the messages but could not

send them. In addition, 57.7% used personalized-ring tones, 56.7% of students used games, 28.8% of students used hands-free handsets, 27.0% used voice dialing, and 16.9% used pre-paid minutes.

Figure 6.4: Cell-phone features used by students

Source: questionnaire data (N = 626)



"Camera phones" were not popular in 2003 but they have gained popularity since due to their declining cost. The FACAC survey indicated 6.2% of respondents in their survey took and sent pictures, which is higher than my figure (1.4%), yet it still was the minority. This 2003 survey also mentioned that 8% accessed the Internet with their phones (my survey indicated 12.1%) and other additional features—17% used "calendar and directory information" and 5% "accessed their E-mail" (FACAC website 2003). In my survey, the use of these additional features was indicated by students that selected "other." There were 29 students (4.6%) who indicated other functions they used on their phones. These features included alarm clock / clock, date planner, caller ID, two way / CB radio, voice memo, one-touch dialing, Instant Messenger, news, mobile to mobile (family), MP3 player, face cover, and fun-welcome screen. It is likely that some of these features were also used by many students who did not indicate the category

“other” in their questionnaire—but the fact that those who did indicate these functions meant that they either used them heavily or were very self-aware of the features they used on their cell phone. I overlooked the popularity of clock / alarm function in my study and did not include it in my list of features in my questionnaire, but both questionnaire responses and interview transcripts illustrated that it was considered to be a useful function for many students.

To examine the use of these features, I grouped the students based on a binary measure of features used (either use or not use) using hierarchical-cluster analysis using (employing the Ward’s method as the clustering technique). I omitted the category “don’t know” because there were only two students who did not know which features they used. I included the category “other” because the students who indicated other “features” represent users who were particularly conscious about the features they used as well as those who used “features” that were not the majority. The resulting dendrogram indicated four major groupings (see Appendix E for the actual dendrogram). Next, I used the crosstab / chi square analysis between the four clusters and the features used. Categories of “camera” and “other” were omitted from the analysis due to cells that resulted in expected count of less than 5. This was expected because there were only 9 students who used the camera feature and 29 students who indicated they use other features on their cell phones in my sample group. All tested features had statistically significant differences ($p < 0.001$). Table 6.12 summarizes the counts and the percentages of students within each group that used the examined features in comparison with the statistically expected counts.

In addition, to further understand the characteristics of each group, I used a series of crosstab / chi analysis between the four groupings and place, gender, race / ethnicity, residency, age group, time spent on cell phones everyday, who pays for the cell-phone bill, length of ownership, as well as the frequency of communication with their siblings, parents, significant other, friends, and people at work. One-way Anova was used to compare the average cell-phone bill and the average number of calls made and received per day. Among these variables, there were no statistically significant differences relating to gender ($p= 0.121$), age groups ($p = 0.778$), on or off-campus residency ($p =0.743$), who pays for the cell-phone ($p =0.575$), or frequency of talk to their siblings ($p = 0.265$). On the other hand, there were statistically significant differences between Penn State and Shippensburg students ($p = 0.001$), non-white and white students ($p = 0.007$), time spent using cell phones on their cell phones ($p < 0.001$), average number of calls made ($p < 0.001$) and received per day ($p < 0.001$), average amount of cell-phone bill ($p > 0.008$), and length of ownership ($p = 0.024$). There were also statistically significant differences among four groups and cell phone use *at school* ($p < 0.001$), *at work* ($p < 0.001$), *restaurants/bars/stores*

($p < 0.001$), *while driving* ($p = 0.002$), *while walking* ($p < 0.001$), and *while riding public transit* ($p < 0.001$). The category of "at home" had an expected count of less than 1 in one of the cell and it was omitted from the analysis. Table 6.12 summarizes the characteristics of the four groups based on these differences.

Group 1 can be considered as "Fun / trendy users" that utilized standard features that come with basic cell phones including *address book*, *voice messages*, and *games*. But the group also had more students who used personalized ring tones (154) than expected (140.7) as well as *text messaging* (163) as much as expected (161.0). Along with games, these two features could cost extra money to use and constituted additional dimensions of entertainment and accessorizaion of the cell phone and its use (Ling and Yttri 2002). Other "functional" features such as *vibrating mode*, and *hands-free handsets* as well as other features only supported by expensive-end or newer editions of cell phones at the time –*voice dialing* and *Internet-connection*—were used less by Group 1. In addition, this group of students interestingly underutilized *long-distance service* since there was fewer students (178) who utilized the service than expected (194.1). This may be due to the fact there were more Shippensburg students (145) than expected (129.0). Since Shippensburg is a regional school, students there may have family in the vicinity so that they do not often make long-distance calls. Group 1 also tended to have more white students (215) often than expected (210.1), had the second lowest cell-phone bill ($40.50), and they made (3.79) and received (3.70) calls per day, which can be considered "moderate" in comparison to other groups. The group tended to have more students (41) than expected (37.1) that did not use their cell phones *everyday.* There were more students (49) who had owned their cell phones between *1-2 years* than expected (45.2). There were more students (210) than expected (206.6) who used their cell phones *at school* but less (80) than expected (95.9) who used them *while riding public transit*. In addition, there were more students who talked to their significant other (47), people at work (99), parents (161), and friends (96) on the *monthly / weekly* basis than expected (41.2, 90.9, 153.9, 87.8 respectively). Therefore, for "fun/ trendy users," cell-phones were not necessarily used for daily communication with various people but perhaps as an "accessory." This group saw additional entertainment value in owning and using cell phones.

The second group (Group 2) consisted of students who underutilized all features except pre-paid function, and for this, can be called "minimal users." The group had more students (28) who used *pre-paid minutes* than expected (14.6). This group also had more students (40) who "*don't use* [the cell phone] *everyday*" than expected (16.1) and they have significantly less average number of calls made (1.95) and received (1.73) per day and the lowest cell-phone bill

($35.23) compared to other groups. There were less students (22) who owned their cell phone *more than 3 years* than expected (39.8). They tended to *never* talk to their significant other or people at work using their cell phones. However, there were more students who used cell phones to talk to their parents (59) and friends (51) on *monthly / weekly* bases than expected (54.6 for parents and 30.1 for friends). For the "minimal users," their cell phones were most likely to be designated for emergency purposes and they used cell phones on an infrequent basis. This correspond with the evidences that there were less students who used their cell phones in different places (*at school, at work, at restaurants/bars/stores*) and times (*while driving, while walking, and while riding public transit*) than expected. This group had about the same number of Penn State (42) and Shippensburg (44) students as expected (40.5 for Penn State and 45.5 for Shippensburg), and more white students (78) than expected (74.0).

The third group of students (Group 3) can be described as "basic users" since they tended to use basic features such as *long-distance services, address book, vibrating mode*, and *voice message*. In this group, there was a higher count (26) of students who used *pre-paid minutes* than expected (19.0). The average cell-phone bill ($43.92) was higher than the minimal users ($35.23). This group tended to have students who had their cell phones a relatively shorter period of time since there were more students who had cell phones *less than a year* (28) than expected (26.5) and *between 1-2 years* (24) than expected (20.8). Furthermore, "basic users" received (4.17) and made (3.94) calls per day on average—these figures are similar to "fun / trendy" users (Group 1), but significantly higher than the "minimal users" (Group 2). But, unlike Group 1, they tended not to use extra "fun" features such as *games*, *personalized-ring tones*, and *text messaging*. On the other hand, there were more students who used *long-distance service* (95) than expected (89.1) and *vibrating mode* (112) than expected (74.8). In contrast to Group 1, there were more students who were from Penn State (71) than expected (52.8) but similarly had more white students (101) than expected (96.4). This group had more students (68) who talked to their significant other on *daily* basis than expected (58.9). However, they talked less frequently to people at work and to their parents compared to their significant others. There were more students who talked to their people at work (43) and parents (73) on *monthly / weekly* bases than expected (41.0 and 68.6 respectively). Therefore "basic users" most likely used their cell phones for long-distance calling and / or communicating with their significant others. They tended to use cell phones less in settings outside of their homes except *while riding public transit* (count of 52 compared to expected count of 44.0).

Group 4 consists of “all-embracing users” since there were higher counts of students who used all of the cell-phone features compared to the expected counts except for *pre-paid minutes.* Also, 16 out of 29 students who answered they used *other features* were in this group. There were a few features that only Group 4 had more students than expected while other groups had less counts of students than expected. For example, there was a higher count of students (107) who used voice dialing than expected (49.7). Moreover, there were more students (100) than expected (52.9) that used hands-free handsets that were purchased separately and attached to their cell phones. Even in regards to the *Internet connection* on cell phones, which is a feature only 12.1% of overall sample group used (Figure 6.3), there were more students (57) that used such connections than expected (22.3). “All-embracing users” tended to be heavy users of their phones. They tended to use cell phones in all setting outside of their homes. All categories of when and where cell phones were used had more students than expected. This was also reflected by the fact that more students (90) than expected (66.4) talked *more than an hour* per day, the group had significantly more calls made (5.65) and received (5.51) compared to other groups, and the highest cell-phone bill ($44.27). There were more students (73) than expected (57.6) who had their cell phones *more than 3 years*. Thus, this group tended to be students who had their cell phones the longest compared to the other three groups. This group had more students who talked with their significant other (114), people at work (15), parents (73), and friends (136) on a *daily* basis than expected (significant other 96.5, people at work 10.6, parents 57.1, and friends 106.3). This group tended to have more Shippensburg (101) and non-white (39) students than expected (97.3 for Shippensburg and 25.6 for non-white).

The four cluster groups indicated that there were substantial variations in how cell phones were utilized and the frequency with which features were used. For “minimal” and “basic” users, a cell phone was “just a phone” that was used for emergency purposes and long-distance calling. On the other hand, for “fun/ trendy” and “all-embracing” users, cell phones was “more than a phone” that assisted them to accessorize, manage daily activities, and communicate with others. “All-embracing” users also tended to satisfy all the potentials of what cell phones can do. This was interesting because although cell phones may be owned by many students, there was considerable variations in how they were consumed.

Table 6.12: The 4 cluster groups according to features used

Source: based on questionnaire data

Group 1 (N = 244) Group 2 (N = 86) Group 3 (N = 112) Group 4 (N = 184)		**Group 1 Fun / trendy users**	**Group 2 Minimal users**	**Group 3 Basic users**	**Group 4 All-embracing users**
Address book Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	188 (176.6) 77.0%	40 (62.2) 46.5%	89 (81.0) 79.5%	136 (133.2) 73.9%
Games Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	194 (138.4) 79.5%	14 (48.8) 16.3%	0 (63.5) 0%	147 (104.3) 79.9%
Hands-free handsets Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	56 (70.2) 23.0%	7 (24.7) 8.1%	17 (32.2) 15.2%	100 (52.9) 54.3%
Internet connection Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	11 (29.6) 4.5%	1 (10.4) 1.2%	7 (13.6) 6.3%	57 (22.3) 31.0%
Long-distance service Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	178 (194.1) 73.0%	55 (68.4) 64.0%	95 (89.1) 84.8%	170 (146.4) 92.4%
Personalized ring tones Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	154 (140.7) 63.1%	5 (49.6) 5.8%	36 (64.6) 32.1%	166 (106.1) 90.2%
Pre-paid minutes Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	23 (41.3) 9.4%	28 (14.6) 32.6%	26 (19.0) 23.2%	29 (31.2) 15.8%
SMS / Text Messaging Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	163 (161.0) 66.8%	24 (56.7) 27.9%	59 (73.9) 52.7%	167 (121.4) 90.8%
Vibrating mode Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	129 (162.9) 52.9%	2 (57.4) 2.3%	112 (74.8) 100%	175 (122.9) 95.1%
Voice dialing Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	16 (65.9) 6.6%	6 (23.2) 7.0%	40 (30.2) 35.7%	107 (49.7) 58.2%
Voice message / mail Chi square Sig. (p < .001)	*# of students who uses* *(Expected count)* *% within group*	229 (224.5) 93.9%	58 (79.1) 67.4%	107 (103.1) 95.5%	182 (169.3) 98.9%

Table 6.12: The 4 cluster groups according to features used [contd.]			**Group 1 Fun / trendy users**	**Group 2 Minimal users**	**Group 3 Basic users**	**Group 4 All-embracing users**
Place Chi square Sig. (p =.001)	*Penn State*	Count (Expect.)	99 (115.0)	42 (40.5)	71 (52.8)	83 (86.7)
	Shippens -burg	Count (Expect.)	145 (129.0)	44 (45.5)	41 (59.2)	101 (97.3)
Race / ethnicity Chi square Sig. (p = .007)	*Non-white*	Count (Expect.)	29 (33.9)	8 (12.0)	11 (15.6)	39 (25.6)
	White	Count (Expect.)	215 (210.1)	78 (74.0)	101 (96.4)	145 (158.4)
Time spent on cell-phones everyday Chi square Sig. (p < .001)	*≠ everyday*	Count (Expect.)	50 (46.1)	40 (16.1)	15 (21.0)	13 (34.8)
	< 1 hr	Count (Expect.)	104 (107.0)	36 (37.3)	55 (48.8)	79 (80.8)
	> 1 hr	Count (Expect.)	87 (87.9)	8 (30.6)	40 (40.1)	90 (66.4)
Average # of calls made per day One-way A-nova Sig. (p < .001) *Tamahane was used for post-hoc test			3.79 (Sig. different from Group 2&4)	1.95 (Sig. different from Group 1,3&4)	4.17 (Sig. different from Group 2&4)	5.65 (Sig. different from Group 1, 2&3)
Average # of calls received per day One-way A-nova Sig. (p < .001) *Tamahane was used for post-hoc test			3.70 (Sig. different from Group 2&4)	1.72 (Sig. different from Group 1,3&4)	3.93 (Sig. different from Group 2&4)	5.50 (Sig. different from Group 1, 2&3)
Average amount of cell-phone bill One-way A-nova Sig. (p = .008) *Tamahane was used for post-hoc test			$40.50	$35.23 (Sig. different from Group 3&4)	$43.92 (Sig. different from Group 2)	$44.27 (Sig. different from Group 2)
Length of ownership Chi square Sig. (p = .024)	*Less than a year*	Count (Expect.)	57 (57.7)	25 (20.3)	28 (26.5)	38 (43.5)
	Between 1-2 yrs	Count (Expect.)	49 (45.2)	21 (15.9)	24 (20.8)	22 (34.1)
	Between 2-3 yrs	Count (Expect.)	65 (64.7)	25 (22.8)	25 (29.7)	51 (48.8)
	More than 3 yrs	Count (Expect.)	73 (76.4)	15 (26.9)	35 (35.1)	73 (57.6)

* Tamahane was used for post-hoc test because the variances of the four groups were unequal. Group 1 had 244 students, Group 2 had 86 students, Group 3 had 112 students and Group 4 had 184 students.

Table 6.12: The 4 cluster groups according to features used [contd.]			**Group 1 Fun / trendy users**	**Group 2 Minimal users**	**Group 3 Basic users**	**Group 4 All-Embracing users**
At work Chi square Sig. (p < .001)	*Students who use*	Count (Expect.)	125 (123.6)	25 (43.5)	48 (56.7)	119 (93.2)
At store, etc. Chi square Sig. (p < .001)	*Students who use*	Count (Expect.)	168 (166.4)	37 (58.7)	72 (76.4)	150 (125.5)
While driving Chi square Sig. (p = .002)	*Students who use*	Count (Expect.)	199 (199.2)	61 (70.2)	87 (91.4)	164 (150.2)
While walking Chi square Sig. (p < .001)	*Students who use*	Count (Expect.)	204 (204.6)	53 (72.1)	94 (93.9)	174 (154.3)
While riding public transit Chi square Sig. (p < .001)	*Students who use*	Count (Expect.)	80 (95.9)	16 (33.8)	52 (44.0)	98 (72.3)
Frequency of talk with significant other Chi square Sig. (p < .001)	*Never*	Count (Expect.)	61 (55.9)	34 (19.7)	16 (24.8)	30 (40.6)
	Weekly / Monthly	Count (Expect.)	47 (41.2)	16 (14.5)	18 (18.3)	23 (29.9)
	Daily	Count (Expect.)	122 (132.8)	31 (46.8)	68 (58.9)	114 (96.5)
Frequency of talk with people at work Chi square Sig. (p = .042)	*Never*	Count (Expect.)	127 (131.5)	60 (46.6)	57 (59.4)	89 (95.5)
	Weekly / Monthly	Count (Expect.)	99 (90.9)	20 (32.2)	43 (41.0)	68 (65.9)
	Daily	Count (Expect.)	11 (14.6)	4 (5.2)	7 (6.6)	15 (10.6)
Frequency of talk with parents* Chi square Sig. (p = .023)	*Weekly / Monthly*	Count (Expect.)	161 (153.9)	59 (54.6)	73 (68.6)	98 (113.9)
	Daily	Count (Expect.)	70 (77.1)	23 (27.4)	30 (34.4)	73 (57.1)
Frequency of talk with friends* Chi square Sig. (p < .001)	*Weekly / Monthly*	Count (Expect.)	96 (87.8)	51 (30.1)	41 (40.5)	37 (66.7)
	Daily	Count (Expect.)	132 (140.2)	27 (47.9)	64 (64.5)	136 (106.3)

** The category "never" was omitted from the chi /square analysis for frequency of talk with parents and friends because of very small number of students in that category.

The series of quantitative findings on magnitudes of cell phones uses that I have presented—intensities of uses including how often and how long they get on the phone, the three cluster groups according to reasons of ownership, and the four cluster groups according to features used—point to consumption differences among the various sub-groups. The length of ownership seemed to contribute to students to use cell-phones more intensely since they tended to talk longer and more frequently (Tables 6.5 and 6.9). In addition, the "all-embracing" users tended to be students who had their cell phones more than 3 years (Table 6.12). Furthermore, Table 5.10 showed that there was a tendency in students who owned their cell phones longer to be ranking half of the reasons of acquiring a cell phone higher compared to students who had cell phones for shorter periods of time. These observations point to the fact that as cell phones are introduced into students' lives, students appreciated the benefits of cell phones and / or uses of cell phones more intensely. This was also evident in the interview transcriptions. For example, several students stated "initially it [cell phone] was for driving," or "initially it was for security purposes." But then, cell phones eventually became integrated into their lives more intensely and intimately. Students used them more frequently and carried the device with them most of the time. For example, Emma's statement below illustrates such shift in nature of ownership:

Emma, 20, junior, Penn State	
Emma:	Yeah, so it started out more just for emergencies and then, it kinda of turned into just, into a social thing. 'Cause I get free minutes, so why not use it?

In addition to the length of ownership, there was quantitative evidence indicating that students' social identities were related to particular tendencies in how cell-phones were consumed. Age group differences were evident when reasons of ownership were considered (Table 6.10). But surprisingly, students' age did not contribute to the frequency and duration of uses or the extent of features used. On the other hand, gender and racial / differences of cell-phone consumption were apparent from quantitative findings and I discuss them in the light of interview transcripts in the next chapter. The rest of the chapter focuses on examining students' management of daily communication by considering the aspects of place settings of campus, residences, and communication infrastructures.

Managing daily communications

How students utilized cell-phones and the way they are positioned in their daily settings depended on various factors including aspects of cell-phone technology, their daily mobility, and the management of different types of communication "connections." In addition, there were several tendencies in how students' residency (on or off campus) and place (Penn State or Shippensburg) were related to patterns of cell-phone consumption (Tables 6.2, 6.4, 6.6, 6.8, 6.12). These tendencies can be explained in terms of the infrastructural connections based on on-campus and off-campus residencies but also in terms of the differences in the scale of Shippensburg and Penn State campuses. Students' negotiations of experiences in public spaces and utilizations of communication-technology systems intersect with the "time geography" of campus life but are also structured by the availability and reliability of the cell-phone technology. Patterns of intensity of uses and variations in the uses of cell-phone features were part of how students managed spatial experiences in different spaces.

Negotiating cell-phone technology

Cell-phone consumption involved negotiating aspects of communication systems, especially the restrictions on use that are imposed by cell-phone plans and the capabilities of cell-phone technology of the time. During the period of my investigation, cell-phone calling plans most often had time restrictions—allocated total "minutes" and limited hours when consumers could make and receive calls without paying extra costs. For those students who did not use the phone "everyday," many were on the phone for more than an hour during the weekends because many cell-phone plans offer unlimited calling minutes during the weekends. When they were asked the duration of their cell-phone usages, some students wrote "it depends on weekday or weekends." Such time allocation by cell-phone plans often restricts or encourages cell phone uses by students and is reflected in the students' average per month cell-phone usages. For example, Ellen and Gabrielle described the intensity of their cell-phone uses:

Ellen, 19, sophomore, Penn State	
Ellen:	[Edit] I spend probably over 5000 minutes a month sometimes.
Interviewer:	Wow.
Ellen:	Like on my way to class I will be talking on the phone, it's (lot of it) like one minute conversations and (lot of), but at night it's free nights and weekends I will be on the phone for hours with one person at a time sometimes. So.

Gabrielle, 24, transfer student, Shippensburg	
Interviewer:	What are some of the things that you make a call, like during the day would you call
Gabrielle:	Oh yeah ah
Interviewer:	Is it mostly nights or?
Gabrielle:	I, I have more minutes at night but usually like the short, the majority of the calls are during the day but they're all little short calls
Interviewer:	Ok
Gabrielle:	If I'm gonna talk to someone, I'd wait till 8 o'clock and call them, but usually during the day, if I need to, ah leave my boyfriend a message at work, like "could you pick this up on the way home from work?" stuff like that, or ah if ah, I need to ask my dad something and, and I, I, he has a cell phone too, so I'll a leave him a message on his, you know "hey I had a question about this and I need to ah make a decision right now, could give me a call back and help me out here?"

Ellen and Gabrielle's consumption habits may be reflected in the finding that 44.3 percent of survey respondents used cell-phones "less than an hour" everyday (Figure 6.1). During the day, many students had "one-minute" conversations, which did not amount to an hour in total. On the other hand, in the evening hours and on weekends, they could afford to devote time talking to various people at length.

One of the open-ended questions asked: "how often do you use wired phones in relation to cell phones? Why?" (Appendix A, Q #20). There were 295 open-ended, hand-written responses. Many of them were concerned about the communication infrastructure relating to cost, the quality of cell-phone service, and alternate communication connectivity as outlined in Table 5.31. In particular, a number of students pointed out that they did not have a wired phone at home and that their cell phone served as their only phone. Others mentioned how the use of wired-phones was reserved for local or the campus calls, and that they did not even have long-distance connectivity from their home / dorm phones. On the other hand, wired phones did have their place. The following statements are representative of those made about adjusting cell-phone consumption in relation to the cost of alternatives.

- Using cell more often [than wired phones]: have to use up the minutes or they get "wasted." Paying for wired phones is inconvenient. I'll use wired phone for local calls, or long calls, or when receiving calls

- Less at school b/c [because] wired costs more $ to call. Cell is used to call & then people call me back on wired [phone]

- Wired phones more often when around them. The wired phones don't eat up my minutes

- Much more wired phone use → because it is cheaper and more basic charging structures

Many students pointed to the fact it was a "waste" of cell-phone minutes if they did not use the allotted time under their cell phone plan. On the other hand, some students preferred to "save" their minutes so they did not go over the plan limitations and incur additional charges. Some of the interviewees, such as Jenna, mentioned that she preferred to text message through the Internet computers in order to save cost for the recipient of the message. Jenna explained that there were ways to minimize the cost for herself and her friend:

Jenna, 20, sophomore, Penn State	
Jenna:	So, I like, I like the text messaging, I think that's really cute, it's nice to get little message from someone but it's expensive to text people all the time
Interviewer:	So, would you go to a computer to do it?
Jenna:	Yes, [laugh]
Interviewer:	So you get it on the cell phone, so that's the difference?
Jenna:	Yeah, you just, you send it through web, send it to the computer but it comes on their cell phone
Interviewer:	You just don't want to send it through your phone.
Jenna:	Yeah, 'cause they'll charge me for that.
Interviewer:	Ok, and so you like to receive as well, do you receive it a lot?
Jenna:	Ah (…) not too often. Not too often, 'cause (…)
Interviewer:	What are some of the things that like you guys text message each other.
Jenna:	Um, I text message my boyfriend a lot [laugh], I send him little messages and (…) sometimes
Interviewer:	Just "how are you" kind of thing?
Jenna:	Yeah, sometimes to save money for my one friend, since she (…) that's her only phone is a cell phone, so she doesn't like to always get calls, she is like just text me, if you are going to tell me "where we are gonna meet at three" or something, so I do just to save her

Jenna's practice was an example of how students' creatively tweak the communication systems to minimize their cell-phone costs. The text messaging did cost money to send and receive per message but compared to the cost of phone usage it could be economical in some cases.

Since the cost issue was one of the deterrents or restrictions on students' use of cell phones, it was interesting to see whether who pays for the cell-phone bill mattered in terms of how students used cell phones. There were indications that for some students, the way cell phones were consumed was negotiated with their parents. Maya and Sally described their arrangements with her parents as the following:

Maya, 19, sophomore, Shippensburg	
Maya:	It's, you have a lot of amount of time and you have for this much money, like if you stay within your limits, however long you want pretty much for 50 bucks a month
Interviewer:	Right
Maya:	My parents pay my bill, the, the deal is, I get good grades and I don't go over my time
Interviewer:	Right, you're responsible
Maya:	They pay it
Interviewer:	Yeah
Maya:	You know what I mean, but if I go over, I have to pick up the difference
Interviewer:	Right
Maya:	And 'cause I pay my bills up here pretty much, well we're going to pick up your cell phone bill

Sally, 18, freshmen, Shippensburg	
Interviewer:	But you said that the phone bill might be sometimes higher than [the monthly cost]
Sally:	It's 'cause like, I have a habit of using it, before like, I have ah, free minutes
Interviewer:	Mm-hmm
Sally:	From nine o'clock until six o'clock in the morning, I have a habit of using it during the day more
Interviewer:	Ok
Sally:	Instead of at night, so it runs up my phone bill, and when I text message, it's ten cents to text message so it costs
Interviewer:	Right, would you text message more than one like, like, keep on chatting like IM [Internet Messenger]
Sally:	Yeah
Interviewer:	You do that
Sally:	It's a bad habit
Interviewer:	[Chuckles] does your parents pay for the phone bill then
Sally:	Right now they are, um, 'cause I'm up here, but when I'm home, like I'll have to pay my dad back for like all the phone bills [laughs]
Interviewer:	[Laughs] but they'll keep on paying and it's like a debt towards your parents
Sally:	Mm-hmm
Interviewer:	And you would pay them back kinda thing
Sally:	Pay them back, well like when I'm home from school, I pay for my phone bill
Interviewer:	I see, but at school
Sally:	Yeah
Interviewer:	Even it's above the plan they're in or
Sally:	Um, well, if it's like, it's supposed to be forty dollars a month
Interviewer:	Right
Sally:	And my dad will cover that but anything over
Interviewer:	I see
Sally:	Like when I'm here, I have to pay for it
Interviewer:	Ok [chuckles]
Sally:	So
Interviewer:	You don't, you don't think of that when you're using it
Sally:	Yeah, mm-mm, it kinda, doesn't cross mind

One interesting aspect of the comments above is that when students go over the allowed minutes and incur additional cost to the family-financed monthly bill, then it was the students' responsibility to pay for that amount. But interestingly, as Sally said, the issue of cost did not cross her mind while using her cell phone during the day or when using extra features. As mentioned earlier, there was no statistically significant difference in terms of the amount of time students spent on their cell phone each day and who paid the cell-phone bill ($p = 0.097$). Also, one-way Anova indicated that there were no statistically significant differences between how many calls students make per day ($p = 0.713$) or receive per day ($p = 0.412$) and who finances their cell phones. This corresponded with the findings that students who are light users (group 3) and heavy users (group 1) both tended to be financed by "others," indicating that there was no relationship between the intensity of use and who makes the cell-phone payment (Table 6.14). Similarly, the cluster groups based on uses of cell-phone features did not show a relationship with who paid the cell-phone bill ($p = 0.725$) (Table 6. 13).

Several cell-phone commercials that aired on television in the mid-2000s have been promoting increased "minutes" associated with cell-phone plans by portraying the parent-child dynamics resulting from young people's (excessive) cell-phone consumption. For example, T-mobile's "family talk" shows parents who are terrified of their children using cell phone in a costly manner by talking too long. Similarly, Cingular's pre-paid "go phone" portrays children stating that they would go over their allowed minutes even though they would be "grounded" by their parents. The main message being conveyed by these advertisements is that parents do not have to worry about the extra costs that may be incurred by their children by signing up to these new plans. Such portrayals also imply that financial negotiations between parents and children on cell-phone consumption are common among many American families.

Respondents to my questionnaire also mentioned similar things while answering the question "Has anyone ever complained about your cell phone usage?" (Appendix A Q#23). For example:

- My father says I use it too much. My mom says I waste my money with it.
- Yes-mom b/c [because] the bill was much higher than it should've been

Some parents restricted their children's cell-phone usage. For instance, some students mentioned in the interviews that they do not have the option of text messaging functionality (which cost extra to their cell-phone plan), because after seeing the increased amount of cell-phone bill due to "texting," the parents took that option away (also see Foderaro 2005).

In addition to the usage cost and time limitations, the quality of cell-phone services and spatial restrictions also affected how cell phones were used by students. A phrase that is associated with cell-phone usage that conjures images of the mobility of the device and people is "roaming." In the context of mobile phone service, the phrase "roaming" means that you (as a caller and receiver of a call) step out and are no longer in your "home calling area" (Stetz 1999). In most instances in the United States, this means that you will be charged additional fees for using your mobile phone while "roaming." Over the years, consumers' "home calling areas" have been expanding in their geographical extent to satisfy consumers' needs. Several service carriers now even offer global services. In the United States, there are multiple services plans you can choose from according to your needs, lifestyles, and where you "roam" (Figure 5.7). Thus, "roaming" signifies the spatial extent of where your bodies move and the home calling area becomes the bounded space in which the service is available (where you can use your phone).

The quality of the communication transmission was another factor relating to the extent to which cell phones were used. In some cases, the poor quality of cell phone communication led to increased use of wired phones, as pointed out in the following sample of responses:

- More often than cell phones. Usually 3-4 times a day because it saves minutes on my cell phone if it is local. Also, my cell phone doesn't get good reception
- I use wired phones more often while in rooms because you can hear on them better, you don't run up your minutes, and it saves your battery for later use
- At least 3* [times] as much No dropped calls!
- More because my cell phone is "out of range" when I'm at school
- I tend to use them slightly more since my cell phones gets poor reception of [sic] my new apartment
- More. Cell phones don't always have service
- I use wired phones in my dorm because I receive hardly any cell reception in my dorm. But everywhere else, driving…etc. I use my cell

Poor reception was most often described as occurring while being inside building structures, especially apartments and class room buildings. When poor reception was encountered and students still wanted to use their cell phone, conversations often spilled out of their residences. In Kaylee's case, she stated the following:

Kaylee, 21, senior, Shippensburg	
Kaylee:	I tried to use it in my apartment (..) but the reception is really bad and we are right beside the elevator in the building, so my roommate's and my phone don't work very well in my apartment, but that's why I think I end up using a lot in my car because I can't really use it in my apartment
Interviewer:	Oh that's too bad
Kaylee:	[Laughs]
Interviewer:	Do you go outside sometimes then, it's been cold but
Kaylee:	I just, I just deal with it, like I end up like not being to able to hear people very well but I think I rather that than stand outside [laughs] ( )
Interviewer:	Right, right

Furthermore, Gabrielle described the "patchy-ness" of cell-phone reception in different places:

Gabrielle, 24, transfer, Shippensburg	
Gabrielle:	Um, these days, ah I haven't used it [cell phone] as much as I used to, 'cause my family, I'm from Northwestern Pennsylvania, so that was one of the uses, the main uses, um I would use it to call my family so I won't have to pay long distance but here, um, I don't get real good reception where I live, so I have to walk up the hill, or down the hill, which is in the summer is ok, 'cause you know I gotta have to sit outside or I can even sit out on our porch but in the winter, it's been way too cold to sit in our porch so [chuckles]
Interviewer:	Yeah
Gabrielle:	Barely been using it in the winter um, but
Interviewer:	That's really interesting ok
Gabrielle:	[Chuckles] yeah
Interviewer:	What do you mean by up the hill, it's either if you go
Gabrielle:	If I go up the hill I might get find reception, if I go down the hill the reception seems fine, it's just we're like in a "dead" area
Interviewer:	( )
Gabrielle:	Yeah
Interviewer:	Oh
Gabrielle:	And if or I'm on the porch it's ok, but if I'm in the house, no one can hear me in there, every time I call someone, "hello, hello, someone there?" you know so
Interviewer:	I see, so you figure that you kinda know where it works
Gabrielle:	Exactly
Interviewer:	If the weather's nice ( ) you call more?
Gabrielle:	Yeah exactly, yeah exactly I would use it or maybe even if the weather isn't bad, I'd run outside for a minute call them and be like "call me back on the phone in the house please"

Generally, students had general knowledge of where cell-phone reception was less reliable. During the course of my research, I encountered two individual students who were keen on "mapping" out the reception signals across space by driving around and confirming the signal strength on their phones. In addition, one student mentioned in the interview that she had to

dispute roaming with her cell-phone company. Even though she was making calls while still in her calling area, roaming charges were incurred because she was very close to a state boundary. Therefore, the calling areas represented on calling-area maps often do not translate exactly on the ground —and physical geography (e.g. mountains and hills) as well as the availability of cell-phone antennas in a region contributed to students not relying solely on cell phones for their communication.

Finally, various perceived and actual "risks" associated with cell-phone technology could be part of the negotiations and the restrictions for students to use cell phones. For example, one student wrote in his survey that he uses wired phone more often compared to cell phones because "I heard cell phones give you brain cancer." When I ask about the "risks" associated with uses of cell phones in the interviews, almost all the students talked about the danger of driving while talking on the cell phone and the potential "health risks" from talking on the cell phone for long periods of time because of potentially hazardous "radio waves" emitted from the device while in use. The extents to which both of these are actual "risks" have been contested from the individual to the public level as "unproven" risks because of lack of scientific studies; they were not backed by statistical "proof." Many interviewees used the term "urban legends" to describe the potential risks of developing "tumors" and "brain cancers" by using cell phones. Even though it was perceived to be merely an "urban legend," many students have heard about the potential risks; but until proven, they were not worried about using their cell phones. Gabrielle, for instance:

Gabrielle, 24, transfer, Shippensburg	
Gabrielle:	You mean like that like there's all those stories, I, I don't, about how it could give you brain cancer?
Interviewer:	Sure yeah
Gabrielle:	[Chuckles] well, I thought about'em but ah
Interviewer:	Ok
Gabrielle:	I don't know, you know you think about'em but then when you pick up the cell phone, you don't you don't think about it, at least I don't, you know I, I think you hear the risks and, then when it rings, you just grab it [laughs]
Interviewer:	[Laughs]
Gabrielle:	Thinking as you're talking "ohh"

Others took the recognition of potential risks more seriously and restricted their uses, especially the length of talk. Another interviewee mentioned that once the cell phone starts to feel "warm" against her skin, she knows that she talked too long. Other students mentioned that to be "safe" and in order to minimize the exposure to cell-phone radio waves, they used hands-free head phones when they knew ahead they were going to be on the phone for a long period of time.

"Driving while talking" was another potential risk that the majority of the students talked about in the interviews. Generally speaking, there were strong feelings attached to the behavior of "driving while talking" ranging from the guilt while admitting that they used the phone while driving to outright rejection of the practice, especially in their attitudes towards other drivers. Most students expressed that they try not to use cell phones while they were driving. Some students commented that their family members and significant others disapprove of them talking on the phone while they were behind the wheel. Other students insisted that when their phone rung while they were driving they would not pick up the phone, or they would ask the passenger to pick up the phone for them, or pull over on the side of the road to initiate calls. I discuss the issues surrounding cell-phone use while driving in the next chapter. These perceived and actual risks associated with cell phones are part of daily negotiations involved in students' cell-phone consumption.

Use of multiple communication methods

As soon as I began my interview processes, it became apparent that the extent and the nature of cell-phone consumption could not be studied in isolation but rather, had to be examined in relation to, and in conjunction with, other types of communication technologies including wired phones and Internet-connected computers. One of the first interviewees mentioned that he used the AOL [America on-line] Instant Messenger [IM] program extensively to communicate with his friends daily. After I learned about the popularity of IM use among young generation, I began to incorporate interview questions that concerned daily uses of different methods of communications. My survey data was designed primarily to understand cell-phone communication, thus, the statistical exploration of characteristics of different types of communication was limited. The multiple communication methods utilized by young people can be important in understanding how information and communication technology are consumed and placed in daily settings.

Penn State's 2003 FACAC survey found that students were "most likely use a cell phone to communicate with friends and family at a distance (75.6% of respondents)." But it also mentioned that other popular communication tools included "Instant Messenger (72.5%), E-mail (71.9%), traditional telephone (44.8%), letters in the mail (16.7%), and Net Phone"—a phone connection through the Internet (0.8%). Less than one percent of students replied that they use some other type of communication tool (0.9%) (FACAC website 2003). These figures also

pointed to the fact that cell phones were often designated as modes of long-distance communication with their families and friends due to the aspects of "family" and "campus" connections discussed in the previous chapter (Chapter 5). But an equally interesting aspect about this survey finding was that more than 70 percent of students answered that they used Instant Messenger and E-mail to communicate with their family and friends as well.

Almost all students had an Internet connection, either from home, dorm rooms, or computer labs. I used a cross-tab / chi square analysis in comparing wired phone use according to place and residency. There were statistically significant differences between Penn State students and Shippensburg students in the frequency of using Internet-connected computers ($p < 0.001$) (Table 6.13) and wired phones ($p = 0.003$) (Tale 6.14). More Penn State students (317) used Internet-connected computers "everyday" than expected (304.6) (Table 6.13). In contrast, fewer Shippensburg students (352) used Internet-connected computers "everyday" than expected (364.4) (Table 6.13). There were fewer Penn State students (154) who used wired phones "everyday" than expected (177.1) (Table 6.14). On the other hand, more Shippensburg students (228) used wired phones "everyday" than expected (204.9) (Table 6.14). A few factors related to the accessibility to wired phones and Internet-connected computers likely contributed to such differences. For example, at Shippensburg, wired phones are present in the dorm rooms but are also "visible" in other main buildings such as the student union building and athletic building; these can be used to call other campus phones for free. There are more computer labs present on campus at Penn State than at Shippensburg. And Shippensburg students who commute daily and weekly to school may not have Internet connection at home.

Table 6.13: Crosstabulation of frequency of using Internet-connected computer according to place
Source: based on questionnaire data

N = 727		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Penn State	Count (Expected count) % within place	12 (14.1) 3.6%	2 (12.3) 0.6%	317 (304.6) 95.8%
Shippensburg	Count (Expected count) % within place	19 (16.9) 4.8%	25 (14.7) 6.3%	352 (364.4) 88.9%
Pearson Chi-square sig. ($p < 0.001$)				

Table 6.14: Crosstabulation of frequency of using wired phone according to place Source: based on questionnaire data				
N = 729		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Penn State	Count (Expected count) % within place	18 (16.2) 5.3%	166 (144.7) 49.1%	154 (177.1) 45.6%
Shippensburg	Count (Expected count) % within place	17 (18.8) 4.3%	146 (167.3) 37.3%	228 (204.9) 58.3%
Pearson Chi-square sig. (p = 0.003)				

There was a "trade-off" between using a wired phone and a cell phone since both were voice-based communication. Crosstab / chi square analysis for frequency of wired phone use according to cell-phone ownership indicated statistical significance ($p < 0.001$). When compared between cell-phone owners and non-owners, there was a tendency for non-owners to use wired phones "everyday" (Table 6.15). Cell-phone owning students more often tended to use wired phones on "weekly, monthly, yearly" bases (272) than expected (250.8). Such trade offs could be to due the cost of using cell-phones and wired phones. As mentioned earlier, some students solely used cell phones and disconnected the wired phone at their house. This supported the statistical evidence that the average numbers of cell-phone calls made and received by off-campus students was higher than on-campus students (Table 6.8). Additionally, there was a weak difference ($p = 0.056$) indicated between the frequency of using wired phones according to on or off campus students (Table 6.16). More on-campus students used wired phones "every day" (180) than expected (164.4). On the other hand, off-campus students tended to not use wired phones everyday. Again, this can be seen in the light of difference in the resident-phone connection offered at on-campus and off-campus locations.

Moreover, when cell-phone owners and non-owners were compared, there was a tendency for non-cell-phone owners to use Internet-connected computers everyday ($p = 0.015$) (Table 6.17). During the interviews, non-cell phone owners almost always expressed themselves as heavy users of Internet-connected computers and used IM and / or E-mail as their primary daily correspondence method with their friends and family. Therefore, owning a cell phone did not mean that students did not correspond daily with people using information and communication technologies, but rather, these students relied greatly on Internet-based communications over phone-based communications.

Table 6.15: Crosstabulation of frequency of using wired phones according to cell-phone ownership
Source: based on questionnaire data

N = 729		Never	Weekly, Monthly, Yearly	Everyday
Cell-phone owner	Count (Expected count) % within ownership	26 (28.1) 4.4%	272 (250.8) 46.4%	288 (307.1) 49.1%
Cell-phone Non-owner	Count (Expected count) % within ownership	9 (6.9) 6.3%	40 (61.2) 28.0%	94 (74.9) 65.7%
Pearson Chi-square sig. ($p < 0.001$)				

Table 6.16: Crosstabulation of frequency of using wired phone according to residency
Source: based on questionnaire data

N = 695		Never	Weekly, Monthly, Yearly	Everyday
On-campus	Count (Expected count) % within residency	14 (14.9) 4.5%	119 (133.8) 38.0%	180 (164.4) 57.5%
Off-campus	Count (Expected count) % within residency	19 (18.1) 5.0%	178 (163.2) 46.6%	185 (200.6) 48.4%
Pearson Chi-square sig. ($p = 0.056$)				

Table 6.17: Crosstabulation of frequency of using Internet-connected computers according to cell-phone ownership
Source: based on questionnaire data

N = 727		Never	Weekly, Monthly, Yearly	Everyday
Cell-phone owner	Count (Expected count) % within ownership	31 (24.9) 5.3%	20 (21.7) 3.4%	534 (538.3) 91.3%
Cell-phone Non-owner	Count (Expected count) % within ownership	0 (6.1) 0%	7 (5.3) 4.9%	135 (130.7) 95.1%
Pearson Chi-square sig. ($p = 0.015$)				

For cell-phone owners, Internet-based communications can take place in addition to, and conjunction with, phone communications. Many students expressed in the interviews that they used combinations of E-mail, IM, text messaging systems (SMS) and phone communications. For example, Austin talked with his mother on the cell-phone on regular basis and also used AOL Instant Messenger:

Austin, 20, sophomore, Shippensburg	
Interviewer:	Do you frequently do you use those text, E-mail, IM
Austin:	Well, every everybody is on AOL messenger, um, I mean you know
Interviewer:	On campus or anybody from home
Austin:	Anybody is on there I mean
Interviewer:	You're parents?
Austin:	Yeah, mom, I talk to my mom too there yeah

Maya's comment below indicated that a cell-phone connection was not the only connection available to students but IM is also regarded an equally important method of communication:

Maya, 19, sophomore, Shippensburg	
Interviewer:	Do you think if, you can live without a [cell] phone for a day (again) or is that something
Maya:	I could, I mean it like, well, I have to make a trade off, if I, didn't have a phone, then I have to have IM
Interviewer:	[Laughs]
Maya:	If I didn't have IM, I have to have a phone [edit]

Aside from the cost issue, the choice of using communication modes among IM, E-mail, or phone communication mostly depended on few factors. First of all, students preferred different types of communication depending on the "formality" of the communication. Julia and Isabelle chose various communication methods according to who they talked to but also the intended formality of the conversation:

Julia, 22, senior, Shippensburg	
Julia:	Well, I usually I use E-mail for people who don't have cell phones, that live further away that I wouldn't talk to, or for professional reasons and stuff like that, and IM I just use on a regular bases
Interviewer:	Ok, at home as well as campus
Julia:	Mm-hmm
Interviewer:	Ok, so is there a difference in who you call and who you IM or it just, wherever
Julia:	Actually, I call people more often that I'm closer to 'cause I Instant Message, you just see people up there, you say hi really quick, you know calling you have to put a lot more effort I guess
Interviewer:	[Laughs]
Julia:	Than calling the person, spending time taking to them so, IM's more casual and
Interviewer:	Ok

Julia:	Then if I want to talk to someone in depth, I use the cell phone

Isabelle, 18, freshmen, Penn state	
Isabelle:	I use it more, I use like Instant Messaging ( ) all the time
Interviewer:	All the time?
Isabelle:	Yeah, whenever I'm in my room I'm always like talking to someone, and E-mail, I, I use it but it's not as easy as Instant messaging
Interviewer:	Ok, why is that? What's the difference between IM, cell phone or E-mail, what are some of the
Isabelle:	Well, um Instant Messaging is like if my friend is on, than you know just talk back and forth really quick, but E-mail, it takes a few minutes and it's like you have to write and type and send but um, I mean it's somebody is not on-line and I want to talk to someone, I might write them an E-mail, that's more like if I was gonna write them a letter you know
Interviewer:	Yeah
Isabelle:	It's like how are you doing, where Instant Messaging is more like informal, just like "what's up" and my cell phone, um, I just like call my friends couple times a week, but (..) that's it [starts laughing]

IM was something you have "on" all the time according to Monica and Jasmine. At university campuses, dorms, computer labs, and many residents have the "free" Internet connections. Therefore, the accessibility to Internet-connected computers contributes to the popularity of IM among university students. Also, IM was seen as an economical as well as a convenient way to initiate and sustain communication with others. For Gina, IM was part of the multi-tasking while she was in front of the computer:

Gina, 20, junior, Penn State	
Interviewer:	Ok, how about IM? Is that a
Gina:	Definitely, ( ) that would be just mostly like lazy talking, wasting time it's not usually contacting ( )
Interviewer:	[Laughing] so you are multi-tasking or?
Gina:	Yeah, talking on the cell phone, talking on the IM, and listening to music all yeah [starts laughing loud]
Interviewer:	You can do that all at once? Wow. I get confused just talking to ( )
Gina:	[Sustained laugh]
Interviewer:	So you even do that just for fun?
Gina:	Just for fun, I'm supposed to be doing [a] paper but now I'm talking on IM, talking on the phone or
Interviewer:	Ok, so it's lot of a social thing
Gina:	Definitely social, definitely social

Generally, E-mails were often designated for "professional" or school related correspondence, such as when students contacted their professors. IM was used more for "casual" conversations with friends and family. IM communication was particularly considered to be "casual" compared

to other forms of communications. According to one of the interviewees, with IM "you can talk to as many people as you can type fast enough to keep up" thereby dialoguing with multiple people. In a way, IM was considered to be something you use to "chat" with your friends and family and to socialize with them. In many cases, students stated that they were multi-tasking like Gina, by working on assignments in the computer lab or in their rooms or talking with someone on the IM while talking multiple others on the phone and the Internet.

Hutchby (2001)uses the terms the "affordances of the technology" to describe the enabling and constraint of the technology such as telephones. The affordances of various technologies were articulated by students as part of their choice over which communication methods to use. Another example was that the duration of time lag between communications (instant vs. lagged) was a factor for students to use one communication method from another. For instance, Mary and Eileen explained that E-mail correspondence may not be the most effective way to contact their friends:

Mary, sophomore, International	
Mary:	Yeah, I first call them like, at home, if I don't get them, then I try this, their cell phone
Interviewer:	How about E-mail
Mary:	Yeah, and then I go to E-mail
Interviewer:	E-mail [la] ok, but is that reliable E-mail to get in touch or
Mary:	Yeah, kind of, it depends on how important like this stuff you want the person to know about, it's yeah
Interviewer:	Ok then, if it's important than you
Mary:	I'll, I'll chose their cell phones, if like I need immediate
Interviewer:	Ok
Mary:	Response or something then I, 'cause obviously um, it's not everyone who checks his or her E-mails that often

Eileen, 25, graduate, Shippensburg, International	
Eileen:	I mostly call than E-mail
Interviewer:	[Laugh]
Eileen:	Because I realize that um, E-mails, some of them don't' reply as often
Interviewer:	Ok
Eileen:	And that's another reason why you like using the phone, I can get you
Interviewer:	Oh
Eileen:	And know that hey I've talked to you, are you coming at five you know
Interviewer:	Right
Eileen:	But E-mail, you don't know when someone would open the E-mail
Interviewer:	Ok
Eileen:	So, uh, if I need something immediately, I would call the phone
Interviewer:	Ok
Eileen:	But if, you know long period, I can just E-mail

The knowledge regarding the most effective and appropriate ways of communicating with various people became important in managing social relations as well as multiple communication methods. Gabrielle commented that her decision of which methods to use depended on who she was contacting:

Gabrielle, 24, transfer student, Shippensburg	
Interviewer:	Ok, so is this verbal contact and textual like IM or E-mail, um, is that any different in how you, who you contact or how you contact or do you feel connected?
Gabrielle:	I guess I have friends who are, who hate to write and hate to answer E-mail but they'll talk to you for like 2 hours on the phone
Interviewer:	[Laughs] ok
Gabrielle:	So you know I kinda know who I should E-mail and who I should call you know, 'cause I'm not gonna bother calling someone who'll I know would respond to my E-mail but there's friends of mine you can write them 15 E-mails and they wouldn't send you but they'll call you and they'll be willing to talk to you for like an hour so
Interviewer:	Ok
Gabrielle:	It kinda depends on the person
Interviewer:	Person rather than like ( ) or
Gabrielle:	Yeah exactly yeah
Interviewer:	How close that relationship is
Gabrielle:	Yeah, it really, it really just the person, not the distance

Some interviewees who did not use their cell phones regularly used the phrase "I'm not a phone person" to describe themselves. Students varied in their preferences over which methods of communication to use. Sometimes this depended on their perception towards what sorts of experiences associated with each methods. For example, Eileen and Alyssa described their preference of communicating by phones because phones allowed them to hear the voice and confirm the presence of who they were communicating with:

Eileen, 25, graduate, Shippensburg, International	
Eileen:	I think it's for me, the E-mail is like, it's very impersonal for me
Interviewer:	Ok
Eileen:	The phone is like I can hear your voice and
Interviewer:	Ok
Eileen:	I know you are there, and it's easier for me
Interviewer:	Ok
Eileen:	And can just call and talk and then you know
Interviewer:	Right
Eileen:	and E-mail is easier for, but for some reason I just
Interviewer:	[Laugh]
Eileen:	Prefer phone
Interviewer:	You prefer phone

Alyssa, 21, senior, Shippensburg	
Alyssa:	I mean, some people, they just have their different preferences I like talking to people more because less things get construed
Interviewer:	Right
Alyssa:	Do you know what I mean
Interviewer:	Right, right
Alyssa:	You might have a misunderstanding if it's on-line, 'cause it's hard to tell the person's like inflection or tone of voice
Interviewer:	So the voice, ok, so you
Alyssa:	Yeah
Interviewer:	Find that find that more intimate more

Students also described how on-line and phone communication varied in their effectiveness of relaying information, especially nuanced feelings and meanings. Gina stated the following:

Gina, 20, junior, Penn State	
Interviewer:	So what's the difference between IM and cell phone, it's just you're in front of the computer?
Gina:	Well, no, for I think like for IM people talk more frankly, on IM definitely more frankly, someone would tell you how they feel about you, or if they are angry at you, joke more on IM because you can't see the person's face you only get the, the words, but at the same time you get more confusion some of them I'll be having a IM conversation, people are not understanding you I'm trying to joke and not catching my sarcasms, so I might call them and look this is going on, so they can understand, sometimes it doesn't work as the best communication but you might want to ask somebody a personal question, you might do that on IM ( ) instead of calling them and [Edit] You got the hand writing, you got like the feeling between you and the paper, and they took the time just to wait and all the anticipation but E-mail you can send it it's right back to you, you know even it's worse with IM, like sometimes you can just chat and as you type they see what's your typing so, so it's instant and so impersonal it changes the way people interact with each other
Interviewer:	Right, but you also mentioned like it could be emotional though
Gina:	It could be emotional because you could ( ) instant you can see like how they're feeling, sometimes you write waiting like I wonder what they are going to say as I return, because it's not the same thing to be on the phone, you can hear the tone in your voice, how angry or how sad or how important it is

For Joey, he perceived E-mails to be more "personal" than Instant Messenger because there could be more "thoughts" that could go into constructing his message:

Joey, 19, sophomore, Shippensburg, International	
Joey:	So I try to send E-mails, I just find them more satisfying emotionally [chuckle] right?
Interviewer:	E-mail than Instant Messenger

Joey:	Yes
Interviewer:	Why?
Joey:	I don't know when
Interviewer:	It's the same text kind of
Joey:	I know but it's not the same
Interviewer:	It's not the same
Joey:	Like um, when you, when you chat with somebody, the idea is you, the idea is you, you send a little bit shorter, a little bit
Interviewer:	But it's instant, you don't want to have like a
Joey:	Yeah, it's instant
Interviewer:	Ok
Joey:	You cannot put really a thought into what's your writing right? so
Interviewer:	So E-mail you would kind of re-think what you've written and
Joey:	Exactly
Interviewer:	Before you push the send [Laughingly] Sright?
Joey:	[Laugh] exactly
Interviewer:	You make sure you make sense or something
Joey:	It creates a more personal relationship
Interviewer:	Oh that's more personal than Instant
Joey:	Yeah, that's how I think of it
Interviewer:	Interesting
Joey:	I E-mail a lot
Interviewer:	You E-mail a lot
Joey:	E-mail a lot

Various communications allow students to have personal conversation when they cannot have face-to-face interaction. But when text-based and phone communication was compared, phone communication was perceived to be more personal. Austin perceived phone communication to be a more personal method of communication than text-based communication but less personal compared to talking to someone face to face:

Austin, 20, sophomore, Shippensburg	
Austin:	Um, but I really, you know a phone is it's kinda impersonal to me, I rather be, face to face with the person talking
Interviewer:	So you mean like phone in general
Austin:	But well yeah
Interviewer:	Is that what you mean
Austin:	But you know, times when you can't see the person
Interviewer:	Right
Austin:	You know the phone is the next best thing
Interviewer:	Yeah
Austin:	So even if I'm here and I'm talking to my mom, you know back home and see her, you know
Interviewer:	Sure, sure
Austin:	All the time to talk to her so
Interviewer:	Ok
Austin:	As far as relationships, definitely, I mean it's, it's helped me

Interviewer:	Is that different from text message, like E-mail, IM or
Austin:	[Silence]
Interviewer:	You're saying phones or cell phones but verbal contact is much more personal than
Austin:	Right than, than texting right
Interviewer:	Ok
Austin:	But, but, texting is more than nothing at all
Interviewer:	Right, so there is some kind of
Austin:	There's, there's a level, I mean obviously seeing the person, in person would be the best thing, the phone would be the next best thing and then you know electronic communication that's non, non verbal next and then (…)

Students' choices of different methods reflected how casual, personal, intimate, and immediate their communication with various parties to be. Students were aware of effectiveness and the consequences of using each communication method.

Self-managing extensibility, availability, and spatial experiences

In understanding how university students have been incorporating cell-phone technology into everyday practices and spaces, it is helpful to consider the five dimensions of telephones pointed out by Roos and summarized in Table 6.18. He states that the nature of cell phone consumption is "ambiguous" and needs to be understood according to various social contexts;

> [i]t might be suggested that the mobile portable telephone is defined by its mobility, accessibility, immediacy, privacy and personal use. This is misleading, however. In all dimensions the mobile telephone is very ambiguous. It can be used in exactly the same way as a fixed telephone, to protect your isolation (contact is made only at will, and only with a few intimates), to communicate with a time lag and as a completely public telephone where outsiders may listen to intimate conversations, as well as the formal, impersonal communication. This versatility, especially in the public—private and isolated—accessible dimensions, means that the mobile telephone has no clear social function and its role in changing society and social interaction depends on other developments. It increases both our accessibility and our nomadic isolation, and it increases both the intimate privacy and public nature of telephone communication (Roos 1993, 458).

As Roos points out, meanings and experiences associated with cell-phone consumption vary depending on who is using the cell phone and their social context. Therefore, considerations of place settings such as American university campuses as well as students' social "situatedness" related to their socio-cultural identities are important in understanding the shaping of roles and meanings of cell phones in everyday contexts. For American university students, cell-phone consumption involves personal management of social connectivity and spatial experiences. Parts

of such management are about maximizing one's extensibility and achieving desirable levels of availability to others, but also controlling the nature of usage according to different spatial contexts. Again, the extent and the nature of connections also depended on uses of multiple communication methods.

Table 6.18: Roos' five dimension of telephony Source: Roos 1993, 458; Figure 2		
Fixed	-------	Mobile
Isolated	-------	Accessible
Lagged	-------	Instantaneous
Public	-------	Private
Impersonal	-------	Personal

In addition to the structural issues associated with phone use (e.g. cost, quality, and risks), the sense of "mobility" was one of the themes that was articulated by students who used cell-phones more in comparison with the wired phones. The following statements are some examples of responses indicating that the cell-phones' mobility was the reason for their use over wired phones (Appendix A, Q#20).

- Barely ever, cell phone is always w/ [with] me. I'm never home.
- Practically, never. I am rarely in my apartment
- Only when I'm at my house or a friend's house – so not very often – I'm usually out
- I use a wired phone little to never, because I am never in one specific place, with a cell phone, people can reach me anywhere.
- Not as often can't move w/ [with] them
- I do not use wired phones unless I am answer[ing] my parents home phone. So I use my cell phone to make connections with businesses, family, and friends, because I am either at work or at school
- ½ as much b/c I'm never a home –always between school, work or going out
- Not nearly as often because I'm always on the run and don't have a wired phone near

These answers showed the multiple aspects of daily mobility that were outlined to in the previous chapter—daily, seasonal, and residential. The access to a wired phone depended on whether students are home or not most of the day. If one were based at home most of the day, uses of

wired phones were sometimes seen as more economical and practical. These students answered that they use wire phones more compared to cell phones. For example, the following are some of the examples of their statements (Appendix A, Q#20).

- Daily, because I'm home & pay for phone service
- Daily, when I'm near one
- Everyday; when I'm in my dorm I get phone calls so I answer them

Thus, the students' accessibility of a phone connection was related to variations on students' mobility.

Students' indicated that the choice of cell phone over wired phones also depended upon domestic arrangements—their residential circumstances. If one lives with roommates, wired phones are shared among their roommates. For example, the following statements are selected responses to the question "how often do you use wired phones in relation to cell phones? Why?" (Appendix A, Q#20).

- Much less, I use a cell phone so I don't worry about splitting the bill with my roommates
- Once a day compared to 5 or times a day with my cell, I live in a house w/ [with] 5 other girls the phone is never free—and b/c [because] of convenience
- Never use wired phones… Your own personal cell phone is yours and yours only, no need to share it w/ [with] others. Goes with you wherever you go. Always accessible.
- Less often than cell phones. We have 7 roommates + one land line so often times its easier to just have my own personal line
- [Use] cell phones more, [because it is] easier to have privacy
- Cell phone all the time, b/c [because] is like y[our] own line

These responses highlight how students perceived cell phones as personal technology that allowed them to be much more accessible to a phone line compared to a wired phone.

Cell phone technology was appreciated by students because of their "mobile," "personal," and "accessible" phone connection compared to wired phones that can be characterized as "fixed," "isolated," and "impersonal." In the mid-2000s, it has become standard for laptops to have wireless cards and many campus spaces, work places, public spaces, hotels, coffee shops, and private residences have become "wi-fi" spots. However, at the moment of my research period, computers wirelessly connected to the Internet were not common. Penn State's

FACA 2003 survey mentioned that only 6.6 percent of respondents used a wireless Internet connection and only 9.0 percent of students who owned a laptop (32.2%) used their laptops in wireless "mode where available on campus" (FACAC website 2003). Only one graduate student mentioned in the interviews how wireless laptops were used by people around him in professional settings. Another interviewee mentioned that he saw a commercial for wireless-laptop connections advertised on television commercials. Therefore, during my research period, the majority of the students used the Internet from home or on campus.

On the other hand, cell phones were widely carried by students as well as used in various spaces as seen in Figure 6.3. No longer can students' "extensibility" originate from fixed spaces of residences, offices, pay phones, computer labs, and student union buildings, which were considered to be the "access points" for personal daily communications. Rather, cell phones allow students to maximize both their extensibility and accessibility to others located far and near as long as cell-phone technology is "working." There are three overall themes that are associated with the practices of cell-phone consumption while on the move and outside of domestic settings. They are cell-phones usage for (a) orientation and micro-coordination of daily activities, (b) personal customization of spatial experiences, and (c) sense of control over cell-phone connection.

Orienting and coordinating

Several students, like Emily below, stated that they often use E-mail and IM to arrange meetings and social events with their friends:

Emily, 20, sophomore, Shippensburg	
Interviewer:	Ok, do you use um, not just the cell phones but do you use E-mail and IM too?
Emily:	No, I don't use that on my cell phone
Interviewer:	Ok, but on the computer
Emily:	Yes, I do
Interviewer:	Do you use that as to pre-arrange meetings with your friends
Emily:	Yeah
Interviewer:	As much as cell phones or do you just use
Emily:	I use IM, and E-mail more than my cell phones
Interviewer:	More
Emily:	Yeah
Interviewer:	And why, why is that, is that much more convenient among your friends or
Emily:	Yeah, it's more convenient and like (..) it depends like where I am, like if I'm out then I'll use my cell phone
Interviewer:	Right, but your in front of the computer lot of the times or is that
Emily:	Yeah
Interviewer:	Ok, so do you actually pre-arrange usually to meet or do thing or

Emily: Yeah
Interviewer: Do you just call up and do things
Emily: No, we pre-arrange
Interviewer: Pre-arrange
Emily: Yeah [giggles]
Interviewer: And it works out?
Emily: Yeah

Even though Emily usually uses Internet-based communication, her cell phone was used while she was not in front of the computer. One of the advantages of cell phones has been that users can manage daily activities while they do not have access to a wired phone or Internet connection to use IM or E-mail. Cell phones are also different from pay phones or work phones in that a user can receive phone calls regardless of location, as well as make them. Ling and Yittri (2002) in their Norwegian study describe the use of cell-phones to arrange meetings and manage daily activities as "micro-coordination." They point out that cell phones have allowed "the coordination of interaction without the need for larger nodes or centralized base of operation" which means that the direction of trips that had already started can be redirected with a cell phone communication (Ling and Yttri 2002; Ling and Haddon 2003). Ling and Yittiri give an example of a "micro-coordination" with a wife calling a husband to pick up something at the store on his way home and the husband can also call from the grocery store whether she needs something additional. Therefore, the husband's journey home is redirected by a phone call. In addition, "micro-coordination" include other uses in scenarios such as letting your friend know that one is running late or to progressively coordinate the "exact arrangements of a meeting" (p.144) or orienting one another if they cannot locate each other at a particular place. The cell phone "allows for the nuanced coordination of transportation such that meetings can be arranged, errands cane be carried out, and people can be reached" (Ling and Haddon 2003, 247).

Such uses have been identified to be important particularly for "career parents" to coordinate daily activities with their children. Parenting activities were one of the driving forces for American young people to own cell phones. In a Finish study, young children coordinate with their parents using cell phones. On the other hand, teenagers have more use coordinating with people who are outside of their family members, especially with their peers. Therefore, cell phones mediate relationships that are intimate such as family members, significant others, and close friends. Cell phones, then, became an essential tool for university students to arrange to meet with one another and coordinate activities. For example, Jacob commented that the use of cell phones was for long distance calls and coordinating with his roommates:

Jacob, 23, graduate, international	
Jacob:	I make a lot of long distance calls
Interviewer:	Yeah
Jacob:	I make a lot of international calls, when I have my land phone, I'm sort of constricted only when I go back home, then only you can call someone
Interviewer:	Yeah
Jacob:	Usually, my cell phone I can call up, anyone at a any time
Interviewer:	Right
Jacob:	Then both of my roommates
Interviewer:	Mm-hmm
Jacob:	We function as a family
Interviewer:	Ok
Jacob:	Both of roommates, when one of my roommates, is supposed to do the dinner
Interviewer:	Right
Jacob:	And the other one is supposed to do the shopping
Interviewer:	Right
Jacob:	( ) supposed to do the laundry
Interviewer:	Wow, ok, great
Jacob:	So we, perform together as a team

Other examples of "micro-coordination" included locating each other during football games and in crowded bars, working on group projects, and arranging to meet with their friends for lunch after class. In addition, SMS (Short Messaging System) have been used for "micro-coordination" as documented by scholars in Finland and Japan. Quick phone calls or using SMS acted as an important means for university students to coordinate as well as chat. There were some students who used SMS for the purposes of coordinating:

Faith, 19, sophomore, Shippensburg	
Faith:	[Edit] I'm even becoming more using with the text messaging more so
Interviewer:	You are?
Faith:	Yeah like I never did until ah, Christmas, Christmas break, this past Christmas break my friend did it to me, one of my roommates, ah, I was just like ah I don't know how to respond to this you know, but I never use it
Interviewer:	[Laughs]
Faith:	And then like every since then I definitely have used it a lot and I, I kinda resort to that on my cell phone
Interviewer:	[Edit]
Faith:	Um, I definitely resort to that more 'cause like me and my roommate that uses the phone all the time like we would do that back and forth like, "are you going to the gym," "yeah I'll be there at six," "ok I'll meet you there," instead of like calling [edit]

For some students, cell-phone mediated coordination was something that has already become a "norm." This was indicated by Olivia's statement below where she imagined what it would have been like in the 1980s, when cell phones were not a part of vernacular landscape:

Olivia, senior, Penn State	
Interviewer:	Ok, um, I was gonna ask one more thing, do you think how you relate to your friends are much different with cell phones? Well 'cause you had cell phone for a while so you can't really compare with
Olivia:	Um, I think it is in the way, 'cause I mean we always say this we don't know how people like even when we were little kids like in the '80s, how they found ( ) anyone, 'cause they ( ) didn't have cell phones
Interviewer:	[Laugh] right
Olivia:	We didn't realize like how I never realized how much I, I use my cell phone, if I forget it one day, I'm like ( ) I mean I realize like I do use it for little things like don't know how people before me really did, I mean I can remember not having one and like you just have to go home call'em and wait but it, it is funny
Interviewer:	So there is no particular place that you guys hang out usually just, just where you are
Olivia:	Yeah it's kinda, just we just kinda, meet up yeah, um, yeah we don't really go anywhere [to meet]
Interviewer:	So in the '80s you just
Olivia:	I don't know what they did, I was there but I don't know
Interviewer:	But you were pretty young
Olivia:	Yeah, I was born in the '80s but I mean I'm not really sure like what they did like I mean I'm sure they just called each other in the dorms but it just seems weird to me
Interviewer:	That's interesting
Olivia:	Because they didn't have the [cell phone]

The frequency of phone calls can be seen in the light of using cell phones for "micro-coordination." Daniel stated that one of the changes he felt when he started using his cell phones was that the pace of daily life became much quicker and the "frequency of parties and playing tennis" has increased dramatically:

Daniel, 24, graduate, international	
Daniel:	Yeah, you know it's, it's, um, I never thought of this before, theoretically if you intend to organize a party or
Interviewer:	Yeah
Daniel:	Mm, recreation event some time in weekend, you can always do that some traditional method, like writing E-mail
Interviewer:	Right
Daniel:	Using wired phone
Interviewer:	Right

Daniel:	But um, the time that takes you do this is much bigger than using a cell phone, if, if, and at um, like say, (sometime) you know people um, are likely to be available at cell phone
Interviewer:	Mm-hmm
Daniel:	And several minutes, you can organize
Interviewer:	You can [laugh]
Daniel:	[Laugh]
Interviewer:	But sometimes you can't make it, just to, that, because you're busy or something but still you have that possibility of that
Daniel:	Yeah, yeah, it's, it's typically it's like um, one people got an idea and call this one, and this one calls, "A" calls "B," "B" calls "C," "C" calls back with another idea, that it's [chuckles] [Edit]
Interviewer:	Um, when I see my um, cell bills, they, they record every, every call, that you make
Daniel:	Oh
Interviewer:	And quite amazed by the number of calls I made, and that the short, the short duration of each call

As Daniel indicated, many of the calls that are "micro-coordination" were short calls. This may reflect the fact that majority of the students (44.3%) use cell phones "less than an hour" everyday (Figure 6.1).

Moreover, there were differences between two campuses in terms of intensity of uses (Table 6.2). Penn State students tended to use cell phones "less than hour" everyday. On the other hand, Shippensburg students tended "not to use it everyday." In addition, Penn State students on average made more calls per day (4.51) than Shippensburg students (3.84) (Table 6.6). One explanation of this difference may be relative tendencies in which Penn State students use cell phone for "micro-coordination" that involve few to several "short calls" compared to calls that are "social" and "long distance" in nature. According to Licoppe "one of the stable and recurrent results of statistical research on residential telephone communication, based on the domestic telephone, is that the more distance there is between people the longer (on average) their telephone conversations are and the longer the intervals between their calls will be" (Licoppe 2004, 142). The "micro-coordination" occurs in the local area of campus and the surrounding regions. However, within the local area, cell phones become useful when there is physical distance between the two parties. Hence, Penn State campus is larger than Shippensburg campus, and therefore, there is more "usefulness" and "need" for Penn State students to coordinate with their friends and others who are "dispersed" away from one's location at any point of the day. On the other hand, at Shippensburg, it is relatively easy to meet up with friends on campus and their residences because campus buildings and off-campus apartments are located in the short walking

distance from each other. Amber, a Shippensburg student, did not carry her cell phone very much around campus:

Amber, 19, sophomore, Shippensburg	
Amber:	At constantly, no (...) [don't carry my cell phone] I mean there's just like, when I'm walking around campus at school, I don't need a cell phone, I am, you know 2 minutes away from my home you know

Faith assessed the usefulness of cell phone by comparing the size of two campuses as following:

Faith, 19, sophomore, Shippensburg	
Faith:	I think it's pretty much the same kinda thing everywhere you go, it's just kinda just a thing you know to do, maybe it's more it's more prevalent at like Penn State or something that like so many more people and you have to kinda keep in touch with lot of people and it's a bigger campus like this [Shippensburg] is not as large um
Interviewer:	So you can get by without it
Faith:	Oh yeah, certainly, you don't know I have a friends that live on that side of campus like you can't get a hold of them so you walk over you know what I mean, like it's not that big of a deal to me
Interviewer:	That's great ok
Faith:	Like, maybe like I've been to Penn State before and I wanted to die like I thought it was too big for me that I just got scared you know and I was like
Interviewer:	Ooh, so you were there [visiting]
Faith:	Oh yeah, I've been there and ( )
Interviewer:	[Starts laughing]
Faith:	I just I just think it's too big you know and like I'll probably use it more there to see like hey how do I get to my class or I don't know where I am
Interviewer:	[Laughs] 10 minutes is not enough to get to [another class]
Faith:	No, like and you know and I don't know I think the bigger you are
Interviewer:	I see, that's an interesting observation
Faith:	And more dispersed you are, I think that's I think that's more 'cause everyone knows everyone here, I, I can sit here and say who this person is and that person is you know maybe there you are

Furthermore, cell phones were seen as an "orienting tool" not just to locate one another but also to ask for directions while becoming lost and trying to find a place. In an unfamiliar place, cell phones become a valuable tool to contact someone to potentially find out the directions to the place.

One's availability was generally considered to be diminished if a student did not use a cell phone. Jacob described how it was hard for him to find one of his friends who did not own a cell phone:

Jacob, 24, graduate, Penn State, international	
Jacob:	Adrian, uh, she's the most difficult person here
Interviewer:	I know she doesn't have cell phone

Jacob:	She's the most difficult person to ( ), because, are you, her, I have two numbers of phones, in her house and in the office
Interviewer:	Office right
Jacob:	Ok, but most of the times, she's not exactly in the office, she might be in the computer lab sitting over there working
Interviewer:	Right
Jacob:	So I'll be calling her up in the office and the person who picking up the phone and "oh she's not here" but she's just next door in the office, why miss her
Interviewer:	They don't really make a point to [look next door] ( ) yeah
Jacob:	Exactly

In some cases, students who did not have a cell phone were considered to be "out of the loop" because they were "out of reach" and hard to get hold of. Hanna claimed that cell-phone ownership was a "norm" among students:

Hannah, 19, freshmen, Penn State	
Hannah:	[Edit] if you don't have a cell phone, people are like, "are you kidding, why don't you have a cell phone?" 'Cause I actually have a friend, she is always borrowing somebody else's cell phone to call people, because she doesn't have her own, so we are like "you know Jane, you have to get a cell phone" (…) I don't know, I think it's tough because lots of people, if you want to get in touch with someone, they will be like can I have your cell phone number? It's a lot easier than asking someone for an E-mail address or screen name because you don't know when you have an access to an computer, opposed to your cell phone is almost always on you, and even it is turned off, like you can still, you can turn it on anytime and like call someone back, it is pretty much like instant communication I guess (whatever like)
Interviewer:	And would be excluded if you don't have like, you might be left out in some instances if you don't have a cell phone?
Hannah:	I think so yeah, like it's weird I mean I know very few people who don't have cell phones, I think that if, if someone asks you for your cell phone and you say I don't have one, people will probably be like "that's weird"
Interviewer:	[Laugh] that's weird?
Hannah:	Yeah, it's really weird because everyone has one

Consequently, some students mentioned that they hinted to their non-cell-phone using friends to buy their own cell phone so that they could be contacted easier. Nonetheless, the extent of marginalization depended upon the preference of communication technology utilized among the group of friends:

Ellen, 19, sophomore, Penn State	
Ellen:	[Edit] like I think maybe one or two of my friends don't have one, most of my friends have one
Interviewer:	And they are getting by without it?
Ellen:	Yeah [hesitantly], but that's because they are usually with us anyway so
Interviewer:	Oh, ok
Ellen:	We don't have to really get a hold of and I don't know, um

Interviewer:	So they are not always marginalized or anything?
Ellen:	No, like they, everybody we always know ( ) because we always have the IM also

Ellen's comments above pointed to the fact that some of the students had access to other students' cell phones. A few interviewees mentioned that they themselves do not carry their cell phones while they were out because they were generally with someone who had their cell phone at all times. If someone needed to contact them or needed to contact others, their friends' cell phones were used. Therefore, cell phone lines were sometimes shared among friends for micro-coordinating purposes.

In addition, uses of multiple features available allowed students to use cell phones as "more than a phone." For instance, a few of my interviewees mentioned how cell phones were used as their clock and alarm clocks. Keith emphasized the usefulness of these functions:

Keith, 23, junior, Penn State	
Interviewer:	You like that fact that anyone can contact you anytime any place
Keith:	I am spoiled now
Interviewer:	You're spoiled?
Keith:	Before I had it, it didn't care, you don't have it, you don't realize it, but now that I have it, if I lose my phone for a day, if I leave it at a friend's house, I start to going "nuts," and it, people don't call me that often either, it's just, I don't know it's become like I am depended on it, I use it for a watch too most of the times for a clock
Interviewer:	Ok, so, you don't wear a watch
Keith:	It's so half and half, yeah, sometimes I do but I just got used the clock on (that) all the time
Interviewer:	Ok, so what are the features do you use, like text messaging?
Keith:	I have text messaging, but I can only text message, text message other people with the same carrier, there's only maybe five people, so I don't "text" too much, the games, I do that sitting on the bus, in and out ( )
Interviewer:	You do?
Keith:	Yeah, um, that's all about I use, I use the alarm clock every once in a while, if I am staying over at someone else's or anywhere where I am not home, I got a little alarm clock with me.
Interviewer:	Reliable then?
Keith:	Yeah, as long as the battery doesn't die
Interviewer:	That's right
Keith:	Pretty good the battery is pretty strong, so it usually works out

Alarm clocks, address books, and voice message equally allow students to "orient" and manage their daily activities and social relationships. Cell phones had become important part of Ellen's life because of her use of the address book:

Ellen, 19, sophomore, Penn State

Interviewer:	Ok, cell phone is pretty important
Ellen:	I don't know what I'll do without my cell phone. I will be a lost 'cause and I have all my phone numbers in here and everything. I don't even know like half the people's phone numbers, it's all stored in my phone
Interviewer:	You just find the name and just press the button kinda thing
Ellen:	Yeah, god forbid, if my phone broke, I would have no phone numbers

For many students, cell phones represent their social world as they store their contact numbers in their cell pone. Gina explained what it means to have contact numbers stored in her phone:

Gina, 20, junior, Penn State	
Gina:	Because before, you had to remember the phone number for somebody, now you can just press speed dial and there's the number so I, so I definitely felt like after I lost my phone I was like, well before I can remember numbers so easily, I can have up to ( ) even 50 people I knew different you know contact ( ) my mom's numbers, and this person's number, because I have my cell phone, I never even bothered to remember, so that information is lost, ( ) capacity to connect a number with a face or a number with the person is now gone
Interviewer:	Ok, do you call someone then you vaguely remember the face but you don't sometimes?
Gina:	No, no, like in terms of you see a number and that number might register the person in your mind instead of having now you just have the name in the cell phones
Interviewer:	Ok
Gina:	That's what you registered with, of course you're registered person's name originally but now you don't have it might just been a speed-dial or like on my phone you can just the name
Interviewer:	Wow
Gina:	So depending on what's you have, because you know what you can do
Interviewer:	Ok, if you, can you live without a cell phone at this point?
Gina:	I *could*, I could live without it but it's just little bit difficult, like when I'm lost, ( ) I guess I had three come to think of it, I had another one earlier when I first got in August when I lost it, left in a cab or something, I lost like I had like 4-300 numbers so all of that was gone
Interviewer:	Oh no, how many you can store?
Gina:	You can store like up to 500 numbers
Interviewer:	Wow
Gina:	Yeah, so I lost like all of that so for a brief of time my life was like suspended, I didn't have any contact with my friends that I've got, ( ) you might meet someone and get the number in the phone and not talked to them for a long time, you're just scoring through and you're and "um, I'll talk to so and so" so for a while it was kind of like on the hold and someone can get a hold of you or die or whatever, you feel uneasy but not I mean it's I left ( ) leave it at home I'm like no, I've left my cell phone at home but I can think if I *had* to, I wouldn't prefer (laugh) that but
Interviewer:	Right, it's part of your life
Gina:	It's part of my life

Because of reliance on cell phones to store numbers, it is "disorienting" not to have a cell phone. Other students expressed similar sentiments of "loss," when they forgot to bring their cell phone with them for a day. Similarly, Hanna commented on how her friend reacted when she broke her cell phone:

Hannah, 19, Freshmen, Penn State	
Hannah:	I don't know, like when they go out, like they usually have, like I, I put my cell phone in my pocket too because that way it vibrates so you can feel it, you can hear it, 'cause you know that actually one of my friends I was talking to um last night she had it in her back pocket she feel and she smashed it and ( ) she had one of the nice picture ones too. So she was really upset like that's like one of the most important things if you lose your cell phone, like I lost my cell phone last semester about the week, it was like the world has ended because it has like every single phone number in it that I know
Interviewer:	That you did not put it in anywhere else?
Hannah:	Yeah, I mean, like some of the numbers like my home phone and my grandparents and stuff I have it at home but a lot of my friends up here I won't have a clue how to get in touch with them if I didn't have my cell phone, so.

The above comments showed that for these students, cell phones had become part of their daily life that without it, they feel disoriented.

Personalization of "in-between" transitional spaces

Students' cell-phone consumption involved instrumental calls that were "short and quick," but also long-distance calls that occurred occasionally or at specific times (e.g. evening hours and weekends when cell phone calls are cheap or free) and / or emergency calls. For many students, a cell phone became incorporated in their daily lives "intimately" by using it frequently, in many places, and for "intrinsic uses" (personal entertainment and socializing). Hannah's comment below illustrates how extensibility mediated by cell phones is a "social" activity:

Hannah, 19, freshmen, Penn State	
Interviewer:	Ok, so what does the cell phone represent, is it a convenience, social, is it emergencies, is it emotional support?
Hannah:	Um, I would totally think like more like social, and I guess like the emotional support like, like if I had a really hard test or like I'm in a bad mood or something, one of the first thing I do is like, it's like get out of the test I think if I did bad on it, I will call one of my friends and be like "I think I just failed my test" and I think it is more like, ( ) just helps you keep in touch, 'cause it is such a big school, you don't get to see your friends as much so I'll call my one friend a lot, 'cause I don't really get to see her that often during the day.

In the absence of face-to-face contact, Hannah's socialization with her friends mediated by cell phones occurred more spontaneously and frequently without waiting to go to a wired phone at home. In addition to orienting and micro-coordinating, "keeping in touch" with someone on the phone could be seen as a way for students to cope with the range of hardships of university life such as taking exams, doing assignments, and being away from friends and family.

Cell phones are also "more than a phone" because text messaging adds a way of socializing. This was especially the case for students who were "all embracing" and "fun / trendy" cell-phone users (Table 6.12). Text messaging can be used for micro-coordination to arrange meetings but can also add expressive and entertaining aspects to the communication (see Kasesniemi and Rautiainen 2002 for study on Finish young people). For example, Kaylee expressed the "fun" element of receiving text messaging:

Kaylee, 21, senior, Shippensburg	
Interviewer:	Oh ok, um do you use text messaging or
Kaylee:	My phone is like I can receive them but I can't sent them so
Interviewer:	That's interesting
Kaylee:	So I think it's a little, it, it well I guess it was [laughingly] a little too old to be able to send them but it wasn't old enough to be able to get them, I don't know, but I do enjoy when people send them to me, it's pretty exciting
Interviewer:	[Laughs]
Kaylee:	It's pretty exciting
Interviewer:	Do you want to send back sometimes [Laughs]
Kaylee:	I wish I could, I wish, 'cause I always have to call people back
Interviewer:	Ok, so you do call back sometimes
Kaylee:	Yeah
Interviewer:	What are the things they text message you with, just "can you call me now?"
Kaylee:	Ooh, my one friend told me like "do you want, gonna do something tonight?" or "are you going to this place tonight?"
Interviewer:	So it acts like a message box as well then, or do you get it immediately usually?
Kaylee:	Mm-hum
Interviewer:	Oh ok
Kaylee:	Yeah they'll just like pop up and it's like if I have it with me but yeah it's kind (fun) I always think it's funny because like little some special message so I always think
Interviewer:	Funny [laughs] ok, is that a bit different then like a voice message and
Kaylee:	Yeah, 'cause I don't get them near as much, so it's just kind of something ( )

Austin also sent about twenty to fifty text messages per month and used the E-mail and IM functions on his phones in addition to phone communication:

Austin, 20, sophomore, Shippensburg	
Austin:	Well [sighs] if you're in class
Interviewer:	Yeah

Austin:	And you need to talk to somebody
Interviewer:	Right
Austin:	I mean you can just send them the text message or send them an Instant Messenger
Interviewer:	Without talking
Austin:	Without talking to them
Interviewer:	That's interesting, why do you need to contact them, just [for Athletic club Austin belongs to]
Austin:	Well, well not, I mean you know during school, it wouldn't be for [Athletic club] but, you know, say there's somebody of interest you just want to say hi to
Interviewer:	Right and you just think of someone
Austin:	Maybe, yeah maybe you know there's a girl you want to say hi to or whatnot
Interviewer:	Yeah sure [laughs]
Austin:	You know I mean it's
Interviewer:	Ok
Austin:	You know you want to meet somebody for lunch and you want to send them a little text message
Interviewer:	Ok, so you use like text message, you might IM, you, you call them
Austin:	Yeah
Interviewer:	You use it from [your cell phone]
Austin:	E-mail, you can write E-mail with it too

When one cannot initiate phone conversations, such as when in class, text-based conversations were seen to be a useful way to communicate. Austin's uses of text messaging resonate with Mimi Sheller's observation that:

> The proliferation of screens, from the miniature ones displaying text messages on handheld devices to the large ones in public space is allowing for new kinds of informational mobilities that use public spaces for "private" purposes. Private conversations are increasingly occurring in various "free spaces" that have been appropriated from the "semipublic" realm of streets, trains, stairwells, hallways, and situations. New degree and kinds of personal communication or "keeping in touch" are now possible from shifting public locations (Sheller 2004, 46).

Private phone conversations and text messaging occurring in public spaces can be described as the "personalization" or "privatization" of public space. This is because phone conversations as well as text-based communications can be considered to be a "personal" activity as well as belonging to the "private" realm that has strong ties with domestic spaces. Cell phones are part of a range of portable technologies that make "keeping in touch" at all times possible.

Cell phones also share the characteristics with portable personal stereos—e.g. Walkmans, i-pods, mp3 players—that provide personal "entertainment" for users while on the move. Michael Bull has been studying ethnographically how people use personal stereos to "manage space, time and boundaries around self" (Bull 1999, 2000, 2001). Regarding Walkmans, he states that "what is traditionally conceived of as 'private' experience is brought out into public realms in the act of

individualized listening" and that their use "allows the user to prioritize their experience in relation to their geographical, social and interpersonal environment and as such enables to attempt to exist with their own private soundworld" (Bull 2001, 181). Similar dimensions of Walkman use were also described by my interviewee, Gina:

Gina, 20, junior, Penn State	
Interviewer:	Right, do you use a Walkman for example?
Gina:	Yeah [she shows me her Walkman]
Interviewer:	Oh yeah, I just saw you yeah, is that pretty important you as well
Gina:	Yeah, definitely important to me like listening to tune on the radios and CDs is just to like when you have a bad test you can pop out a CDs afterwards and walk and you know calm down, or if you're in the library and trying to study and you're having trouble concentrating so putting on a CD, ok, so I'm always listening to music or talking on the phone
Interviewer:	Ok, so, that helps you go, keep on going
Gina:	Yeah

Like Hannah who called her friends using her cell phone when she had "bad" experiences, Gina used Walkman and phones in similar ways to transform her daily-spatial experiences. Listening to music and talking on the (cell) phone are practices that create an auditory environment that suits one's mood and activities.

Cell phones, like Walkmans, also have been used by students to negotiate with their surroundings while in semi-public and non-domestic settings. For instance, Ellen and Maya saw cell phones as a way to "escape" the boredom of being in class and while walking to and from class:

Ellen, 19, sophomore, Penn state	
Ellen:	Um in class, I usually have it [cell phone] on silent, it works, if I get bored, I text message back and forth with my friends, I play the games so. 'Cause some classes [I] get bored.

Maya,19, sophomore, Shippensburg	
Maya:	I use it [cell phone] pretty much, walking home from class, if I'm bored I'll call somebody

Cell phones features such as games were also used by students to entertain themselves, when caught in "boring" situations such riding the public transit. Jasmine does not own a cell phone and she observed how her friends utilized their cell phones while they were "stuck" on the side of the road:

Jasmine, 20, junior, Shippensburg and Monica, 20, junior, Shippensburg (Group interview)	
Jasmine:	We broke down, (...) something happened with my car, it, the gas garage was off and I thought I had more gas than, and I ran out of gas, and we are sitting on the side of the road, and I was so thankful because we stopped at theses people's house, they weren't there, well both of my roommates had their cell phones
Interviewer:	Right
Jasmine:	So we called, which was very helpful, what annoyed me and why I felt left out was [chuckles]
Interviewer:	[Chuckles]
Jasmine:	For the half an hour that we had to sit there until someone came and got us
Monica & Interviewer:	[Laughs]
Jasmine:	They [my roommates] sat there and played games and made phone calls and
Interviewer:	Ok
Jasmine:	I don't know it's just like (…) I'm sitting there with a piece of paper and pencil
Monica & Interviewer:	[Laughs]
Jasmine:	Like writing how many words I can make out, out of [the word] "gas," and they're like playing game ( )

As cell phones become multi-functional with the capacity to send text messages, E-mails and IM through their phones, and playing games, there are more options for students to use cell phones for personal entertainment. For instance, today there are cell phones with which consumers can view video clips and receive information such as sports news (e.g. Mobile ESPN website 2006). Another example is a smart phone called Motorla SLVR, that allows both phone communications and listening to music with one device. An advertisement for such phone / personal stereo shows a young male (there is a female version of this too) calmly walking down a street listening to music through his ear phone (A version of this ad was viewed in Cingularsleek website 2006). We also see his shadow dancing to the song he is listening to. But then, you hear a phone ringing and he switches from listening to music to answering the phone. His phone conversation ends very quickly—like a phone call that is micro-coordinating in nature—and his music comes back on and his shadow starts dancing again. Such a portrayal illustrates how cell phones are among the portable devices that allow the creation of personalized spaces, even while walking down the street. What is also significant about the portrayal is that phone communication and music listening while walking down the street occurs effortlessly and continuously.

As seen in Figure 6.4, many students utilized cell phones while in transit and semi-public spaces on campuses, such as while walking to and from class and while driving. It has become a common sight to see students engaging in cell-phone conversations in various spaces. "Chatting" with friends, sending text messages, and playing games on cell phones during "free" time allows

students to “fill” the mundane and transitory time-spaces by personally customizing their own communications and entertainment. Bull states that the use of “sound technologies” such as personal stereos, cell phones and car radios inform us about

> how we attempt to “inhabit” the spaces within which we live. The use of these technologies appears to bind the disparate threads of much urban movement together for users, both “filling” the spaces “in-between” communication or meetings and structuring the spaces thus occupied. The use of sound, music and speech while on the move, whether it be in automobiles, through personal stereos or on mobile phones, appears to represent wider social transformations in everyday life (Bull 2004, 243-244).

According to Bull, the social transformation over the last forty years has been about people’s “increasing ability and desire to make the ‘public’ space of the city conform to a notion of a ‘domestic’ or ‘intimate’ private space” through mobile sound technologies (Bull 2004, 255). Students’ cell-phone uses were about “inhabiting” technologically-mediated privatized spatial experiences while moving within “public” spaces. Personal customizations of various “in-between” spaces using cell phones by students were epitomized by Hannah’s description of her cell-phone use. Hannah was a self proclaimed avid user, who claimed that she was “always on the phone:”

Hannah, 19, freshmen, Penn State	
Hannah:	Yeah, and I don’t know I just feel like if I am ever uncomfortable in the situation or something, I can always just like call someone on my cell phone and talk to them so ( )
Interviewer:	What do you mean by that like “uncomfortable” just um? Something happens?
Hannah:	Like, well it’s a ( ) at night. ‘Cause lot of times like I just feel weird or um, if I am sitting in the HUB all by myself and I feel like weird, so ( ) cell phone calls someone.
Interviewer:	I see, have company that way, I see what you’re saying.
Hannah:	Just like to talk to someone or um (…) sometimes when I’m in the bus, I’ll call someone. Just because I hate like sitting on the bus by myself, I just want to talk to ( ) cell phone then, just like situations like that when I want to talk to someone.
Interviewer:	Ok, so the presence of somebody just makes you feel more comfortable and secure and
Hannah:	It’s easier, like if you’re walking home ( ) um, even like in the middle of the day, it makes it seem like you’re walking faster, it goes faster if you’re talking with someone, so like even if it is just my mom or something it makes you feel like it takes you less time to walk ‘cause you’re not like paying attention to walking you’re talking to somebody, so
Interviewer:	Whomever you think to mind, you just call.
Hannah:	Yeah, well, like ( ) right now the other day and I called my mom tell like what happened and so I was talking to her my whole walk back up to “East” and so it seems like it went a lot faster, ‘cause I was talking to her on the phone. So that’s nice I usually talk ( )

Cell phone use allowed Hannah to transform the spatial experiences of being in transitional spaces when she was by herself by bringing in company to the spaces she was "inhabiting." In addition, cell phones were also becoming a part of the automobile experience as indicated by 81.5 percent of my questionnaire respondents utilized cell phones while driving (Figure 6.3). For instance, Kaylee and Eve utilized cell phones to transform their driving experiences:

Kaylee, 21, senior, Shippensburg	
Kaylee:	Or I got, sometimes I use it when I'm walking to my car when I'm walking back from my car, but I think the majority of the time, I do use it while I'm in the car
Interviewer:	Oh that's really interesting, but if you're by yourself, if you have someone in the car would you
Kaylee:	No, I probably wouldn't use it as much if there's somebody in the car
Interviewer:	Ok, so you just like that presence of like somebody
Kaylee:	I get lonely
Interviewer:	You get lonely
Kaylee:	[Chuckles] yeah
Interviewer:	Ok, even around Shippensburg, when you're driving around Shippensburg, or is this more of a long, commute kinda thing?
Kaylee:	Yeah, it's more like when I ( ) little bit longer and when I'm by myself
Interviewer:	Right and that happens pretty frequent for you then?
Kaylee:	Um, yeah like my internship is 25 minutes away
Interviewer:	Ok
Kaylee:	And so I have to, I drive myself 25 minutes there and back everyday, well, you know four days a week
Interviewer:	Wow, ok
Kaylee:	Four or five days a week so
Interviewer:	Right
Kaylee:	Sometimes I'll talk to my parents in the morning
Interviewer:	Ok, just before like when you get out or something for the day
Kaylee:	Yeah
Interviewer:	Kinda thing, ok
Kaylee:	Or like when on, on my way home, sometimes I'll talk to them too.
Interviewer:	I see, while you driving
Kaylee:	Yeah
Interviewer:	[Laughs] ok
Kaylee:	Again, while I'm driving

Eve, 24, senior, Shippensburg	
Eve:	And driving, I try not to use it while I'm driving, unless I'm driving long distance and just on a straight road
Interviewer:	(Isn't it) [turnpike] straight
Eve:	Yeah [laughs]
Interviewer:	It's three hours straight [laugh]
Eve:	I know, and then I'll like use it because I'm bored, I'm just like hey ( ) you know
Interviewer:	Do you usually call your boyfriend
Eve:	Mm

Interviewer:	Or friend or, ok
Eve:	Someone
Interviewer:	And you just chat
Eve:	Mm-hum
Interviewer:	Do you use that ear piece thing or
Eve:	Mm-mm, I don't have one

There were statistically significant differences between campuses in terms of which transitional spaces cell phones were used including *while driving* ($p = 0.007$), *while walking* ($p = 0.001$), and *while riding public transit* ($p < 0.001$) (Table 6.19, 6.20, 6.21). There were more Penn State students who used cell phones *while walking* (264) than expected (248.3) (Table 6.19) and *while riding public transit* (175) than expected (116.3) (Table 6.20). On the other hand, there were more Shippensburg students (283) than expected (269.9) who use cell phones *while driving* (Table 6.21). Such differences, just like in the case of micro-coordination, can be understood from considering the discrepancy in the size of the two campuses. For Penn State students, the time spent in in-between transit spaces (e.g. walks, riding, bus rides, waiting for a bus, walking to downtown)—can generally be longer. At Shippensburg, there are many commuting students who travel with cars daily or weekly. Shippensburg students generally did not use public transit unless they were from bigger cities with public transit, but some did use the limited regional and local public transportation system offered.

The general differences in the time spent in transitional spaces between the Penn State and Shippensburg campuses may also be the explanation of the variations frequency of Walkman ($p = 0.003$) and Mp3 player ($p = 0.009$) use (Tables 6.22, 6.23). There were more Penn State students who used a Walkman *everyday* (98) than expected (85) (Table 6.22) as well as a MP3 player *everyday* (70) than expected (61.1) (Table 6.23). Jenna, for example, used her mp3 player only when she was walking longer distances:

Jenna, 20, sophomore, Penn State	
Jenna:	Yeah, yeah, I have a mp3 payer but I don't really I only use it actually when to ( ) Dieke [building]
Interviewer:	Ah Dieke yeah
Jenna:	Yeah only when I go to far walks because I don't know
Interviewer:	You just
Jenna:	Yeah, only when I go to far walks just 'cause I don't know (..) um only 'cause far walk I'm gonna listen to few songs but I don't mind not having music or anything like that

In contrast to Penn State students utilizing personal stereos daily, there were more Shippensburg students (240) who listened to the radio *everyday* than expected (199.4) (Table 6.24). Bull

suggests that "the historical turning point between 'dwelling on the road' and 'dwelling in the car' can be located in a very specific technological development: the placing of a radio within the automobile" beginning in the early 1960s. "This has radically transformed the nature of driving and the driver's experience of space, time and place" (Bull 2001, 188). Therefore, radio listening often occurs in the car. In my questionnaire, crosstab / chi square analysis indicated that off-campus students tended to use radio *everyday* compared to on-campus students ($p < 0.001$)(Table 6.25). It may also be the case that differences in radio use between the two campuses and residency was due to the difference in the number of students commuting by automobile.

Table 6.19 Crosstabulation count of cell-phone use while walking according to place
Source: based on questionnaire data

N = 628		**Penn State**	**Shippensburg**
Use while walking	Count (Expected count) % within place	264 (248.3) 89.9%	261 (276.7) 78.9%
Do not use while walking	Count (Expected count) % within place	33 (48.7) 11.1%	70 (54.3) 21.1%
Pearson Chi-square sig. ($p = 0.001$)			

Table 6.20 Crosstabulation count of cell-phone use while riding public transit according to place
Source: based on questionnaire data

N = 628		**Penn State**	**Shippensburg**
Use while riding public transit	Count (Expected count) % within place	175 (116.3) 58.9%	71 (129.7) 21.5%
Do not use while riding public transit	Count (Expected count) % within place	122 (180.7) 41.1%	260 (201.3) 78.5%
Pearson Chi-square sig. ($p < 0.001$)			

Table 6.21 Crosstabulation count of cell-phone use while driving according to place Source: based on questionnaire data			
N = 628		**Penn State**	**Shippensburg**
Use while driving	Count (Expected count) % within place	229 (242.1) 77.1%	283 (269.9) 85.5%
Do not use while driving	Count (Expected count) % within place	68 (54.9) 22.9%	48 (61.1) 14.5%
Pearson Chi-square sig. (p = 0.007)			

Table 6.22: Crosstabulation of frequency of using walkman according to place Source: based on questionnaire data				
N = 734		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Penn State	Count (Expected count) % within place	46 (61.9) 13.6%	195 (192.1) 57.5%	98 (85.0) 28.9%
Shippensburg	Count (Expected count) % within place	88 (72.1) 22.3%	221 (223.9) 55.9%	86 (99.0) 21.8%
Pearson Chi-square sig. (p = 0.003)				

Table 6.23: Crosstabulation of frequency of using mp3 player according to place Source: based on questionnaire data				
N = 731		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Penn State	Count (Expected count) % within place	201 (192.7) 58.9%	70 (87.2) 37.4%	70 (61.1) 53.4%
Shippensburg	Count (Expected count) % within place	212 (220.3) 56.5%	117 (99.8) 30.0%	61 (69.9) 15.6%
Pearson Chi-square sig. (p = 0.009)				

Table 6.24: Crosstabulation of frequency of using radio according to place Source: based on questionnaire data				
N = 729		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Penn State	Count (Expected count) % within place	25 (16.7) 7.4%	155 (142.9) 45.6%	160 (180.4) 47.1%
Shippensburg	Count (Expected count) % within place	1.1 (19.3) 2.8%	153 (165.1) 38.9%	229 (208.6) 58.3%
Pearson Chi-square sig. (p = 0.001)				

Table 6.25: Crosstabulation of frequency of using radio according to residency Source: based on questionnaire data				
N = 699		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
On-campus	Count (Expected count) % within residency	20 (15.8) 6.3%	172 (135.6) 54.6%	123 (163.6) 39.0%
Off-campus	Count (Expected count) % within residency	15 (19.2) 3.9%	129 (165.4) 33.6%	240 (199.4) 62.5%
Pearson Chi-square sig. (p < 0.001)				

Therefore, students' cell-phones uses occurred in various transitory spaces while getting from one place to another—whether it was on foot, riding public transit, or driving. The "social" calls also took place in other places outside of domestic settings such as during class and while passing time in various public spaces. I mentioned earlier that the calls that were related to micro-coordination were usually short calls. But many of the cell phone conversations that occurred in these transitory spaces were also relatively short because they were mainly made to "fill" what might be considered as "dead" and "boring" times. For example, Ellen felt that she generally spent too much time on the phone since she sometimes spent over "5000 minutes" a month. She described the "time geography" of her phone calls:

Ellen, 19, sophomore, Penn State
Ellen: Like on my way to class I will be talking on the phone, it's (lot of it) like one minute conversations and (lot of), but at night it's free nights and weekends I will be on the

phone for hours with one person at a time sometimes. So.

Since cell-phone plans include "long-distance" calling, it was possible for students to not only call their family and friends who may be co-located locally, but also those at long distance. The economic-dependent (Table 6.10), the basic, and the all-embracing users (Table 6.12) spoke with their family members, significant other and / or their friends "daily." For these users, cell-phones allowed them to keep contact with various people "all the time" and not just through occasional "long distance" and / or social calls that lasted for long periods of time. In addition, Eric mentioned that he contacted his family and friends "back home" using multiple methods of communication. And this meant that phone conversations that were social in nature were generally not long due to frequency of the calls:

Eric, 23, junior, Penn State	
Eric:	[Thinking] I talked to them maybe, sometimes few times a day, but it is always short conversation, I mean again, because I go home enough, I E-mail enough, I IM enough, phone enough, that there's never hour-long conversations because we talk enough and catch up enough
Interviewer:	Ok, so your parents IM as well?
Eric:	Yeah, my mom does

The above comment suggested the fact that patterns of cell-phone consumption needed to be understood in relation to and conjunction with uses of other popular communication methods.

Being in charge over cell-phone connections

The multiplication in the availability and uses of technological communication devices requires management of communication contacts. The intensity of cell-phone uses somewhat depended upon economic considerations and ease / constraints associated with their use. But students also self-manage various connections according to their desires. The "fixed to mobile," the "isolated to accessible," and "lagged to instantaneous" dimensions of cell phones (Table 6.18) show how students manage and control their extensibility as well as their availability to others. The uses of multiple communication methods as well as the variety of cell-phone features allow students to both minimize and maximize connections. For instance, as I mentioned earlier, many students kept IM "on" at all times on their computer in their rooms or while they were working in computer labs. Monica was an example:

Jasmine, 20, junior, Shippensburg and Monica, 20, junior, Shippensburg (Group interview)	
Monica:	No, I think um, a couple of years ago during college I think we would like, when I lived in the dorms and she lived in the dorms and it was only a couple feet away
Jasmine:	[Laughs]
Monica:	But instead of calling or whatever we would just type on the computer and IM
Interviewer:	Ok
Monica:	Now me and, and, our other roommate, we have our computers on all the time and we have our IMs on all the time, and they'll have the away message and all that kinda things and I rarely get messages when I'm not there, and I don't know why I leave it up and I often forget to put up my away message and I would just walk away and I come back and nobody's messaged me
Interviewer:	Right [Laughs]
Jasmine:	[Laughs]
Monica:	So I, I, I often um, I'll, you know what every time I go to work and I have a computer there, I'll put it up and nobody will talk to me, I just put it up just in case maybe

Answering machines, voice messages, and away messages on IM, can be all considered to be a way to "stretch" one's availability to others. Even for students not in front of the computer, they could have their contacts read their "away" message and also have people leave them messages. Maya left an away message to let her contacts know where she could be reached so she could be "available" to others while out of her room:

Maya, 19, sophomore, Shippensburg	
Maya:	So, you know if I'm sitting at my computer, I'm gonna use IM, but usually like if I'm out, I say "call my cell," and it's on my away message, so people know if they need me, they can get a hold of me, that kinda thing

The mobility of cell phones gives students the choice to maintain the personal connectivity with others while on the move. Ellen and Shannon's comments below referred to how different methods facilitate communication among people who were and were not in front of their computers:

Ellen, 19, sophomore, Penn State	
Ellen:	I mean I talk to everybody on the IM who talk I talk on the phone, it's just that if I am at my computer, that's always on, or if I am, if I am out somewhere, they can just call me, that's how they get a hold, get a hold of me.

Shannon, 21, junior, Shippensburg	
Interviewer:	Oh, ok, so then when you arrange things, you said your friends might call each other
Shannon:	Right
Interviewer:	With cell phones but you would use pre-arranged things with Instant Messenger, E-mail or

Shannon:	As an example, last Friday night, we were trying to figure out what was going on and while I was sitting at my computer, Instant Messaging someone, trying to figure out what was going on, there was someone who wasn't at their computer, so I was calling them, while talking on the Instant Messenger to the third party saying what was going on, so all three of us can organize it, multi-tasking is something ( ) [laughing]

Portability of cell phones did not necessarily translate into students' availability to others *at all times*. In Gabrielle's case, she chose not to have her cell phones "on" all the time:

Gabrielle, 24, transfer, Shippensburg	
Interviewer:	Ok, how about cell phones, do you carry it around everywhere and have it on all the time?
Gabrielle:	I carry it around with me [laughingly], in fact I have it with me now but I always
Interviewer:	( )
Gabrielle:	Yeah, I always forget to ah, turn [starts laughing] it on, so I always get all these angry voice messages like why do you have this if you never turn it on [chuckles] so I, I do forget, 'cause I'm in class, in and out of class you know, it just seem ridiculous to come out turn it on, go back in turn it off, I'm afraid you know one day I'm gonna forget
Interviewer:	Right
Gabrielle:	And it's gonna start ringing and it's gonna be embarrassing so I end up leaving it off more than on
Interviewer:	Ok, but you just have it for like, just voice message
Gabrielle:	Yeah, yeah, I get all the voice messages and I'll call people back, or if I need to make a call, then I turn it on and ah yeah [Edit]
Interviewer:	Ok, how often do you use your cell phone during the day then, pretty often or?
Gabrielle:	No, um, since I've moved down here, since I don't get reception as well
Interviewer:	Right ( )
Gabrielle:	[Chuckles] I probably, I, some days I don't even turn it on 2 or 3 days, that's why I get on I'll find a message that's 3 days old
Interviewer:	I see [Laughing]
Gabrielle:	That's why
Interviewer:	It's not like 2 hours ago or something, it was 2 days ago ok [laughs]
Gabrielle:	No, yeah exactly, yeah I think the last time, well we used it yesterday at the dog show
Interviewer:	Ok
Gabrielle:	And it's been off since then
Interviewer:	Ok
Gabrielle:	But ah, before that it was off 'till like 3 days so [chuckles]
Interviewer:	So even long distance, you don't call every night
Gabrielle:	No, no, not usually, yeah I'm trying to think if I, I would say maybe once or twice a week, it seems like I use, I use it, and if I go home I might, I might use it a little bit more 'cause I'll be, I'll turn it on and it would be like one of my friends call you know 'cause we're in town that much, we're here and tell them to call this and come find us

The above statement indicated that Gabrielle dealt with her cell phone ringing all the time. But it also illustrated that she would turn her cell phone off when she did not want it to ring in class and turn it on when she needed to make a call. Therefore, Gabrielle's cell-phone communications with others were deliberately "lagged" because of her choice to not to have her cell phones "on at all times."

In fact, many interviewees mentioned that they would not take calls at all times, or, that they turned their cell phones off when they did not feel like talking to someone or were in situations where cell-phone conversations should not take place. In other words, they did not always pick up the phone choosing instead to call back when it was convenient for them. There were various reasons for students to restrict their availability to others through cell phones. Many of these reasons were about students' decisions on when cell-phone conversations were considered to be "distractions" and / or "disruptions." Some students abstained from using cell phones in certain situations ranging from retail spaces such as restaurants, to classrooms, libraries, and public transit. The cell-phone uses in these spaces were often seen as "disruptive" behavior to the others sharing that space. Time management was another important theme that was brought up in relation to cell-phone uses. Because university life was considered to be "busy" with school work, activities, as well as socializing, students preferred to not have extra or unwanted "distractions" while they were engaging in certain activities. In addition, Kaylee wanted to minimizing "distraction" while driving:

Kaylee, 21, senior, Shippensburg	
Kaylee:	Well I think, I think it is difficult to do more than one thing like if your on the phone, like when I drive, I try not to have the radio on while I'm using the phone, because I figure my eyes are watching the road and my ears are on the phone
Interviewer:	Right
Kaylee:	So there aren't too many things, like I worry about how many things your sense can be monitoring at the same time, so I try to turn my radio off so it's not
Interviewer:	Ok
Kaylee:	So I'm able to concentrate that better

There were also some students who commented that talking while walking was also considered a "dangerous" activity. There were instances in which students got into accidents while walking down the road because they were not paying attention to their surroundings.

The methods of restricting their availability through their cell phones ranged from not even owning and carrying the devices to choosing to pick up the calls according to who the caller was, and, to the time of day. Audrey for example made the decision not to carry her cell phone some days:

Audrey, 20, senior, Penn State	
Audrey:	Yeah, ‘cause like you (get) you tended to just to call someone, ‘cause you’re walking to class or something, um or if you’re bored or something like that but now I leave it at home, chose in the morning when I’m like, I know that I need to stop talking

Betsy had to negotiate taking the call during the day because of the cost associated with using her cell phone:

Betsy, 24, graduate, Shippensburg	
Interviewer:	I see, ok, do well do you find that very um, useful then, do you like the fact that people can reach you outside your home or
Betsy:	It’s ok but it’s expensive
Interviewer:	Oh
Betsy:	If they don’t call me at night
Interviewer:	Ok (laughs)
Betsy:	Then it costs me a lot more
Interviewer:	Right
Betsy:	Um
Interviewer:	Ok
Betsy:	So it’s expensive for me and I don’t like that, but I do you know throughout the day it’s really nice to have you know somebody call you and talk to them, it kinda breaks the tediousness of everyday life [laughingly]
Interviewer:	Oh you do, you think so, ok
Betsy:	Oh yeah [chuckles]
Interviewer:	So you do pick it up when call
Betsy:	Yes
Interviewer:	Even it’s costly, um, so how, do you sometimes engage a long conversation or you try to keep it
Betsy:	I try to keep it very short like, oh, “I’m glad you called but can I call you back later” or something like that

The daytime minutes—quota of time for calls during the day—are often limited with common calling plans as opposed to night time and weekend minutes. Therefore, students often receive calls during the day time but chose not to return the call until the night time when the calls are affordable.

During the interviews, when I asked whether students cared about the fact that anyone can possibly “track them down” or contact them through cell phones, many interviewees said “I can always turn my cell phone off.” In fact, this sense of self-control over their availability to others was identified as one of the dominant themes in the interview transcripts. For instance, Jacob mentioned how he was in charge when it came to the use of technologies including cell phones:

Jacob, 24, Graduate, Penn State, International	
Jacob:	[One of his friends says], "I'm calling you for the 4th time, why aren't you picking it up?," [and I said] "I'm in a class, I'm not picking it up now"
Interviewer:	Right, ok
Jacob:	So ok
Interviewer:	There's a balance there then
Jacob:	It's a balance there but you have to ( ) the proportion, when you pick, when I pick it up, it's near and dear ones that are telling them like, can't tell everyone [about the fact that I don't pick up the call from some people] but
Interviewer:	Ok, so you don't feel like you're anti-socializing ( ) I can ( ) too
Jacob:	No, I don't want to be constrained by my cell phone
Interviewer:	No
Jacob:	That's what I feel, I mean, ask
Interviewer:	So you draw a line somewhere
Jacob:	I, yeah, I drew a line consciously somewhere, because I feel technology, you have sort of constrained us, ( ), we are being slaves now, in a way
Interviewer:	Slaves of cell phones?
Jacob:	Slaves of everything, slaves of the computer, slave of the Internet, slave of the cell phone
Interviewer:	That's interesting way to think [chuckle] yeah, you're not the, control
Jacob:	I don't want to be controlled by anyone, I don't want to be controlled by anything, if it, if I'm ( ) in this way that, if you can't survived without your cell phone
Interviewer:	Yeah
Jacob:	For 1 single day
Interviewer:	Yeah [chuckle]
Jacob:	If you can't survive without Internet for one single day, if you think like, oh my god, ( )
Interviewer:	[Laugh]
Jacob:	( ) then, you're kind of being totally dependent on the technology
Interviewer:	Sure, sure yeah
Jacob:	Even I get a little you know upset if I won't check my E-mail for more than 2 or 3 days but

Despite the fact that students felt "disoriented" and distressed when they have no connectivity, students generally expressed their sense of control over various connections.

Different tactics were used by students to combat what could be described as "caller hegemony"—power of the caller over the recipient of the call—when using their cell phones (Hopper 1992 in Hutchby 2001). Hutchby points out that there is a hierarchical relationship between the "caller" and the "called" / "answerer" in a telephone communication in which the latter is at a disadvantage (2001). This is because "the caller knows who they are trying to call, and why they are doing so. The answerer, upon picking up the phone, knows nothing on either count" (Hutchby 2001, 111). "Caller hegemony" can be considered "as a form of social power" and certain practices such as turning off phone connections as well as use of technologies such as answering machine / voice mail and caller ID can be considered to be "strategies of resistance" on

the part of cell-phone users (Hutchby 2001, 101). For example, in Austin's case, caller ID on cell phone was just such a "strategy of resistance" against the dynamics of "caller hegemony":

Austin, 20, sophomore, Shippensburg	
Austin:	Every phone has a caller ID, so if you don't want to talk to somebody you don't have to and you know you can certainly just not answer your phone if you don't want to
Interviewer:	You don't feel obliged to pick it up
Austin:	Um (…) I mean certainly you always want to hear what somebody has to say but you know if you just don't feel like being bothered, you can just leave it on silent
Interviewer:	Is there like when you look at the ID, do you kind of think of, oh this person is cool, or this person isn't cool or, that's not how ( ) then
Austin:	[Sighs] no you, you
Interviewer:	Yeah
Austin:	I mean say, you say you just had an argument with somebody or something, you just don't feel like talking to them and they call you

Especially before the introduction of caller ID, "very seldom" was "anyone able to ignore the enticing ring" of the conventional wired telephone (Gumpert 1987). But with cell phones, students fully utilized the caller ID (a standard cell phone feature) and "voice mail" functions to screen calls. For example Shannon did not pick up the phone when caller ID did not tell her who was calling and she also mentioned how to block unwanted calls and IM correspondence:

Shannon, 21, junior, Shippensburg	
Shannon:	And if I'm not on then my cell phone, you know I have that, a lot of my friends don't have that number, because I don't like to, I just don't like picking up the phone, this morning I got a call and I ignored it and some(one) was "like weren't you gonna answer'em?" [I said] like "no"
Interviewer:	[Laughs]
Shannon:	Not really (don't know) I don't want to talk to them
Interviewer:	Oh, 'cause it doesn't say on the screen
Shannon:	It says "unknown," so the person didn't want me to know who it was [laughs]
Interviewer:	Oh yeah that's not helpful at all
Shannon:	Like if you don't want me to know who you are, I don't think I want to talk to you [laugh] [Edit]
Interviewer:	But like anybody could contact you potentially but you don't have to answer it kinda thing
Shannon:	Right, what you have is your ( ) screen, and I can, if you had a [IM] screen name and I found out your screen name and I can see that you're on-line, I can send you a message, and if you don't reply, you know that's your choice, most people who ignore you while talking and then there's people who wanted to have like a 5 hour conversation and talk forever, you also have the option of blocking people, just like you do with your phone service, you can call the phone company and you can say I don't want to have phone, I don't want calls received from this number

In some cases, students needed to decide whether to pick up the phone when caller ID said "unknown" or "unavailable" number. A student mentioned that she picked up phone calls even when "unavailable number" came up on the screen because her father's number was blocked to caller ID. Also, if the phone number was not programmed into their personal cell-phone address book, the number would appear on the caller ID instead of the callers' names. Therefore, students also do not always know for sure who the caller could be. Nonetheless, students have the means to make a guess of who the caller's identity from the number (for example, area codes hint at whether the call was from someone locally or back home).

Another way to manage one's connectivity with others was through the distribution of cell-phone numbers to potential contacts. Monica expanded her availability to others by giving out her cell-phone number to contacts that needs to get hold of her:

Jasmine, 20, junior, Shippensburg and Monica, 20, junior, Shippensburg (Group interview)	
Monica:	I don't even think of it, people asking for my phone number and I'll give them the apartment phone number and then I'll realize, when I'm at class and thing, I'm, I'm rarely in the apartment
Jasmine:	Yeah
Monica:	During times that business will call, that kind of a thing, and this year when I was, um job hunting
Interviewer:	Mm-hmm
Monica:	I put my cell phone on every single application to, I put both numbers and, and actually my cell phone's been very helpful because, yesterday I was expecting a phone call from my teacher at ( ) and, and I knew I wouldn't be in the apartment I was supposed to be on campus and out and about, so
Interviewer:	Right
Monica:	He reached me, my phone, my cell phone

On the other hand, because Kerry did not turn on her cell phone most of the time, she gave her cell-phone number to people who she *did not* want to have contact with:

Kerry, 21, senior, Shippensburg	
Kerry:	If I had to pay for it, I probably wouldn't have one
Interviewer:	Oh really? Even after having all this while, you
Kerry:	I don't use it that much
Interviewer:	Oh
Kerry:	I hardly ever, I only turn it on when I'm gonna call somebody, and that's probably like once a day
Interviewer:	Oh really
Kerry:	For like a minute
Interviewer:	[Chuckles]
Kerry:	I don't, I don't use it very often
Interviewer:	But you do carry it around with you
Kerry:	Maybe half of the time, like I don't have it with me today

Interviewer:	Ok so
Kerry:	I only, only carry with me when I know that like I'm gonna have to get in contact with somebody
Interviewer:	Ok, so otherwise you don't even think about bringing it
Kerry:	Mm-mm
Interviewer:	Ok
Kerry:	Sometimes I, give people my cell-phone number that I don't want them to call me, 'cause I never have it on
Interviewer:	[Laughs]
Kerry:	Oh here's my cell-phone number and then they can't get a hold of me [laughs] that's bad but

Because Kerry usually did not turn her cell phone "on," she could avoid contact with people she did not want to talk to. In addition, Austin and Nick explained how they manage the distribution of cell phone numbers:

Austin, 20, sophomore, Shippensburg	
Austin:	Well, I mean the, the number is not, the actual cell-phone number's aren't, it's not possible for, unless you give it out
Interviewer:	Right
Austin:	You know and then they can go through and get it from
Interviewer:	Are you careful in terms of whom you give it out then
Austin:	Yeah, I would certainly never give it to you know a telemarketer that would call, 'cause then they'll you know they have, well they get it from other people and other people, and it's just, it's you know passed around

Nick, 23, senior, Penn State	
Interviewer:	Ok, is there some people you don't want to get to you or do you usually tell the phone number to just people you are comfortable?
Nick:	Yeah, I use caller ID, so I might be avoiding ( )
Interviewer:	Is the tela, what do you call them tela [um] the people who advertise on the telephone
Nick:	No, I haven't talked to tele-marketing [on my cell phone]
Interviewer:	Are they able to call or something or?
Nick:	Um, it depends on how they get a hold of your number, some of them ( ) legally you know they might find a phone number on (Internet) somewhere and add to their list but so far, I haven't got any tele-marketing
Interviewer:	Do you try to be careful who you distribute your cell phone number
Nick:	Exactly. Ah (..) I don't like put out there on the Internet, generally ( ) to tell privately
Interviewer:	How about the school directly
Nick:	Ah, the school does have it, ah as far as I know it's only a faculty or administration that will have to contact me for school related business
Interviewer:	So you are not worried [laugh] ( ) people look up or something
Nick:	Yeah, I'm not see I'm not if it's out there on the main directly because I've changed, ah I haven't changed my number but I change my directory update 'cause I've moved from one apartment from another

Nick and Austin was especially careful not to distribute their cell-phone numbers for "public" use, especially when there was a potential for their numbers to get into the hands of telemarketers.

Hutchby argues that "one place where caller hegemony is particularly powerful in its social effects is in the use of the telephone by marketing and social survey companies to make unsolicited calls to random subscribers" (Hutchby 2001, 117). In reaction to the possibility of the cell-phone industry adding a listing of cell phone numbers to "its existing directory assistance feature," Jason Gaskamp writing for the *Daily Cougar* (U. of Houston) described that the difference between a wired and cell phone was due to the number of solicitations received. He states that

> [f]or consumers, the cell phone isn't like a regular home phone. It has become something of a haven for us. It's a line of communication that is free from all the solicitation we normally get. I like to think of it as our personal line of communication where we conduct our private and intimate conversations. It's a line that is confidential because we only give it out to those we know and with whom we feel comfortable. After all, most people give their home number to a business, but they give their cell number only to their close friends and family. The one exception is when it's for business, but even then we're consenting to it (Gaskamp 2003).

Therefore, cell-phone numbers are often considered a "personal" domain which restricts interactions with businesses and people students wish to interact with.

This attachment of "personal" technology attached to cell phones was not just because students had their personal phone to initiate calls but also they can personalize the degree of connectivity to various people. Matsuda (2001; 2005) in her research about Japanese cell-phone consumption found that the cell phone has enabled young college students to engage in "selective interpersonal relationships" (*sentakuteki ninngenn kankei*) (Matsuda 2001). Matsuda mentioned a 1999 study that found that even though "one out of four college students would give their keitai [cell phone] number to just anybody" and "youths have many 'superfluous' numbers in their" cell-phone address books, that students contact "regularly with only about ten people" (Matsuda 2005, 133). My study also confirmed this tendency of personalization of phone connections as a tool to facilitate intimate connections among close friends and their families. Her study also resonated with my research in that many college students in my study and hers screen incoming callers using either caller ID functions (*ban-tsuu sentaku)* or the voice message system. Students were then able to be selective about when, who, and where they wanted to interact with through their cell phones. So cell phones are a tool to maintain, confirm, and build their ties between

friends—but these ties were often based on selective friendships, family relationships, and in some cases professional contacts. Hence, students' cell-phone consumption and the management of various communication technologies was about their sense of and actual control over the connections and their ability to create personalized communication spaces.

Summary

This chapter explored various aspects of cell-phone consumption by university students beyond the initial acquisition of cell phones. During my research period—when cell-phones began to be visible across the American university campuses—there were variations in consumption patterns as well as the extent to which cell-phone technology was embraced and positioned in students' lives. A cluster analysis on the reasons for getting a cell phone identified three major groups: economically-dependent-heavy users, self-sustaining economically-conscientious users, and economically-dependent-light users. On the other hand, another cluster analysis on cell-phone features used showed four major groups: fun / trendy users, minimal users, basic users, and all-embracing users. I am not suggesting that every student falls into these categories, but these groups indicate broad variations within American university students in how cell phones were consumed daily. Moreover, they aided in exploring various factors and aspects contributing to students to use cell phones in particular ways. For instance, the variations of intensity of cell-phone use depended upon the following:

- Characteristics of place such as campus settings and residential connections;
- Social identities based on gender and racial / ethnic identities but not age groups;
- Length of ownership;
- "Affordances" of cell-phone technology including its mobility, availability and reliability of cell phone service, and cost;
- Nature of use including micro-coordination, personal customization of space, and social calls.

In addition, cell phones can be reserved for security purposes or incorporated into students' lives more intimately when carried around everywhere and all of the time. There were different levels of placement in students' lives and daily contexts. They depended upon the factors such as:

- Whether cell phones were used as "just a phone" or "more than a phone";
- Heavy or non-heavy users depended on aspects of ownership—initial reasons and who financed the cell-phone use;

- Preferences of communication methods including phone, text-based, and Internet-connected computers;
- Whether students carry and use it outside of their domestic settings.

The selection of communication methods largely depended on the nature of students' desire to be available and connected. Ultimately, most students generally felt they had control over how much "presence" of others they want to allow in each moment of the day and embraced the new type of extensibility, namely the mobile connection, offered by cell phones. The variations in how cell phones were positioned in students' lives also related to their desire to be available to others as well as preferences in using particular combinations of communication systems. Table 6.26 summarizes various practices involved in managing the five dimensions of communication technology mentioned in this chapter. These practices represented how students felt "in control" over their communication management by enhancing their extensibility as well as fully utilizing cell-phone functions to personalize everyday spaces. At the same time, they restricted their availability and minimized unwanted "distractions" and costs associated with cell-phone uses by "isolating" themselves by turning their cell phones off, using caller ID, and "lagging" the communication correspondence.

Cell-phone consumption involved careful management and negotiations in daily contexts including relationships with their family and friends, the nature of cell-phone technology, the utilization of various communication technologies, physical geography, and aspects of campus life. In addition to these negotiations, social negotiations based on students' socio-cultural identities, opinions, and experiences are part of social-constructions of cell-phone technology. I have reserved the examination of variations in cell-phone consumption between subgroups based on gender and ethnic / racial identities that was evident from the multiple statistical analyses for the next chapter. There I discuss how uses of cell-phone technology are points of gender negotiations as well as constructions of various cultural boundaries based on ethnic / racial and national classifications. In conjunction with the discussion on consumption patterns based on these socio-cultural identities, I delve into a consideration of the socio-spatial implications of cell-phone consumption by addressing students' observation of cell-phone consumption in daily contexts and various assessments made from those observations.

Table 6.26: Managing the five dimensions of various communication technologies Source: Modified from Roos 1993, 458; Figure 2		
Fixed	**-----**	**Mobile**
- Use of wired phones - Use of IM and E-mail through Internet-connected computers	Use of cell phone	- Text-messaging system (SMS) - Micro-coordination - Personalization of space
Isolated	**-----**	**Accessible**
- Leaving cell phones at home - Availability of cell-phone technology - Restricting distribution of phone numbers - Turning cell phones off - Not owning cell phones		- Use of multiple communication methods - "Micro-coordination" - Leaving cell phones and IM "on" at all times - Distributing phone numbers and screen names
Lagged	**------**	**Instantaneous**
- E-mail correspondence - Leaving IM "away message" - Using answering machine / voice message		- Engaging in a phone call - Corresponding with IM - Sending and receiving text messaging - "Micro-coordination"
Public	**------**	**Private**
- Use of cell-phones outside of domestic settings - Use of cell phones while driving and walking	Distributing one's cell-phone number	- Use of phone in domestic settings - Using caller ID and ignoring the calls
Impersonal	**-----**	**Personal**
- Use of wired phone - Receiving telemarketing calls - Posting one's contact in a phone directory	Choice of communication methods	- Use of cell phone - Use of caller ID - Using cell phone as "more than a phone" - Cell-phone and Walkman use in transitional spaces - Engaging in phone conversation with friends and family

Chapter 7—Socio-spatial experiences and negotiations of cell-phone usages: gendered dimensions, monitoring, and assessments

Introduction

The previous chapter discussed how students' management and sense of control over information and communication technologies was the major theme of cell-phone consumption. This chapter continues to explore the socio-spatial implications of university students' cell-phone consumption by expanding the scope of analysis from individual experiences to the social processes of shaping meanings and spaces. My study illuminates the voices and experiences of one of the heavy consumers of cell phones—the American university student. Their cell-phone consumption intersects with their identity negotiations played out in domestic, campus, and public settings and also contributes to recreating social identities, spaces, and campus landscapes. I have been discussing how cell-phone ownership and consumption are intimately tied to dimensions of students' mobilities. What makes mobile and wireless communication technologies, such as cell phones, interesting is the fact one can utilize cell phones while on the move. Therefore, cell-phone uses are relevant not only in the conventional terms of the extent of mobility and extensibility (both often measured in terms of distance and time) but the meanings and the spatial experiences of "mobile connections" (compound of mobility and extensibility) facilitated by cell phones. The socio-spatial negotiations are part of how cell-phone technology has been experienced, observed, and assessed by students in various spaces as well as while "on the move."

There are three socio-spatial experiences and negotiations of cell-phone consumption that I focus on in this chapter. The first is the gendered dimensions of cell-phone use. In the previous chapters, I have identified gender variations in terms of ownership and time spent on cell phones. In the light of those findings, I discuss how cell-phone consumption entails various gendered meanings and experiences. Furthermore, I provide additional evidence on the gendering of cell-phone technology by exploring the differences between male and female students in terms of using other portable technologies as well as the dominant perceptions towards cell-phone technology. I illuminate how cell phones have similar gendered stereotypes as compared with conventional wired phones. But at the same time, I suggest that there has been, or can be, a possible reconstitution of gendered meanings and experiences that are evolving from the existing common gender characterizations of telephone use.

The second social experience I am going to focus is the practice of monitoring—the active observations—present in daily life but also mediated by cell-phone uses. Several scholars have already pointed out that part of the issue associated with "mobile connections" is that owners of cell phones are expected to be available anywhere and anytime (e.g., Green 2002). Such social dynamics and experiences can be examined from discussions on "surveillance," as cell-phone owners' movements in space and time can potentially be known to particular agents through mobile technology. I discuss students' perspectives on surveillance issues in conjunction with their management of the "privacy" issue and the implications of changes in the placement of phones from relatively fixed spaces to individual "private" bodies and cars. At the same, many students actively "display" their personal uses of cell phones in public spaces, which not only create personalized spaces, but engage the "gaze" of others and present their identities. Therefore, students' cell-phone consumption involves both audible and visible spatial practices that are both "concealed" and "revealed."

The monitoring of cell-phone consumption by and of young people leads to a range of assessments of cell-phone technological usages. The third aspect of socio-spatial negotiations is the debate on the appropriateness of cell-phone uses by young people. There have been tensions between personal uses of cell phones and social experiences which stem from various understandings of "private" and "public" boundaries. Some of this friction has been part of changing social experiences related to the social debates on appropriate uses of cell phones. There are competing ideas about the symbolic and the physical placements of technology in society, and there are different points of view stemming from different individuals and social groups. Furthermore, the diffusion of cell phones on American campus settings has brought new experiences, not only for the students who use cell phones, but also for those who are bystanders, non-cell phone owners, and various other social groups. Among multiple and sometimes competing opinions about cell-phone consumption, I identify the two axes of "claims" that have permeated the examinations of interview transcripts and university newspaper articles. One set of arguments has debated the appropriateness of cell-phone usage by discussing their necessity in life as well as one's competency in appropriately using them. These views intersect with students' articulations of their social identities, especially with their age and their status of being university students. The other group of arguments consists of various ideas on what constitutes personal freedom versus views on how to maintain and achieve public "orderliness." The idea of personal freedom is connected with privacy issues for consumers but also with how students perceive the experiences of being in both public and private spaces.

Gendered performances

Feminine and masculine associations

As part of understanding how information and communication technologies are "social," and therefore "gendered," it is important to explore how the incorporations of various technologies contribute to gender difference in terms of uses, experiences, and meanings. Telephone technology is no exception in constituting a "site of gender negotiations" and the gendered dimensions of domestic telephones have been studied by feminist scholars such as Rakow (1997), Lohan (2001), and Arafeh (2000). In summarizing the feminist scholarship on technology, Lohan (2001) argued in her Irish study about men and telephones:

> Technology is a significant site of gender negotiations where both masculine and feminine identities are constructed and deconstructed. Technologies are incorporated into our gender identities in the way we negotiate them as part of our own—"mine" or "not-mine"—feminine or masculine identity. By interpreting their usage in our lives, they become part of the gendered division of labor and, through social relations, technologies are assigned gendered symbolic values (p.189).

Cell-phone consumption takes on gendered dimensions since it involves gender "performances," and implies a designation of gender roles and ideas about "femininity" and "masculinity," as well as gendered variations of spatial experiences. My interview transcripts show femininity and masculinity were constantly reinforced, negotiated, and possibly re-constructed through cell-phone uses. How does cell-phone consumption involve the reconstruction and the deconstruction of gender identities among young adults? Lohan (2001) states that "the domestic telephone has emerged as an object of both (female) love and (female) labor" (p.190) and argues that its association with feminine identity is one of the reasons that it is considered "mundane" and therefore has been largely left out of academic inquiry until recent decades. Such associations with mundane domestic telephone to femininity can also be explored in regard to cell-phone use. As I discussed in the previous chapter, cell phones facilitate domestic relationships and arrangements and are also used outside of traditionally defined "domestic" spaces of the home. Given all of this, are cell-phone uses also seen as "feminine" activity?

There were many students that had the general observation that there was a gender difference in the way cell phones were used at a basic level. For example, Emma, Kim and Olivia stated:

Emma, 20, junior, Penn State	
Emma:	I think both genders use them equally as much I would say, girls might talk longer, or just talk about things that they can, or really important [bursts out laughing]

Kim, 21, junior, Shippensburg	
Kim:	I think that (…) I kinda notice that um, humm, (…) male tend, they're not phone talkers to begin with, ok, so I think they're more um, inclined to use it as you know just a short check up like, "hey, are we still meeting at this party tonight? blah, blah, blah," and that's it
Interviewer:	Mm-hmm
Kim:	I think girls are more likely to have a long (gone-out) conversation and talk to multiple people
Interviewer:	Right

Olivia, twenties, senior, Penn State	
Olivia:	A way they use cell phones, yeah. Um, most of my guy friends, they hate using the phone they have it so they call their parents, so they can order food
Interviewer:	[Laugh] ok
Olivia:	And actually one of my guy friends, they won't get an apartment phone, they'll use their cell phone as a primary phone
Interviewer:	Oh
Olivia:	So
Interviewer:	Still they don't talk
Olivia:	I don't like it ( )
Interviewer:	You don't like it ( )
Olivia:	That's their phone, most of the, most of them have cell phone numbers when they, when you call them it's like a 30 second conversation, they
Interviewer:	They don't want to chat?
Olivia:	No, they don't wanna talk [Laugh]
Interviewer:	[Laugh] but do you still call them in terms of meeting up or just little things like that
Olivia:	Yeah
Interviewer:	Ok
Olivia:	They don't, they're less of the safety issue, they're more of just having it for convenience I think

The above statements indicate the common observation expressed by interviewees that the males tended to have very brief conversations, mostly for instrumental uses and that they did not "chat," whereas the female students tended to talk longer on the phone.

Such observed gendered differences also corresponded with the quantitative data presented in Table 6.1. 50.2% of male students used cell phones *less than an hour* compared to 39.8% of female students. On the other hand, female students (40.1%) tended to use cell phones *more than an hour* everyday compared to male students (31.3%). There were no statistically

significant differences between the two genders in terms of the number of calls made and received ($p = 0.623$ for calls made and $p = 0.747$ for calls received). This indicates that both female and male students generally make and receive calls the same amount but that the length of conversation differs. There have been studies of teenage use of domestic telephones that both confirms and contradicts the common assumption that girls talk more than boys on the phone (e.g., Skelton 1989; Wynn and Katz 2000). On the other hand, what is more evident has been that the frequency of domestic telephone use differs not by just one's gender but life stages (e.g., early teens, late teens, high school students, single, and married) (Yoshimi, Wakabayashi, and Mizukoshi 1992; Wynn and Katz 2000; Ling and Yttri 2002; Okada and Matsuda 2002; Oksman and Rautiainen 2003; Dobashi 2005; Habuchi 2005; Miyaki 2005).

Since the early diffusion of cell-phones, there have been two portrayals of American young people using cell phones in media. The earliest depiction was epitomized by "Zach Morris" who was a rich Caucasian-male high school student on the television sit-com "Saved by the Bell" in the early 1990s (Hernandez 2000; Neiswender 2002). His phones were described as "huge" compared to contemporary cell phones (Best 2004; Paulson 2005). But, for the time, the fact that he had it indicated his economic status and portrayed him as a "cool" and "rich" kid. He used it occasionally when "emergencies" arose and his use was more for instrumental purposes.

The other image was of female high school students, also affluent, from the movie "Clueless." Matt Cannon, writing for *The Battalion* (Texas A& M University), describes this portrayal and compares it with his observation of cell phone consumption on his campus in 2001.

> There was a popular movie made several years back called Clueless. It was about a dumb rich girl and her friends who color-coordinated preppie clothes, drank designer coffee at school and could not stay away form a cell phone for more than five minutes. Everyone laughed at it five years ago. But not anymore. The movie must have become more of a cult hit than originally thought, because here we are in 2001, on a campus that looks suspiciously like the school from Clueless (Cannon 2001).

Cell phones became accessories for the rich "preppie" girl who had certain consumer behaviors and tastes. Such imagery contributed to the attachment of cell-phone consumption with feminine identity. For example Claire argued that the image of rich girls was no longer just in the movies but stemmed from everyday observations:

Claire, 20, senior, Penn State	
Claire:	I would say, I would think cell phones are gendered little bit more female, like when I think of somebody talking on the cell phone, I think of like, you know stereotypical but like you know, a college sorority girl, walking down the street you know, with her ( ) heels and Vuitton bag and all that stuff

Interviewer:	Where does that image come from, just observing?
Claire:	I think so
Interviewer:	Is it movie?
Claire:	No, I think it is pretty much just around the university that I see
Interviewer:	I don't see Vuitton bags around here but
Claire:	[Laughs]
Interviewer:	I can imagine that too. So from just observation, all you
Claire:	And usually you know as soon as you leave a class, um, the ( ) cell-phone time, the minute the class is over they turn their cell phones on
Interviewer:	More than like guys
Claire:	I think so, is what I have seen
Interviewer:	Do you observe any differences in how they use the cell phones?
Claire:	I think the girls. ( ) just ( ) even in the past from high school, girls like to talk on the phone more, I think that's just gendered female, you know, phones are associated with women, as you know gossip is associated with women, that is what they do on the cell phones, um

Moreover, such imagery has been associated with the social idea of "popularity" attached to female users. Maya argues that more female students encourage people to call their cell phones to confirm and facilitate their popularity:

Maya, 19, sophomore, Shippensburg	
Maya:	Um, I know this, a lot more girls, it seems to me a lot more girls, put like, kind of like on their away messages they say "hit up the cell," like "call my cell," but there's guys just like you know, it's, it's, they know that whatever guy has a cell phone, so they don't really like put it out there but it seems like girls want you to call, I don't know if it whatever makes them seem ( ) one another but
Interviewer:	[Laughs]
Maya:	You know, like they want to ring so it makes them seem like make them seem like they're popular or they seem like you know, if someone calling'em at like 11:30 at night while they're at party, they must be important kind of thing

When features of cell phones were considered, the only feature that had statistically significant difference ($p = 0.005$) was the use of the address book (Table 7.1). There were more female students (276) than expected (260.5) that used "address book / phone book." On the other hand, there were fewer male students (177) who used the feature than expected (192.5). This may reflect the more outwardly "social" dimensions that were mediated by the use of cell phones since the number of entries in an address book indicates one's "social currency" (Ling and Yttri 2002). And, it supports the assumption that being "popular" as well as "socializing" on the telephone tended to be more highly valued by female students.

Table 7.1: Crosstabulation of students who uses address book according to gender Source: based on questionnaire data			
N = 626		**Male**	**Female**
Uses address book	Count (Expected count) % within gender	177 (192.5) 66.5%	276 (260.5) 76.7%
Don't use address book	Count (Expected count) % within gender	89 (73.5) 33.5%	84 (99.5) 23.3%
Pearson Chi-square sig. (p = 0.005)			

Cell phones, then, have perpetuated certain images of female usages of phones. Some students expressed that such generalizations of "chatting female students" stem from their stereotypical image of "chatting women." Feminist scholars have been studying various domestic as well as communication technologies such as telephones and how they become "gendered" (Wajcman 1991). Telephones are often associated with female subject as "call operators" and heavy users of telephone technology, sometimes represented as "gossiping women" and "chattering female teenagers" (Skelton 1989; Rakow 1992a; Arafeh 2000; Lohan 2001). Such associations between female subjects and telephones in terms of images and practices are also carried onto images and use of cell phones. Jasmine made a strong connection between cell phones and femininity:

Jasmine, 20, junior, Shippensburg and Monica, 20, junior, Shippensburg (Group interview)	
Interviewer:	Right, right, ok, so any gender differences or any, do you observe or
Jasmine:	Oh why I started to saying about the walking was, cause I saw some guy, on a cell phone and
Interviewer:	That's interesting
Jasmine:	And [thinking] I think guys turn into girls whenever they're on cell phones [laughingly]
Monica & Interviewer:	[Laughs]
Jasmine:	I mean really ( )
Interviewer:	In what ways, you mean they're chatty is that?
Jasmine:	Yeah, they're [pause] yeah, I just, I see cell phones as a feminine thing
Interviewer:	Ok
Jasmine:	I do but whenever guys use them, I just feel like they're being, cause you always associate girls being on the telephone
Interviewer:	Mm-hmm
Jasmine:	When now [pause], guys don't talk [pause] to their guy friends unless they need, you know, like when we go to this party or
Interviewer:	Oh ok

Jasmine:	What are we eat, and they do that a lot on the cell phones wherever they are, like on the road, they're like what are we doing tonight, ok
Interviewer:	[Chuckles]
Jasmine:	You know, which, whereas, of, I think a lot of guys use phones now, because of cell phones
Interviewer:	Ok, so does that make them feminine, is that what you're saying
Jasmine:	Well, no
Interviewer:	Just you, just kinda thing, it's weird if they're on the phone all the time
Jasmine:	Yeah, yes
Interviewer:	Ok
Jasmine:	I think it brings out their feminine side
All:	[Chuckles]

Beyond acting out their masculine identity, another possible reason behind more male students indicating "less than an hour" of cell-phone use was the fact that male students did not want to "admit" that they are using their cell phones all of the time because of the associations of "femininity." Therefore, some students pointed out how cell phones can be displayed in certain ways to signify one's gender. For example, Shannon pointed out differences in how male and female students present cell phones while they use and carry them:

Shannon, 21, junior, Shippensburg	
Shannon:	[Giggles] I think guys are more prone to make it look like a pager, rather than a phone
Interviewer:	Ok
Shannon:	Just my perceptions of things
Interviewer:	Ok, what, what you mean by like, a function as a pager, or is it just smaller
Shannon:	To look like it, more like the visual
Interviewer:	Ok
Shannon:	When the eye catches it, cause I think in our society, men, you know being the predominant ones in business, are always one with pagers, or have the jobs that require pagers, you know there weren't many electricians who were on call who were women
Interviewer:	Right, right
Shannon:	Or plumbers for that matter
Interviewer:	Right
Shannon:	You know they're more predominantly male jobs
Interviewer:	Ok
Shannon:	And they were the ones who once needed pagers

Cell-phone uses have connotations of "work" because they diffused first in the professional world. Crosstab / chi square analysis illustrated that more male students tended to use cell phones for work compared to female students ($p = 0.001$) (Table 7.2).

Table 7.2 Crosstabulation count of cell-phone use at work according to gender Source: based on questionnaire data			
N = 628		**Male**	**Female**
Use at work	Count (Expected count) % within gender	155 (135.3) 57.8%	162 (181.7) 45.0%
Do not use at work	Count (Expected count) % within gender	113 (132.7) 42.2%	198 (178.3) 55.0%
Pearson Chi-square sig. (p = 0.001)			

When comparing between various perceptions students have on cell-phone use (Table 7.3), male students tended to emphasize the negative perceptions such as annoying (p = 0.003) and noisy (p = 0.002). On the other hand, there were higher counts of female students than expected with positive perceptions such as "convenient" (p = 0.014) and "fun" (p = 0.002). Interestingly, more female students (228) than expected (199.1) indicated a cell phone is "necessary" (p < 0.001). Female students tended to embrace cell-phone technology due to its sociability, convenience, and safety.

There were other technological items that showed slight gender differences in terms of uses (Appendix A, Q #29). On the one hand, there were no gendered differences in terms of how frequently Internet-connected computers (p = 0.696), wired-phones (p = 0.251), and Walkmans (p = 0.453) were used. Interestingly, there were more female students who use radios *everyday* compared to male students and there was more male students (162) who listened to the radio on *weekly, monthly, and yearly* bases than expected (148.7) (Table 7.4). On the other hand, there were more male students (73) who used MP3 players *everyday* than expected (63.3) as well as more male students who used PDAs (Tables 7.5 and 7.6). FACC survey (2003) also found that regarding PDA usage, "only 21% of the respondents own a personal digital assistant" and "male students and those with higher class standings were more likely to own a PDA." Like cell phones, PDAs also have strong connotations with the professional world and MP3 players have emerged since the late 1990s and have become associated with "coolness" and the cutting edge. New technologies including PDAs, video games and home computers are often associated with male "interests" and "hegemonic" masculine identity (Wajcman 1991, 137-161; Alloway and Gilbert 1998). Such male-biases are reflected in the preferences in using everyday technological items.

Table 7.3: Crosstabulation count of students on perceptions towards cell phones according to gender Source: based on questionnaire data			
N = 754		**Male**	**Female**
Annoying ***Chi-square Sig. (p = .003)***	***Count*** ***(Expected)*** ***% within Gender***	**145** **(125.7)** **39.9%**	**116** **(135.3)** **29.7%**
Convenient ***Chi-square Sig. (p = .014)***	***Count*** ***(Expected)*** ***% within Gender***	**330** **(338.4)** **90.9%**	**373** **(364.6)** **95.4%**
Fashionable *Chi-square Sig. (p = .098)*	*Count* *(Expected)* *% within Gender*	62 (53.9) 17.1%	50 (58.1) 12.8%
Fun ***Chi-square Sig. (p = .002)***	***Count*** ***(Expected)*** ***% within Gender***	**92** **(111.7)** **25.3%**	**140** **(120.3)** **35.8%**
Necessary ***Chi-square Sig. (p < .001)***	***Count*** ***(Expected count)*** ***% within Gender***	**156** **(184.9)** **43.0%**	**228** **(199.1)** **58.3%**
Noisy ***Chi-square Sig. (p = .002)***	***Count*** ***(Expected)*** ***% within Gender***	**85** **(68.4)** **23.4%**	**57** **(73.6)** **14.6%**
Professional *Chi-square Sig. (p = .077)*	*Count* *(Expected)* *% within Gender*	109 (98.2) 30.0%	95 (105.8) 24.3%
Unsafe *Chi-square Sig. (p = .559)*	*Count* *(Expected)* *% within Gender*	39 (36.6) 10.7%	37 (39.4) 9.5%

Table 7.4: Crosstabulation of frequency of using radio according to gender Source: based on questionnaire data				
N = 733		**Never**	**Weekly, Monthly, Yearly**	**Everyday**
Male	Count (Expected count) % within gender	21 (17.4) 5.9%	162 (148.7) 45.8%	171 (187.9) 48.3%
Female	Count (Expected count) % within gender	15 (18.6) 4.0%	146 (159.3) 38.5%	218 (201.1) 57.5%
Pearson Chi-square sig. (p = 0.036)				

Table 7.5: Crosstabulation of frequency of using MP3 player according to gender Source: based on questionnaire data				
N = 731		**Never**	**Weekly, Monthly. Yearly**	**Everyday**
Male	Count (Expected count) % within gender	171 (199.4) 48.4%	109 (90.3) 30.9%	73 (63.3) 20.7%
Female	Count (Expected count) % within gender	242 (213.6) 64.0%	78 (96.7) 20.6%	58 (67.7) 15.3%
Pearson Chi-square sig. ($p < 0.001$)				

Table 7.6: Crosstabulation of frequency of using PDA according to gender Source: based on questionnaire data				
N = 735		**Never**	**Weekly, Monthly. Yearly**	**Everyday**
Male	Count (Expected count) % within gender	293 (305.7) 82.5%	45 (33.3) 12.7%	17 (15.9) 4.8%
Female	Count (Expected count) % within gender	340 (327.3) 89.5%	24 (35.7) 6.3%	16 (17.1) 4.2%
Pearson Chi-square sig. ($p = 0.011$)				

Despite the gender-bias in performances observed by students, there were more than few interview respondents who did not see many gender differences in overall cell-phone consumption. These students claimed that they saw equal numbers of male and female students using their cell phones and similarities in the ways in which they were used. There was a statistically significant difference in ownership between female and male students, but since the majority of the students in each gender (71.7% of male and 89.9% of female) had cell phones, such statistically significant difference would not necessarily be obvious to some students. Lohan has argued in her study of masculinity and domestic-telephone uses that "if the stereotypes of masculinity and femininity can be broken down around this technology," "they will be more difficult to sustain around some of the newer communication technologies" (Lohan 2001, 190-191). Because cell-phone technology has been evolving and many students perceive and use cell phones as "more than a phone," dominant forms of gender associations with telephony may be

transforming as well. For example, statistically speaking, there was no gender differences in terms of various cell-phone features used, except the address book function. And there were no gender differences among consumption groups such as all-embracing, fun / trendy, basic, and minimal users identified through the cluster analysis of cell-phone features (Table 6.12).

As cell phones become "mundane" they continue to signify a new "cutting-edge" technology that facilitates multi-media functions. They ways in which they are adopted creates competing ideas about what is "feminine" and "masculine" but does so within the age old stereotypes of phone use. Such emerging and perpetuated gender associations with cell-phone technology need to be explored further in a future research.

Female security

It is important to recognize that cell phones do not inherently have feminine and masculine associations. Rather, uses and experiences of various forms of technologies reflect the social "situatedeness" of the users. In her ethnographic study, (1997) points out that women's use of domestic telephones "is related to their location, their mobility, their assigned responsibilities, and their spatial perceptions relating to distance and security, but not in any simple patterns of correspondence" (p.251). She argues that gendered assignments of spaces in Prospect (the pseudo-name given to her study site)—where women occupy the private sphere and men occupy the public sphere—contribute to differences in how men and women relate to telephone technology. Women tended to be assigned the role of managing the domestic telephone (e.g., picking up the phone) but generally men took charge of women's mobility (e.g., family trips and access to cars) outside of their home. Such gender assignments to the public and private spheres has also carried on to the uses of cell phones. Shingo Dobashi (2005) summarizing Matsuda's Japanese study (2001) states that

> [f]or men, *keitai* (Japanese word for cell phone) use contributes to expanding their networks mostly in the public world on grounds of business, and for women, *keitai* use is more directed to a private world of communication with children. Matsuda cautions that such differences between the genders should be regarded as reflective of "positions in social structure" rather than as independent choices by individuals. The results here similarly reinforce the role of *keitai* in reproducing the gender-biased role of the wife or mother (p.228).

Similarly, Rakow and Navaro's 1993 American study emphasized how cell phones were used by their study participants for "remote mothering" practices. One of my interviewees identified such gender roles relating to his parents' use of cell phones:

Vincent, 21, senior, Penn State	
Interviewer:	Oh ok, just for emergency
Vincent:	Yeah, and she [mother] uses it mainly for that and also, my, well, my sister has a, ah, young child, so like, if there's any emergencies with that too um, my mom could be notified, so I, I think for my mom, so maybe there's a gender bias here, because "A" her responsibility is towards her grand child and
Interviewer:	Mm-hmm
Vincent:	"B" because there, maybe inability to ah, take care of her car problem or because
Interviewer:	Opposed to your father who could ( )
Vincent:	Who could, if he couldn't fix it, it's probably, I guess it would help him to have it there too but um, so I don't know but I think my mom's sense is that general helplessness in that situation
Interviewer:	Ok, ok
Vincent:	I mean, and ah, I mean because, I don't think my dad would ever say that as a reason, but I can picture my mom saying like, if I get broke down ( ), and um
Interviewer:	Right, right, ok
Vincent:	I think, whether or not there's any reality to that sort of a, um, (trope or) stereotype there, ah, I think it's articulated in the way they speak about why they have there cell phones

As Vincent points out, gender roles—being a grandmother, mother, and female driver—were related to his mother's reason for owning a cell phone.

As I explored in Chapter 5, there were gendered dimensions of cell-phone ownership because of unequal ownership levels and the reasons for getting a cell phone. In particular, a sense of security in public spaces and possible variations in parenting concerns over female and male children were contributing factors in the gender differences in the ownership levels. Both male and female students expressed cell phone's role in "security" on the road. But, additional security issues were expressed by female respondents. Therefore, one of the gendered practices associated with cell-phones uses is their use for security measures in public spaces and experiences associated with female mobility. Gill Valentine (1989), exploring the women's sense of fear in public spaces, argues that despite the significant violence that's experienced in the private sphere, the notion of "danger" is strongly associated with being in public spaces for many women. Domestic telephone lines can be seen as a window to the outside world since they connect individuals who may need help to telephone "hotlines" (Arafeh 2000; Hutchby 2001). Furthermore, there have been charitable and student organizations that collect used cell phones and distribute them to victims of domestic violence so that these women can call for help discretely (Schwartzberg and Winther 1999; Hayakawa 2001; Piper 2001; Pepitone 2004; Stampfl 2004; Engler 2005; Terasevich 2005; Thomas 2005; Welch 2005). However, cell phones have been strongly associated as a "rescuing tool" while outside of domestic / private spaces,

especially when on the road. Alyssa for example stated that because she was “a woman” cell phones were even more important as a “security blanket”:

Alyssa, 21, senior, Shippensburg	
Alyssa:	‘Cause I’m a, I’m a woman, I don’t, you know if my car breaks down, if it’s late at night, like I feel much safer always having it [a cell phone] [Edit] I drive sometimes late at night because if I work and then I have to drive back here

Female interviewees articulated additional security issues that intersected with various experiences of mobility. In particular, cell phones allowed many women to cope with perceived and actual dangers, especially walking in public spaces. For example, Gina explained how she used cell phones to feel “secure” walking on campus:

Gina, 20, junior, Penn State	
Interviewer:	[Edit] so then do you talk on the phone at night because it’s a safety thing?
Gina:	Yeah, that’s, that’s a definitely part of the reason, partially because of the minutes, partially because I feel more secure walking on campus if I’m talking on the phone with somebody
Interviewer:	This is at night right?
Gina:	Right, at night
Interviewer:	During the day, does that matter?
Gina:	(During the day), safety, it’s usually for like contact someone for meeting or to talk to a friend whom I haven’t talked for a while, but at night definitely it’s like security

Such comments reveal the gendered “time geography” experienced by female students. The framework of “time geography,” initially developed by Torsten Häggerstrand, has been utilized by geographers as a way to think about daily activities and different life stages of individuals as they relate to mobility, extensibility, and accessibility to various resources (e.g., Palm and Pred 1978; Pred 1984; Adams 1995). Cell phones allow female students to negotiate the experiences of everyday time geography and allow them to have access to “extensibility” while walking and driving (mobility) and to bring about protective “surveillance.” For example, Emily and Mia claimed that talking on their cell phones can change the nature of spatial experiences while walking alone, especially at night:

Emily, 20, sophomore, Shippensburg	
Emily*:*	But like when I’m walking like on the street like at night
Interviewer:	At night you would
Emily*:*	I call like on my phone
Interviewer:	Phone, ok, why at night, is that
Emily*:*	Just like I don’t know, I feel safer if I’m talking to someone
Interviewer:	Ok, do you feel scared at night at Shippensburg or just at night anywhere

Emily:	Just like anywhere like, yeah
Interviewer:	It's just the fact that somebody is talking to you, you feel safer?
Emily:	Yeah
Interviewer:	That's very interesting, ok, does any of your friends do the same or is it more of your
Emily:	I don't know, I don't know, I just like to talk, so I, it's comforting, the sound
Interviewer:	Right, ok so that's like when you're going home from school or something like that or
Emily:	Yeah
Interviewer:	Ok, how, ok but during the day when you're walking, you don't feel
Emily:	Mm-mm
Interviewer:	Not scared or anything
Emily:	No
Interviewer:	Ok
Emily:	There's people around

Mia's statement below also reveals the social network students rely on when they are in a situation where they need someone to talk to:

Mia, 19, freshmen, Penn State	
Interviewer:	Do you think of it as any of a security measures, like you said initially, when you were 16, it was an emergency thing, is that ( ) now
Mia:	Oh, definitely, because like if I am walking home if I like should be by myself, for some reasons, I can just call somebody on the phone, find like where ( ) if I am in the bad area of town and it's really dark, and I can just call any of my friends and you will be like "just talk me"
Interviewer:	So do you do that?
Mia:	Ah-huh, actually, in my [editing out the name of the class] class, she was talking about that, ( ) safety measure, she even put her number on the board, our teacher
Interviewer:	Oh, like, "you can call me"
Mia:	Yeah, she was like "everybody write this down and you just, I don't care what time night it is, just call me"
Interviewer:	What an offer!
Mia:	I know!
Interviewer:	( ) professor?
Mia:	Um-hum, she is really, really nice, she like reminds me like my grandmother
Interviewer:	Yeah
Mia:	But um [laugh]
Interviewer:	Do you feel safer then when you call someone?
Mia:	Yeah, just because if something were to happen, like they would know
Interviewer:	It's on so
Mia:	Yeah
Interviewer:	So have you used that before when you ( ) walk
Mia:	Ah no, but I considered it, because when I walk home from the gym, like I go really ( ) and I walk through, I take the short cut, it's really kind of stupid but really dark, and I always consider like calling somebody, If I, I get kind of afraid
Interviewer:	That's interesting, ok, so do you feel scared in State College, or are there pockets in where

Mia:	There is no light in there, 'cause you are not really supposed to walk there, ( ) green houses, and ( ) and so there is no lighting, it's really dark and sometimes I just hear sounds, and I get afraid, 'cause I'm like well, ( ) cell phones, I can just call whomever
Interviewer:	So it is not a major like a route that people take, you're just taking that short cut
Mia:	Yeah, I know couple of, like it's ok during the day but at night, it is not lighted at all
Interviewer:	Overall, you feel ok, just certain parts?
Mia:	Certain areas
Interviewer:	Certain times, ok, and how about your friends, do they do the same?
Mia:	Um, no body ever called me, but I am sure if they would if they were like afraid. I don't think they would hesitate to call.

Like Emily and Mia, other students called their parents, boyfriends, and friends to feel safer by and so that someone was aware of what was happening to them as they walked the areas on campus.

It was not solely the "time" of the day that created sense of insecurity of being in public spaces for female students. In fact, about the half of the female respondents said they were not scared to be walking at Penn State / State College or Shippensburg, day or night. Claire and Gabrielle pointed out that their cell phones are more for security in a big-city setting:

Claire, 20, senior, Penn State	
Interviewer:	Right, ok, do you feel that you want to have it for the night time when you walk alone? Do you feel scared generally in State College to be by yourself?
Claire:	No. [Assertively] No, I, my apartment is about 8 blocks from campus, so late at night, it's kinds of, but even in State College, you don't feel, it's not like a city, it's not scary, so I feel pretty safe
Interviewer:	So, that's, you would just have it, just in case for other little things
Claire:	Right

Gabrielle, 24,transfer, Shippensburg	
Interviewer:	So you keep it on, or bring it with you
Gabrielle:	yeah I tried to always bring it with me when I go somewhere especially if going somewhere, you know outside, you know if I was just going down to the grocery store, I'm not gonna be too concerned about grabbing it but if, I'm going anywhere like maybe out of 10 or 20 mile radius, I make sure to grab it, just you never know in case
Interviewer:	Ok, how about just walking around at night or something alone, do you feel scared here [chuckles]
Gabrielle:	Mm
Interviewer:	Do you think that as a security or
Gabrielle:	Um, not here in Shippensburg but I have carried it you know like "oh I better take my cell phone you never know," but here I mean after living in Pittsburg, it's, it's a lot safer I feel, I feel lot safer here than I did there so
Interviewer:	So the security is much more of a driving oriented or

Gabrielle:	Yeah, I would say so

For these students, Shippensburg and State College were not considered to be metropolitan cities where there are high risks (actual and perceived) of city crimes. On the contrary for example, Olivia is from the "country" (rural area), therefore, she had a different sense of place being at Penn State campus:

Olivia, twenties, senior, Penn State	
Interviewer:	Do you feel like um you're scared to walk around, do you walk around by yourself or
Olivia:	Uh I walk around my, during the day though, there are certain times like if it's real late at night, I don't really wanna walk around, just I mean, I come from the country[side] so this is populated
Interviewer:	Yeah [laugh]
Olivia:	But um
Interviewer:	So the that the idea that people around you that scares [you] more
Olivia:	Sometimes, I mean I was always told that when you ( ) college, if it's like midnight you don't walk by yourself and I'm in a sorority so we've always said you know unless you have to don't walk yourself, try to stay with somebody and

Therefore a sense of "fear" does not apply to all female students all the time. Rather, their social background, such as growing up in urban, small town, and rural areas also contributes.

One of the important arguments put forth in feminist geography has been to emphasize that there are multiple points of view among women since their identity as women intersects with other social identities such as race, ethnicity, nationality, age, sexuality and economic status (e.g., McDowell and Sharp 1997). In other words, a female identity cannot be universalized and essentialized. The same can be said for thinking about aspects of gender and technology. One study that examined how gendered telephone use differs according to age, race /ethnic, and economic and social status was Moyal's study (1992) in the Australian context. She collected "the views, attitudes and voices of women across Australia" including "women at home and in the workforce; single, married, divorced and widowed women; single parents, teenagers, women from migrant backgrounds; urban, rural and remote region women, some Aborigines, and a group of women without access to a domestic telephone" (Moyal 1992, 52). Even though my study did not have the scope of Moyal's study, the need for female security was expressed by interviewees in multiple ways. For Helen and Ellen, their sense of vulnerability in public spaces also was related with their racial identities in addition to their female identity:

Helen, 20, sophomore, Shippensburg	
Helen:	Yeah definitely, for like emergencies and stuff like if you get stuck or you need to call AAA [American Automobile Association] or whatever, stuff like that

Interviewer:	Right
Helen:	Or you know something is going on, somebody pulled you over and they don't know who they are, you can call 911 to check and make sure it's a State Cop or something
Interviewer:	That's, I never thought of that
Helen:	That's why I would want to have one, you know
Interviewer:	Ok
Helen:	Plus, a girl you know young white female I mean, it's very (…)
Interviewer:	Yeah
Helen:	So

Ellen, 19, sophomore, Penn State	
Ellen:	I mean everybody has them [cell phones]. Me, I guess it makes me feel more secure because god forbid something happens I can just hit 911 real quick and like I know that like you can hear noises and something, and I know there's someway where they [police] can track (these dialed phones) So.
Interviewer:	Do you feel scared at night or something walking by yourself?
Ellen:	Well, maybe I'm minority up here with like that stuff with that death threat letters and stuff that I have heard about like I get scared so I don't really like to walk by myself and if I am I'm talking to a friend (usually) on the phone and my phone lights up so it's like, it's not like, it's not like some that other people can't see, so.
Interviewer:	So you are making it explicit that you are on the phone with somebody. That sends the message that you're with someone.
Ellen:	Either that you are on the phone and tell them what's going on with, I don't know to me it makes me feel safer, like if I'm walking late at night, I'll call my friend or my mom and I will be on the phone with them until (…)

It is interesting that the above statements both articulated that "white" and "non-white" identity, in addition to being "female" and "young," contributed to the sense of vulnerability being in public spaces. For Ellen, the sense of vulnerability comes from being a minority student on a very "white" campus, where racial tension had been felt around the time of interviews. There were multiple incidents of minority students receiving death threats, which provoked campus-wide reactions and media attention (Harkness, Huang, and Lang 2000; Cooke 2001; Weininger 2001; Kepner 2002). Even though not directly related to their cell-phone uses, there were a few instances in which minority students at Penn State mentioned in passing about their experiences being on "white" campus and facing racial profiling by retail establishments and authorities.

Furthermore, what Ellen meant in her comments about her cell phone "lighting up" was that her cell phone would light up while in use. This allowed Ellen to display to the people around her that she was engaged in cell-phone conversation. Such an exhibit of her cell-phone use is part of creating a sense of security for female students while negotiating the experiences of being in

public spaces. Cooper has made observations on how cell phones are used to generate privacy and personalized experiences while in public spaces. He states that

> [t]he mobile [cell phone] can also be a resource for personalizing one's existence in public spaces, a resource for achieving privacy. It can for example, as one female teenage respondent has stated (and gender is obviously crucial for a more fully elaborated understanding of what the generalizations public and private might mean), provide a way of avoiding "strange encounters" in public spaces. It is not the only device for doing this, but it is a particularly effective one which visibly and audibly displays one's engagement with a remote other to those within earshot (Cooper 2002, 23).

Betsy and Jenna's comments below emphasize how the "look" of talking on a cell phone can create a personalized space and security blanket:

Betsy, 24, graduate, Shippensburg	
Betsy:	[Edit] I also heard, um a lot of my friends like if they go out to parties
Interviewer:	Mm-hmm
Betsy:	They will pretend that they're talking on their cell phone, when their walking home and they
Interviewer:	They're not necessarily talking on the phone
Betsy:	Mm-hmm, because like perpetrators of, people trying to harm them don't know if they're really talking to someone or not
Interviewer:	Right, right, oh that's interesting
Betsy:	Um, that's come up a lot like, when I'm talking to my friends, oh you have a cell phone, what's your cell phone number and you know you go out to parties and then they talk about you know, oh well when I go out to a party I always have it with me and even if I'm not on it, when I'm walking home at night, I
Interviewer:	Oh that's interesting
Betsy:	It is interesting
Interviewer:	Ok, um, but you, you think that's kind of a distraction
Betsy:	It can be distraction, like I think it's one of those either or
Interviewer:	So you don't, you think the other way would be more safer like not to talk on the cell phone, 'cause you're aware of the surroundings but
Betsy:	Right
Interviewer:	Most to the other
Betsy:	Yeah, most, most of my friends are the opposite, they would rather have that there
Interviewer:	That's interesting
Betsy:	Just in case, I'm not sure
Interviewer:	Ok
Betsy:	I don't, well I don't go out to parties either
Interviewer:	Oh I see
Betsy:	So
Interviewer:	That's their story so
Betsy:	So you don't know how late or where they're walking
Interviewer:	Right exactly

Jenna, 20, sophomore, Penn State	
Jenna:	There are some times I carry my cell phone like just for whatever reason 'cause yeah, I'm walking out or whatever and I'm sure some people do they say you know, when you're walking alone at night to call someone so *looks like* you know what I mean that you're on cell phone that you're busy and stuff, not less of a target or something?
Interviewer:	You've heard that before?
Jenna:	Yeah, so (..) and I feel lot of people doing that I'm sure sometimes they're like shady I don't know
Interviewer:	Do you think mostly female then or?
Jenna:	Yeah more females, I'm sure guys just like I'm gonna' get'em, girls like ( ) so I can run or call somebody

Jenna and Betsy's examples are the "tactics" of female students' negotiations with the experiences in public spaces. This practice also has similarities with Walkman use as argued by Bull that (2001, 183-184):

> while more female users than men describe using the Walkman as a strategy to avoid unwanted interpersonal communication, this is investigated in the present study under the rubric of the "interpersonal" and the "look" and is discussed under strategies of use. Indeed the Walkman can be used as a strategy to transcend gendered space thus potentially empowering women through its ability to enable them to control space and vision more successfully.

What I want to emphasize here is not only the ways in which cell phones are used to personalize one's spatial experiences, but how female students such as Jenna and Betsy have engaged with the potential and actual "gazes" physically present while on the move. In fact, such engagement and presences of "gazes" are one of the socio-spatial implications of cell-phone consumption, which I discuss next.

Monitoring of cell-phone uses

Concealed talks and "outgressing" identities

The use of portable personal technologies in public spaces has brought on social experiences not just for the users of technologies but also for both individuals who are in the physical proximity of these technology users and multiple social groups based on gender, age, ethnicity, political affiliations, and economic status. To facilitate the discussion on the social significance and public experiences of the consumption of personal technologies, I draw from the literature on personal stereos. The comparisons between Walkman and cell-phone usages are useful because both technological devices are utilized for the personalization of public spaces and

because audio functionality and phone and text communications capabilities are now united into one device.

There have been a considerable number of studies on the consumption of Walkmans—its uses and implications, especially by scholars working in Cultural and Media studies (Hosokawa 1984; Chow 1993; Chambers 1994; du Gay, Hall, Janes, Mackay, and Negus 1997; Bull 1999; 2000; 2001). The majority of these studies have involved geographical analysis, particularly relating to what it means to listen to a Walkman in different places and the consequences observed and played out in places by the use of Walkmans. For example, Chambers (1994) suggests that someone listening to a Walkman upsets the surrounding landscape because the act signifies a "void" and a refusal to participate in that public space. In an article published in 1984 called "Walkman Effect," Hosokawa claims the Walkman is "urban strategy" and is "an effect-event in the pragmatic and semantic transformation of the urban" (Hosokawa 1984, 166). One of the arguments he develops is that uses of Walkmans signify "secrecy," since "others" are not able to know what is being listened to. Therefore the act of listening to a walkman in public spaces could be considered as "theatrical" communication between the Walkman users and the spectators. Hosokawa claims that

> [w]hat surprised people when they saw the Walkman for the first time in their cities was the evident fact that they could know *whether* the walkman user was listening to something, but not *what* he [sic] was listening to. Until the appearance of the Walkman, people had not witnessed a scene in which a passer-by "confessed" that he had a secret in such a distinct and obvious way. They were, in fact, aware that the user was listening not only to something secret but also to the secret itself, a secret in the form of mobile sound: an open, public secret **(**emphasis in original**)** (p.177).

Moreover, he claims that "all passersby are inevitably in the walkman-theatre, as either actors (holders) or spectators (beholders)" (p.178) and "even when one switches off, or leaves it behind, theatrical effects are still active" until the "death of the gadget-object" (p.179).

Such theatrical processes can be explored with the uses of cell phones. There are both similarities and differences between cell phone and Walkman "theatres." There is still a "secrecy" involved with use of a cell phone if others just see (but not hear) one talking or carrying it. The use of text messaging, the playing of games, and obtaining information from the Internet are also kept "secret" away from beholders. Those who are conversing on cell phones seem to be "out of place" in public spaces just like Chamber's argument for those who are listening to Walkmans. Users are "out of place" since they are not fully participating in the immediate surroundings but inhabiting a personalized audio space the "others" cannot participate in or "hear" or "see." On the

other hand, the use of a cell phone when holding it, talking with it, operating it, and having it ring in the everyday landscape, however, is no longer contained in a subtle "secrecy." Seth explained his experiences of others using cell phones:

Seth, 22, junior, Penn State	
Seth:	[Edit] It's, just you know little thing you know, always sit here, probably walking to class and somebody in front of me always talking on the phone and I, I basically get, I'm just like hearing all this stuff about ( )
Interviewer:	Just because you're walking (behind) [laugh]
Seth:	I don't want to hear this, I'm (sitting) here and having a conversation with my friend and I'm trying to, like talk over somebody else's
Interviewer:	Right
Seth:	Gabbing to their boy friend about how "I ( ) failed my test and I don't know what I'm gonna do," you are on your way home and you can call him when you get there [home], but

When one talks on cell phones, sometimes many "intimate" and private things are "revealed." Almost everyone had the similar experience of unintentionally or unwillingly eavesdropping on others' cell- phone conversations. In a sense, the uses of cell phones on one hand involve a practice of "outgression" of identity since they reveal "secrets" in public spaces. At the same time, paradoxically, they signify ingression of self into social space that is detached and / or half present from the immediate surrounding public space.

Michael Bull has criticized Hosokawa and Chambers' discussions on Walkmans in that they don't consider the social situatedness of users as well as lack empirical analysis of user experiences (Bull 2000; 2001). The ideas of "secret" as well as "public theatre" are useful frameworks to think about the social implications of cell-phone usages, particularly by young people—and this is reflected in the interview transcripts.

One of the social debates on young people's uses of information and communication technologies concerns surveillance on the sorts of information young people and children are exposed to through the media, Internet, and cell phones. Some of the fear associated with children's surfing the web may be due to the ability of children to extend themselves into spaces the parents cannot control. Children's enhanced extensibility, due to their use of technological devices such as cell phones may also be used deviantly (Valentine and Holloway 1999; Holloway and Valentine 2001c). In Japan, cell-phone uses have been discussed in relation to the ease of young teenage girls to voluntarily "hook up" with middle-aged men to engage in illegal-prostitution activities.

The extensibility of young people through information and communication technologies in the United States has also been associated with deviant and illegal activities made possible by

the nature of mobile technology. In the era of the American "drug scare" from 1986 to 1992 (Reinarman and Levine 1995), a teenager possessing a pager was more than a hint of being a drug dealer. One law enforcement official at the time stated that "it was the beepers that made these average-looking students stand out form their contemporaries" and "the sound of beep indicated it was time to pick up drugs or make delivery to a customer" (Wheeler, Aoyama, and Warf 2000). From the mid-1980s to early 1990s, newspaper articles reported on the problem of drug dealing activities including series of arrests on high-school campuses associated with drug dealing and banning of pagers from campuses especially in the inner-cities of New York City, Boston, Washington D.C., Baltimore, Los Angeles, San Francisco, and Seattle (Valentine 1989b; Rabinovitz 1991; Hart 1993)(Valentine 1989; Rabinovitz 1991; Hart 1993). There were counter arguments made by the beeper industry stating that "there's nothing to document that the myriad of under 21-year-olds with beepers are drug dealers," but yet there was series of legislations passed throughout the nation "to curb the sale of electronic beepers to teen-agers" since legislators such as Rep. Kweisi Mfume (D-Md.) claimed that teen-agers are "using the paging devices to illicit drug deals" (Valentine 1989b)(Valentine 1989). In San Francisco and other cities, beepers became banned from the hands of the under-eighteen crowd. Beepers symbolized the perceived drug problems involving young people (Valentine 1989; Associated-Press 1991; Rabinovitz 1991; Sandalow 1991; Sylvester 1991; Gardner 1993; Hart 1993; Racz 1994).

The banning of cell phones and pagers from n high school properties became contested by students and parents and there have been attempts to lift the bans. There has been a shift in perception towards cell phones and pagers because, despite the banning of beeper sales to minors, parents were the ones to purchase the devices for children for "safety" purposes. In some instances, high- school students were even being beeped during class by parents (Hart 1993). A newspaper article reporting on this trend suggested that today's youth "travel long distances and stay out late in a crime-ridden city" and "teen-agers today—unlike those of a decade earlier-commonly stay out until midnight or later on a week night, and parents can no longer find their children by shouting out the window" (Rabinovitz 1991). Beepers and cell phones have become tools for parents to keep track of their children. This relationship has been often described as "teleparenting" and the "electronic leash" (Bremner 1991; Racz 1994; Kirkpatrick 1996; Swartz 2000). Eric recalls when he acquired a pager while he was in high school:

Eric, 23, junior, Penn state	
Eric:	Years ago when my first friend first got one, I guess, actually it started with pagers, pagers were the big thing and first thing I said to all my friends that have it "damn fag, you don't need that, you don't need that," and I kept on waiting, I

	finally got one, and pager then, I got read of that and got a cell phone after that and
Interviewer:	Was pagers useful as well?
Eric:	It is but it is less useful, because I mean all it does is someone is trying to get a hold of you, that's it you still have to stop and find a phone somewhere um, if you are middle of nowhere and the tire pops, pagers are not going to do you any good, so
Interviewer:	Yeah. Was this a high school kinda thing?
Eric:	Yeah, I had a pager in high school
Interviewer:	And it was allowed in school?
Eric:	No, oh no, we I think take it in and just leave it in your locker something but or if you carry around you make sure sounds off?
Interviewer:	( )
Eric:	Pardon me?
Interviewer:	Was it just to cool to have one?
Eric:	Um, that's what it started out as, um, it helped a (little) I think my mom liked it more just because she can get a hold of me, and ( ) me she could but
Interviewer:	[Laugh] and did you like the fact that she was [laugh]
Eric:	No, [laugh] no, not at all.

Cell phones also have additional "hidden" dimensions of use. Text messaging in particular allows students to have concealed communications because it involves silent communication. Many students used text messaging to communicate with others both present and outside in the same classroom. Audrey texted during her class:

Audrey, 20, senior, Penn State	
Audrey:	Yeah occasionally, if you see like during class, someone calls, like someone call and, um, it's usually like it's sometimes it can be important like
Interviewer:	Mm-hum
Audrey:	'Cause you don't um usually call, sometimes, or where if I know that something's going on later that night like I want to make sure that everything is all set so um, I'll text and they text me back so ( ) um
Interviewer:	Oh ok, are they in class or they know that you're in class ( )
Audrey:	Yeah
Interviewer:	Ok, so then you just send them little messages of
Audrey:	It's more like you know "what's up" or "what's going on" um yeah usually do it like brief messaging whenever and then I tell them like you know I'll call ( ) stuff like that
Interviewer:	Ok, does it work pretty well in the class context, like nobody really knows that you're doing that?
Audrey:	No [laughs]
Interviewer:	Oh really?
Audrey:	'Cause a lot of my classes are in the lecture
Interviewer:	Mm, I see, so you can be kind of anonymous kinda thing?
Audrey:	Yeah

Using Goffman's framework analysis, Ling and Yttri (2002) point out that text messaging allows users to participate in "two parallel activities." They state that in contrast to telephones:

> SMS [text messaging] enables one to operate on the front stage although one must also be conscious of the small-scale boundaries between the front and the back stage. Thus, in situations where it is illicit to use a mobile telephone, such as during school, the areas that are out of the direct sight of the teacher become, in effect, the back stage, or perhaps even a parallel front stage. These small spaces under the desk, in one's pocket or in one's purse allow for the manipulation of the mobile telephone. This in turn allows for parallel communication, be it instrumental or expressive (p. 165).

Therefore, since text messaging can be used discreetly in the classroom, users such as Audrey can manipulate the experience of being in particular place as well as engage in multiple tasks such as taking class and communicate with others. Cell phones have also become problems in university classrooms since they have the potential to be used for cheating. For example, at the University of Maryland, "12 students in the undergraduate business school were accused of using their cell phones and PDA to cheat" in 2003 (Bresnahan 2003). These students accessed "test answers that their professor had uploaded to the class Web site during the exam" through their "Web-enabled" devices (Bresnahan 2003). Also, the camera function of cell phones can also be used to capture and store images of textbooks and potentially used for cheating during exams (Gruenberg 2003; Chu 2004; Sica 2004).

Uses of information and communication technologies such as beepers, cell phones, and PDAs are not only associated with deviant behavior. Despite the association with drug-dealing activities, beepers became popular among teenagers and were portrayed as a fashion statement, as new tools for communication among friends, and as a symbol of popularity. Reporters declared that beepers were the "new status symbol of the Nike generation" who "wear them for the look" for "the latest fashion statement" (Stewart 1991; Sylvester 1991; Gardner 1993; Racz 1994; Kirkpatrick 1996). Even the color of the beeper worn on the belt was an important element of expressing "an extension of their personality" (Lee 2002). Pagers became strongly associated with "hip-hop" culture and to be a trade mark of African-American celebrities—which many white teenagers also associated with a sense of "coolness" (Blumenfeld 1992). The beeper as fashion-status was also reflected in the fact that some teenagers wore non-functioning pagers and that pagers where high theft items from stores. Moreover they were often target of thefts in schools (Creel 2001).

This leads to a discussion on the significance of the cell-phone theatre as it relates to cell-phone consumption. Ling and Yttri (2002) found in their Norwegian study that cell phones had

different importance levels for different age groups. In particular, they categorized young Norwegian teenagers' uses as "hyper-coordination" and identified that their uses set them apart from older age groups. This is because in addition to instrumental uses, teenagers utilized cell phones for "expressive" uses including "chatting" and "self-image" construction and presentation in relation to their peers. It is the process of participating in mass consumption itself that creates the sense of belonging to certain socio-cultural groups and the development solidarity between people. Cell-phone consumption can be examined as embodiment practices which signify and demarcate youth cultural identities. Tim Creswell states that embodiment "refers to the production of social and cultural relations through and by the body at the same time as the body is being "made up" by external forces" (Cresswell 1999, 176). Thus, cell-phone devices embodied by young people are connected to wider social and cultural networks of meanings. How these imaginations are constructed through certain media forms such as television programs, advertisements, magazines needs further attention. It can also be said that young people displaying cell phones are also part of this media, since it involves a cell-phone theater with actors (holders) and spectators (beholders). Thus, the cell phone as both fashion style and as display of identity enhances the theatrical effect. Through fashion statements, youth participate in constructing socio-cultural boundaries of sub-cultural groups, the youth category (such as student, teenager) as well as that of national citizenship (for example, Japan). Youth participate in the theatrical display of "us" (i.e. owner / user of cell phones with certain fashion taste) and "them" (i.e. non-cell phone owner / users and different sub-cultural group).

These boundaries are always shifting since what is considered "fashionable" and "in" are often time and space bounded. Cell-phone technology has been constantly transforming over the last decade in both their "look" as well as their function. Hannah described how it was important for her to have a stylish phone:

Hannah, 19, freshmen, Penn State	
Hannah:	Totally it is not a necessity, like you can totally live without it, because like I mean if I really need to use the phone, like there is a pay phones that you could use and if I really need it, I can go home and use mine, it is definitely like who has the best phone, who has the color cell phone. If you see somebody with a color one, everybody goes "oh that's so cool." Like the flip phones, like that's why I wanted a new one, because mine wasn't stylish enough ( )
Interviewer:	Is it flip [style] now?
Hannah:	It's a flip phone yeah. ( ) I love it.
Interviewer:	Is there a […] [Hannah shows her cell phone to the interviewer] Oh wow, it is small.

Hannah:	It's like who has the smallest one, who has the most colorful one, who has the best ring tones? I mean it is definitely not, because I could lived with my first cell phone, like my car phone type thing to deal, if I got a flat tire or something I can call someone but I had to get a smallest one and the best one and the prettiest one.

A few students mentioned how their phones were "huge" and "outdated" when they did not have a "cool" phone. Moreover, how a cell phone was accessorized—such as with "face plates" or colors—seemed to be related to gender. At the same time, there was no consensus in terms of what was considered a female or male preferred style of phone. Some mentioned that the flip phones were considered to be masculine. Others mentioned that smaller phones were considered to be stylish by both genders. Olivia noted the following:

Olivia, early-twenties, senior, Penn State	
Olivia:	Guys, one of the guys like all fancy like the more high tech it is, the more they like it [Edit] The guys like the games, I see lot of them buy the games, lot of them will get the ring types, more of the fancier rings [Edit]
Interviewer:	You don't find that as much with your friends, the girl friends
Olivia:	The girl, girls just download the stuff off the Internet, and like they can get different rings off the Internet, they have ( ) ring, the guys
Interviewer:	You have too?
Olivia:	No, mine's just ( ) just rings, but the guys are more after the gadgets that go with it, so ( )

Another outwardly expressive way in which cell phones are "displayed" is with types of ringtones students chose. Austin described in length how the selection of particular ringtones signifies sub-cultures:

Austin, 20, sophomore, Shippensburg	
Austin:	The actual sound of cell phone ring is, is somewhat looked down upon
Interviewer:	Is it really
Austin:	Um, yeah, um
Interviewer:	Not just in a class context
Austin:	Not just in a class room but anywhere, I mean if you hear cell phone ringing, it's like (…) it's, it's odd
Interviewer:	( ) vibration then
Austin:	Yeah, it's a lot of people just leave it on just vibrate um, I mean say you're, you're in the cafeteria you know eating lunch and you're cell phone rings and you know it's pretty loud, people just kinda look over and
Interviewer:	[Laughs] ok
Austin:	Cell phone usage almost has it's own it's own sub-culture, you know with norms and certain values and whatnot
Interviewer:	So

Austin: Certain, certain rules of engagement you might say
Interviewer: So ringing is, which, is it a norm or not a norm
Austin: Well, ringing, ringing can be good or bad, it depends on what kind of ring you have
Interviewer: Ok [Laughs] wow, this is complicated
Austin: It's like, it's like yeah whole different culture
Interviewer: Thanks for sharing this with me [laughs]
Austin: Um, if you have a ring, that might be a cool song of the day or um, you know, something that's popular, then, then you can get away with it
Interviewer: Any example, something on the radio or
Austin: Well, alright
Interviewer: If you don't mind
Austin: Yeah, I'll give you an example of my ring the one that I use
Interviewer: This is cool [chuckles] (…) so normal, I can't even imitated the sound, whatever that comes with the phone, that's not a
Austin: Well, I'll give, ok, um, [starts the electronic ringing jingle: marching song] this is an example of ring that won't be cool
Interviewer: Oh ok [starts laughing hard] I was gonna say
Austin: Yeah
Interviewer: Ok
Austin: Or um, [another ring tone: some tune that I cannot recognize the melody] this is the one that came with the phone
Interviewer: Oh really
Austin: Might not be cool but um
Interviewer: That stand out though
Austin: The one that I use is ah, from a song, a rap artist "DMX"
Interviewer: Ok
Austin: Um, it's called, called "Rough riders anthem"
Interviewer: I just gonna say, ok, so that would be more of the back, you can't really imitate ( ) can you
Austin: Well, I mean you can you can get the beep down [another ring tone: I assumed it was "Rough riders anthem"] I don't know if you recognize that song
Interviewer: Ok, [the song keeps ringing] that is really neat [ring stops] so sometimes you have that as a ring tone
Austin: Yeah, so when I, I mean, when I don't have my sound on, that's what will ring, and if you have something that's cool, like, like a rap song or a, quote on quote "cool," with society uses cool, and then you can get away with your phone ringing in public, but if you have something that's not viewed as cool then
Interviewer: Uh-hun
Austin: Your phone ringing wouldn't be acceptable
Interviewer: That is really interesting
Austin: So, and actually, um, with this phone you can create
Interviewer: Mm-hmm
Austin: Actually edit your own ring tones
Interviewer: Wow, that will be work
Austin: Yes, you can actually compose your own, your own rings
Interviewer: You must, you have to be very cool to that right [laughs]
Austin: [Chuckles] if you can, you can compose your won ring, then you know that your doing something right

Again, the point here is the fact that there is an audience for cell-phone ringtones and that cell-phone users imagine the audience's assessments towards what is "cool" and acceptable. Given this audience, deciding on which ringtones to use on their phones was considered a practice of expressing identity. Olivia described how her friend designated particular ringtones based on the identity of the caller:

Olivia, twenties, senior, Penn State	
Olivia:	That way like my one friend has it for each one of his friends he would have different rings, if I call him it's a different ring than my roommate calls
Interviewer:	So he knows immediately
Olivia:	Who's calling yeah
Interviewer:	You have to know the tunes but you have to associate with ( )
Olivia:	Well, because I'm I live in the country[side], he has like a hick song for me [Edit]
Interviewer:	That's your identity, ( ) "country"
Olivia:	Apparently ( ), yeah, they think it's funny

Vincent did not own his cell phone but he took part in deciding on a particular ringtone for a female friend, deciding which song would be the most representative:

Vincent, 21, senior, Penn State	
Vincent:	I mean yeah, that's alright, but I mean there's definitely some cell phones that are like, seem to be show off cell phone, it's more like, oh look, there is the screen and ah, I have my friend um, from home, just got a new one and has been talking to me about it for a while
Interviewer:	[Chuckles]
Vincent:	There's the songs people pick that ah
Interviewer:	Oh
Vincent:	I guess that's the way to ah, you know the ring tones that are like a song, it's a way to ah
Interviewer:	Yeah you can download
Vincent:	Maybe personalize something, I mean I think this exist a lot in a culture, these little things to personalize something which is really the same
Interviewer:	Right [laugh]
Vincent:	And ah, and having your own ring is certainly I think an example of that way
Interviewer:	So but you, he's saying it's a popular thing to pick or is he saying
Vincent:	Oh no, it was actually a her
Interviewer:	A her, sorry
Vincent:	My friend [her name omitted], ah she, she was going over all these list of songs they had for like which one she wanted
Interviewer:	Oh I see
Vincent:	Eventually like we worked it out, she's got um, "Boy's don't cry" by the Cure
Interviewer:	You're kidding, wow
Vincent:	That's kind of like, not a very popular, I wouldn't think that's very um, main stream of a song
Interviewer:	[Laugh]

Vincent:	So maybe that is a little bit of an identity thing, I, I don't know um
Interviewer:	That's really interesting, wow
Vincent:	But then, then you have the certain rings that everybody like you hear and like eight people grab their cell phone for
Interviewer:	[Laugh] that's right
Vincent:	Which aren't so, uh, which obviously they choose those among so many and um

Vincent and her friend's consideration of a ringtone was interesting since they wanted to pick a song that was not so mainstream in order to make it highly personal.

Consumption practices often translate into the demarcation of "boundaries" between different groups by aligning with and "buying into" particular characteristics. Different types of identities such as national, regional, youth, and sub-cultures are identified through material cultures and practices. In addition to several gender differences, a series of quantitative analyses suggested that there were "cultural" boundaries between white students and non-white students in both cell-phone ownership and consumption. The previous chapter mentioned how minority students tended not to be part of family-based cell-phone ownership. In addition, minority students tended to rank most of the reasons for having cell phones higher than non-minority students except *Your family member purchased for you* (Table 5.9). Furthermore, when compared with white students, non-white students tended to rank *Because cell phones are trendy and fashionable* much higher ($p < 0.001$). Other analyses revealed differences between white and non-white students in the use of cell-phones *while driving* ($p < 0.001$) and *riding public transit* ($p = 0.002$) (Tables 7.7 and 7.8). Non-white students tended use their cell phones while driving and riding public transit more than white students. In addition, non-white students tended to emphasize particular perceptions in comparison with white students (Table 7.9). There were statistically significant differences in regards to annoying ($p = 0.011$), *fashionable* ($p = 0.003$), *necessary* ($p = 0.019$), and *professional* ($p = 0.045$). Among these perceptions, there were more non-white students indicating *fashionable* (25), *necessary* (63), and *professional* (36) than expected (15.2, 52.0, 27.6 respectively) as part of their perceptions towards cell-phone technology. On the other hand, there were more white students (24) than expected (35.4) who indicated *annoying.*

Table 7.7: Crosstabulation count of cell-phone use while driving according to race / ethnicity Source: based on questionnaire data			
N = 628		**White**	**Non-white**
Use while driving	Count (Expected count) % within race /ethnicity	454 (441.1) 83.9%	58 (70.9) 66.7%
Do not use while driving	Count (Expected count) % within race / ethnicity	87 (99.9) 16.1%	29 (16.1) 33.3%
Pearson Chi-square sig. ($p < 0.001$)			

Table 7.8 Crosstabulation count of cell-phone use while riding public transit according to race / ethnicity Source: based on questionnaire data			
N = 628		**White**	**Non-white**
Use while riding public transit	Count (Expected count) % within race /ethnicity	199 (211.9) 36.8%	47 (34.1) 54.0%
Do not use while riding public transit	Count (Expected count) % within race / ethnicity	342 (329.1) 63.2%	40 (52.9) 46.0%
Pearson Chi-square sig. ($p = 0.002$)			

Despite the statistically significant differences indicating that minority students emphasized the importance of cell phones as “fashion” and “necessity” and their heavier intensity of uses compared to white students, the racial / ethnic differences were not sufficiently explored in the interview processes to make any kind of solid conclusions. There were two main reasons for not being able to adequately explore the ethnic / racial dimensions. First, it was not possible to generalize all minority students as a group distinguished from “white students” since all non-white groups do not share similar social positions and cultural identities just because they are not the “majority.” In fact, the minority groups in my sample included African-American, Hispanic-American, Asian-American and international students, yet each minority group was too small to conduct any statistical analysis of these different groups. Secondly, the interview respondents often pointed out that because their university campuses are very “white,” they did not observe many differences in terms of how cell phones were used between different ethnic / racial groups. Another common response was that “everybody has cell phones,” regardless of any race / ethnicity.

Table 7.9: Crosstabulation students' perceptions according to race / ethnicity Source: based on questionnaire data			
N = 753		**White**	**Non-white**
Annoying ***Chi-square Sig. (p = .011)***	***Count*** ***(Expected)*** ***% within race /eth.***	**237** **(225.6)** **36.4%**	**24** **(35.4)** **23.5%**
Convenient *Chi-square Sig. (p = .969)*	*Count* *(Expected)* *% within race /eth.*	607 (606.9) 93.2%	95 (95.1) 93.1%
Fashionable ***Chi-square Sig. (p = .003)***	***Count*** ***(Expected)*** ***% within race /eth.***	**87** **(96.8)** **13.4%**	**25** **(15.2)** **24.5%**
Fun *Chi-square Sig. (p = .553)*	*Count* *(Expected)* ***% within race /eth.***	198 (200.6) 30.4%	34 (31.4) 33.3%
Necessary ***Chi-square Sig. (p = .019)***	***Count*** ***(Expected count)*** ***% within race /eth.***	**321** **(332.0)** **49.3%**	**63** **(52.0)** **61.8%**
Noisy *Chi-square Sig. (p = .737)*	*Count* *(Expected)* *% within race /eth.*	124 (122.8) 19.0%	18 (19.2) 17.6%
Professional ***Chi-square Sig. (p = .045)***	***Count*** ***(Expected)*** ***% within race /eth.***	**168** **(176.4)** **25.8%**	**36** **(27.6)** **35.3%**
Unsafe *Chi-square Sig. (p = .917)*	*Count* *(Expected)* *% within race /eth.*	66 (65.7) 10.1%	10 (10.3) 9.8%

Only a few students mentioned some of the differences based on ethnicity / race in the interviews. For example, Arianna who was an African-American female student and Maya who was a white student stated the following:

Arianna, 20, junior, Penn State	
Arianna:	[Edit] but I think it's as far as especially African Americans, I don't think were [initially] kind of into them, I think they were to an extent but it was more like those who had money or
Interviewer:	Right
Arianna:	Like it was more like um like on television kind of thing
Interviewer:	Yeah
Arianna:	Like um rap stars and kind of you know like if you have money then people ( ) it wasn't as common like the mother and the daughter, the sister the brother it's like the whole family has the cell phone now and I don't think, it ain't used to be like that before, it's, it was usually mom or dad

Interviewer:	Right
Arianna:	To get in contact like to call home or something
Interviewer:	Mm-hum
Arianna:	And then now it's all of a sudden mom, dad, a child
Interviewer:	(Laugh) right
Arianna:	After school programs and you know kids as young as ten and eleven have cell phone, so I think

Maya, 19, sophomore, Shippensburg	
Maya:	Um, I noticed a lot of African-Americans have the head sets like
Interviewer:	Oh ok
Maya:	Just like, more like, I, I don't want to use the word "powerful"
Interviewer:	Mm-hmm
Maya:	But maybe like prestigious looking
Interviewer:	Oh
Maya:	Individuals, like they'll have, up to their ear and it'll be hidden, you can't see it, so if somebody calls, they know it's in their ear, they press the button, ( ) something important
Interviewer:	Right
Maya:	And I've noticed that
Interviewer:	In Shippensburg
Maya:	In Shippensburg and 'cause I live around the Baltimore area
Interviewer:	Ok
Maya:	So just like walking around
Interviewer:	Ok
Maya:	Other than that, not really

As I mentioned earlier, pagers, cell phones, and blackberries have become status symbols associated with celebrities, especially rap stars (Kabiling 2001). Recent African-American "hip-hop" culture since the late 1990s to mid-2000s has been associated with term "bling-bling." According to Wikipedia ("Bling" entry in web dictionary Wikipedia), "bling-bling" "is a hip hop slang term which refers to expensive jewelry and other accoutrements, and also to an entire lifestyle built around excess spending and ostentation" (Wikipedia website 2006). Among the followers of popular youth sub-cultures and the "hip-hop" generation, there may be a particular importance in what is being "displayed" through their attire. Since cell phones are carried on the body, many times as part of the fashion, they can be considered an embodiment object as well as an embodiment tool. In addition to their function and decoration, the gadget itself is perceived to signify "who" you are.

Furthermore, generally speaking, I did sense that ethnic / racial groups such as "Asian" students (both American and international) expressed interest in accessorizing cell phones. In the interviews "Asian," especially the East Asian students showed or described to me how they

accessorized their cell-phones with particular graphics on the screen, used cell-phone "pouches" to carry around their cell phones and placed straps on cell phones. Victoria, an International student from East Asia, was eager to show me her newly acquired cell phone:

Victoria, 25, graduate, Penn State, international	
Victoria:	But American, it's not, you cannot find it so cute
Interviewer:	No, it's like a little
Victoria:	It's just a black one
Interviewer:	You put it on the pocket or something
Victoria:	Yeah, it's ugly
Interviewer:	Yeah, too ugly [laugh], uh, it's so small [commenting on her phone] wow
Victoria:	And it's a colorful display
Interviewer:	Oh it's a color display

These boundaries around subcultures and popular cultures of cell-phone consumption need further explorations using first-hand data. Especially interesting would be research on more "diverse" campuses as well as considerations of theories on how cell phones are related to embodiment practices (e.g., Oksman and Rautiainen 2003).

There were other differences pointed out by interviewees in relation to American cell-phone consumption. Often the words such as "primitive" and "backward" were used to describe the cell-phone technology available in the United Sates as well as how students were utilizing them. Such descriptions came from both International and American students. Some students who had studied or traveled abroad mentioned that in their opinion that cell phones were more advanced and popular in other parts of the world. Especially, "East Asian" and "European" countries, cell phone technology were viewed as "advanced" and "developed." Matthew pointed out the gap between the image and the nature of cell-phone technology found in the United States:

Matthew, 22, graduate, Penn State, International	
Matthew:	Phones are actually quite primitive here, well I think you know, compare [pause] compared to Japan even more ( ) [Edit]
Interviewer:	Why do you think that cell phones are like, a little bit lag behind here, do you, do you observe any
Matthew:	Oh, for here you mean like why there's little cell phones, I think the costs are higher and the networks are not that great either
Interviewer:	Right
Matthew:	Because they use the different, uh, what is it, ( )
Interviewer:	They're still like
Matthew:	There's a kind of an old different system from the rest of the world actually
Interviewer:	That's right
Matthew:	It's very surprising for me because America claims to be like this you know,

	technological, you know, country but for cell phones, that doesn't hold otherwise, it's very primitive and
Interviewer:	Right, do you think Internet connections and since you're in the university, or the hub of the
Matthew:	Yeah, that's much better
Interviewer:	Much
Matthew:	Yeah, I mean that's good in Europe too but that's compared to cell, like they're, they're just, they're modern with their Internet but with the cell phones, they're really kind of ( ) so yeah

In this sense, the fact that students had the perception that American cell-phone technology was "lagging" compared to European and Asian countries had relevance to their national identity. Even though there were students who were interested in participating in the popular culture of cell-phone uses, there were also many students who perceived cell phones as "just a phone." This was especially true in the case of "minimal" and "basic" users who emphasized basic functionality rather than the "accessorization" of cell phones (Table 6.12).

The use of text messaging was not prominent among my research participants, especially compared to how it is used in other national contexts, such as in Japan, Korea, and Nordic countries. Rather, many American college students use IM, creating their own blogs (personal web-logs) and post their profiles in "face-books" and at "myspace.com" for others to read. However, text-messaging systems have become more important over time, particularly in the context in "voting" processes for opinion polls and talent contests. Sheller in describing the newest technology such as watching movies and using text-messaging alerts from television channels asks "could such networked mobility enable the emergence of new spaces and times of publicity?" (Sheller 2004, 45). Therefore cell-phone uses can be of significance not merely in terms of personal communication but also as part of political participation and movements. Sheller argues that "the possibilities of 'publicity' envisioned by corporate designers and advertisers remain firmly entrenched in the cocooned spheres of mobilized privacy rather than reaching out to any wider sense of public presence or civic connection" (Sheller 2004, 45). During the 2000 presidential election, one of the issues raised by political analysts was how young voters were missed by campaigners because their cell-phone numbers—often the primary way of contact for these people —were not listed in the phone directories. Therefore, many young people who are "cutting the cord" and carefully managing the distribution of their cell-phone numbers have been "invisible" in some sense.

Daily surveillance and privacy issues

Cell-phone consumption involves concealed and visible / audible practices and this fact leads to discussions on the spatial concept of "surveillance." Like female users negotiating the gaze of others in public spaces, cell-phone consumption has multiple dimensions of active monitoring occurring in the physical space occupied by the users as well as processes of remote "surveillance" mediated by the cell phone. Students articulated different types of surveillance associated with the use of cell-phone technology.

One level is surveillance in the domestic sphere. Conventional household phones are most often shared by family members. Of course, many households have multiple cordless and wired phones allowing individuals to take phones to places where there are no other family members present. There may also be some cases in which "private" lines are assigned to bedrooms in a household. Yet, home phones are considered to be family phones and often require negotiation over the allocation of their use. Telephone communications now spills over into the public sphere since people, carrying cell phones wherever they go. Consequently, cell phones can be used for micro-coordination and / or personalization of public spaces outside of domestic space. This aspect of phones' location is important for different social relations such as those of family, friends, and gender. For teenagers in countries such as Japan, the U.S. and other Western countries, telephones in the living room often mean that people cannot engage in "private" conversations—rather, their conversation will be partially heard by other family members (Yoshimi, Wakabayashi, and Mizukoshi 1992). Furthermore, with cell phones, young people do not have to stay home to wait for a call and can be contacted even when others don't know their whereabouts. By owning a private phone designated for their personal use rather than using a standard phone system connected to the household, young people can keep the "private" aspects of their lives away from their parents and housemates. Maya highlighted the domestic arrangements of using wired phones:

Maya, 19, sophomore, Shippensburg	
Maya:	Yeah so they people don't call my house at Ship, when I'm home [where my parents live], people don't call my house, they call my cell phone
Interviewer:	Cell phone
Maya:	Because first of all they feel weird like if it's like 10 o'clock at night and they want to get a hold of me
Interviewer:	Right yes
Maya:	They don't have to worry about waking my parents up
Interviewer:	Right
Maya:	And like on my phone
Interviewer:	Mm-hmm

Maya:	I have two way, like this button over here
Interviewer:	Oh yeah, yeah
Maya:	So I can just you know all of my friends have Nextel so I just beep'em and it's like a walkie talkie, so it's even easier so
Interviewer:	So do you guys talk after like 10, 11, 12, when you're sleeping
Maya:	Oh yeah, like my boyfriend's at college 450 miles away from here
Interviewer:	Ok
Maya:	So every night we use our cell phones because we don't like to use long distance on our phone, our regular phone, so we're on the phone at least 2 hours on our cell phones so, um, that saves my parents from paying
Interviewer:	Yeah, sure, sure
Maya:	( )
Interviewer:	So you live with your parents right now
Maya:	No, well, at home, when I go home I do but when I'm here I live in my apartment with a roommate so

Young people are often restricted by parents on the number of calls allowed per day or the amount of time that can be spent on the phone (Wynn and Katz 2000). When young people's cell phones are provided by parents, a similar dynamic is carried out even outside domestic settings (Ling and Yittri 2002). Cell-phone bills reveal the users' cell-phone activity including which numbers were called and how long they talked. Cell phones are often considered a parenting tool while simultaneously being an enhancement of mobility for young people. For example, a local newspaper article in State College on Nov. 18, 2001 was titled "Cell Phone Popular Gifts for Mobile Teens" and states that mobile phones "give parents control and their children freedom" (Moylan 2001). The "anti-drug" campaign advertisements that aired on television in 2002 portrays a boy dressed in a "punk" style leaving a phone number for his mother before leaving the house and a girl, also in "punk" fashion attire, calling on cell phone home while she is in a restroom of a dancing club and asking her parent if she can stay out until eleven o'clock at night. These advertisements end with the slogan "let kids be who they are but let you know what they are doing." There have been critiques that this type of tele-parenting as giving a "false sense of security" and as an "electronic leash" that prohibits young people to be independent and does not let them learn the means to protect themselves (Akst 2000).

Cell phones, as well as pagers, are seen to be good parenting tools since they give parents the means to know where their children are at all times. Tammy and Amber commented on the different views the parents and teenagers have on owning a cell phone:

Tammy, 19, sophomore, Penn State	
Tammy:	I think once they start driving and you, lose that relationships with your parents almost that they aren't taking you places so they aren't physically seeing you dropped off somewhere

Interviewer:	Right
Tammy:	I think I know when I have kids, it might be nice to be able to call my sixteen-year-old when he or she is out driving, just to know where you are, just check out, when we, what you're plans you know, discuss the date, a time when you're gonna be home
Interviewer:	Ok
Tammy:	I think it'd be more comforting but if you're
Interviewer:	From the parents perspective
Tammy:	Mm-hmm
Interviewer:	But how about teenagers' perspective as well
Tammy:	I think the teenager would enjoy having the phone for the sole fact they have a phone
Interviewer:	[Laugh] not necessarily to call the parents or something
Tammy:	Yeah, and they'd be able to get in constant contact with their friends, I think the parent thing might be seen as a little annoying to them

Amber, 19, sophomore, Shippensburg	
Amber:	It was it was, when we bought it was I was you know, not quite seventeen, so it was a while a go and it was mostly just because I got my driver's license and you know if I, that way like if I'm out with my friends they can call home and be like, I'm gonna be late
Interviewer:	Right
Amber:	Or something like that
Interviewer:	( ) home ok
Amber:	That way my mother always knows where I am and what's going on
Interviewer:	Ok, um, some, was that something of a burden or something that was good that you can do that
Amber:	For my mom it was good
Interviewer:	[Laughs]
Amber:	But sometimes, she like, I don't know, (if I felt) I didn't always want to tell her exactly what I was doing and I didn't want her to be able to call me and say "come home now!"
Interviewer:	Right, right
Amber:	You know
Interviewer:	Did that happen?
Amber:	A couple of times
Interviewer:	Couple of times [laughs] ( ) usually then go home
Amber:	It's like "you're out late," I'm like "yeah" [chuckles]
Interviewer:	[Laughs]
Amber:	"Yeah, what's your point"
Interviewer:	But without the cell phone, would you, I guess you weren't that old enough to go out and about, did you use your pay phone or did you just use somebody's phones
Amber:	Yeah, I, I would usually use the pay phone, like if I need to get picked up from high school or something, my mom, my mom won't have to pick me up, I'd call her on the pay phone
Interviewer:	So, cell phone's probably really made it easier
Amber:	Yeah

The above statements suggest that even though teenagers can have more independence because of cell phones, they often negotiate surveillance by their parents.

The monitoring activities facilitated by cell phones were also taken as negative experience for some students. The few students who did not have cell phones stated that one of the reasons they did not have one was because they did not want to be reached at all times. Rather, they claimed that "they can be found somehow if there is an emergency." In addition to monitoring as a negative aspect of cell-phone ownership, students also observed how their friends, significant others, and family members were "paged" by their work "all the time." The experience of being electronically-leashed to the workplace due to pagers and cell phones has been theorized by Takahiro (1997) in a Japanese context as one of the earlier social experiences. Unlike the restricted experience felt by businessmen, he argues that pagers became a media that emancipated youth in the mid-1990s because they could avoid parental surveillance. Furthermore, their pager communications with their friends did not have the hierarchical relationship like workers and their boss. As I explored in the previous chapter, students generally felt that they could personally manage their availability—i.e., they did not feel that they always had to be available to others—by using caller id and voice mail. However, for the students who did not own cell phones or use them often, they had cut off the means to be constantly available. One male Penn State student stated that he would like to be able to "hide" if he feels like it. Therefore, some students are uncomfortable with how cell phones can make them "visible" and available to others.

Returning to the discussion on the "effect-event" of cell phones—the secret theatre of place, it can be argued that the immediate surroundings of cell-phone use are where another level of surveillance experiences are taking place. Green emphasizes that "monitoring other teenagers' possession of mobile phones, the brand of phone and service, and the phone's aesthetics and functionality-in-use (such as the names contained in phone book / contact lists), are important ways that teenagers negotiate their status positions-where their peers are, what they are doing, and most importantly, who they are with" (Green 2002, 40). The "look" of their peers, however, could be also an uncomfortable experience for some. For instance, Kerry and Eric were self-conscious about the "look" of others when using cell phones:

Kerry, 21, senior, Shippensburg	
Kerry:	And it's sort of like, this is shallow but I'll tell you the truth, like I think people look a little, it's like stupid walking around, talking on their cell phone, seem to like, when I, um, when I like have to call someone, I try to make it really short, 'cause I don't like walking and talking on the cell phone
Interviewer:	[Laughs]
Kerry:	I don't know, like I'm, I think I'm little different from most people's attitudes

	towards the phone
Interviewer:	So your conscious about how you might
Kerry:	I know, I know that's terrible saying that isn't it
Interviewer:	No, that's fine, I feel the same way so [chuckles]
Kerry:	But you want it truthfully, 'cause I know you want for the interview to be truth, that's how I
Interviewer:	Yeah it's [your identity is] confidential so
Kerry:	I've, I've said it before to like other people that you know, I won't feel embarrassed when I'm saying that I think you know my shallowness, I feel stupid walking around with it
Interviewer:	Right, do you pick a place to talk then make a call and you said it's short and you know to the point but do you pick a place to, call anywhere
Kerry:	Like spatially, like on campus
Interviewer:	Yeah spatially
Kerry:	Not really, like usually when I'm walking, like I won't, not go into class, like if I have to make a call, like I try to do it when I'm walking, I mean I guess, I won't like change my schedule so I can call somebody
Interviewer:	Right ok, so you just pick it up, but then you're cautious you're not talking a long time while you're walking
Kerry:	Just, yeah, plus I don't have a good plan, that might be part of it also but also, I just, I don't like, I feel stupid walking around and talking all the time

Eric, 23, junior, Penn State	
Eric:	Yeah, even on the bus, I don't like talking on the bus, just, I don't know what it is but it is just something with me is everyone around, it just, I guess it seems like everyone is listening to what you are saying, so, if someone calls me, I'll just quick say "I will call you back" I wait until I get off the bus, and there is no reason, I don't feel like it's out of place to talk on the bus I just personally, don't like it

In addition to the "look" of others, cell-phone conversations in public spaces also mean that their conversation often is half-audible. The content of the conversations has consequences because it leads to a revealing of "who they are" and things that would normally be kept "secret." Charles Bartlett writing for *The Daily Collegian* (Penn State U.) described in the article "Cell Phones Leave Nothing to Imagination" what his "ears have picked up" as he "traversed the landscape of the institute of higher education during the first half of 2002 Spring semester:

> "He got a shot in his groin but the procedure went wrong." That's what someone said aloud in a crowd or people one day outside the Boucke Building. [Edit] "I heard they do really thorough background checks, so my DUI will definitely show up." Some guy said this on the pathway in between Willard and Sackett [building]. [Edit] "What's wrong with me?.. What's wrong with you, (expletive, expletive)?" OK, this one really baffled me. A girl actually had a fight with her mother in the middle of Irving's [coffee and bagel shop] on College Avenue.

After reacting to each incident of eavesdropping, he concluded that "we all need to realize that we still have phones in our houses, which are much more conductive for our more 'private matters'" (Bartlett 2002). Before the popularization of cell phones, one could use a wired phone at home or in designated areas such as phone booths. In fact, what confuses people is the fact that uses of cell phones are not spatially fixed. Geoff Cooper, observing in the British context, states that "the co-existence of, and potential friction between public and private are now material and observable phenomena" since "no longer is the private conceivable as what goes on, discreetly, in the life of the individual away from the public domain" and because "although it is still the case that the co-present tend not to speak to each other, they can now have conversations with remote others which are (half) audible to all" (Cooper 2002, 22).

Jukka-pekka Puro's examination in Finland pointed out that "talking on the mobile phone in the presence of others lends itself to a certain social absence where there is little room for other social contacts. The speaker may be physically present, but his or her mental orientation is towards someone who is unseen" (Puro 2002, 23). This privatization of public space is often problematized in the media as "rude" and as a "lack of respect to people in the immediate surroundings." Gergen calls this "the challenge of absent presence," which results from people engaging with not only cell phones but also other media, such as reading a book (Gergen 2002). Hannah observed certain behaviors associated with cell-phone users:

Hannah, 19, freshmen, Penn State	
Hannah:	I used to work in [a store in] downtown, and people would come in the register talking on their cell phones and that always made me very mad, that's was one of the really annoying things that the customers would do, because you sit there and try to tell them your total or ask them if they want a bag, they're like, ask them and they are just like , they ignore you and you can't talk to them at all, so that was really annoying
Interviewer:	Rude, yeah wow
Hannah:	I feel like cell phones in general, make people more rude and like if somebody is talking on the cell phone, they are not paying attention, you bumped into a lot, or they will talk really loudly in the library or um the bus, like you can always, always overhear somebody's cell phone conversation, and I just feel like it makes people a lot less sensitive to people around them

The resulting actions due to partial presence (not paying attention to the surroundings, talking loudly) can be considered *transgressions* in normalized spatial experiences that result in various reactions to them (Cresswell 1996). In addition, cell-phone use can destabilize mundane interactions among students. Hannah points out that a in which she felt neglected as her friend was "half absent" due to her cell-phone use:

Hannah, 19, freshman, Penn State	
Hannah:	I also think that the cell phones and like if you're with someone it's kind of rude to be on your cell phone, like if you are having lunch with a friend or something and your friend just takes out her cell phones and starts talking, like I would definitely be offended by that 'cause you rather talk to the person on the phone than talk to me, I have friends that have done that before, and I understand it if it's like 2 second phone call, like well I'm here you can come meet us or something but um, when people have a long conversation on their phone while you are there, that's rude

Similarly, one of the reasons why Samuel did not like cell phones was because of the following:

Samuel, 22, senior, Penn State	
Samuel:	I also don't like'em because uh, like I really dislike when I'm having conversation with somebody and then, it automatically stops because their cell phone rings, I think that's real rude and uh, also, I don't, really think that it's ah, in the best interest of people's health to always have something like that, like right next to the body or next to the head [Edit] Ah, it's not, I don't consider it like (…) I don't know I guess it's just like a personal thing that I kind of thing that's insulting that if I'm in the middle of talking to someone, see it's not really, if I'm, say I'm just at somebody's place and that happens, if there was a regular phone
Interviewer:	Yeah
Samuel:	And I'm accustomed at it anyway, I know they will answer the phone, but it's just like when you're, uh, walking to class, or if you see somebody, and like otherwise you would, like it's, like have a conversation with them but they might be on their cell phone and it's like, "hey, how you're doing" and they keep on going, you know what I mean like things like that

The above comments highlights the fact that the priorities of users become highly "apparent" to present others who are co-located.

Partial absence has also become a part of the social debate in terms of whether cell phone use should be allowed while one is driving. For instance, Todd Rosenbaum of *Cavalier Daily* (U. of Virginia) stated that "whether they're sitting in traffic, backing out of parking spaces or merging onto the interstate, it is never difficult to spot drivers talking on their cell phones" (Rosenbaum 2004). My interviewees such as Mandy and Kaylee observed certain driving behaviors associated with users of cell phones including themselves:

Mandy, 18, freshmen, Shippensburg	
Mandy:	So I see a lot of people on their phones in the cars and I notice that they're driving
Interviewer:	Mm-hmm
Mandy:	Behavior really stinks whenever they're talking on the phone
Interviewer:	Yeah
Mandy:	Like people will

Interviewer:	I-81 [Interstate-81], you see people?
Mandy:	On 81, yeah
Interviewer:	Oh, wow ok
Mandy:	Like they're talking on their cell phones and you're trying to merge, onto the, onto the highway and they're in their conversation, they don't
Interviewer:	Oh god
Mandy:	They don't let you know, you know
Interviewer:	They just, don't notice you
Mandy:	It's kinda scary

Kaylee, 21, senior, Shippensburg	
Kaylee:	I don't know, I do worry when I watch other people driving talking on the phone but I do the same thing [starts laughing]
Interviewer:	[Laughs] ok
Kaylee:	That concerns me 'cause people all be like, only half merging, because they're still talking on the phone
Interviewer:	Oh right
Kaylee:	But I did notice, I don't know if this is important at all, but I have noticed I go slower when I'm on the phone
Interviewer:	Oh really? Oh, oh, but you still want that kind of
Kaylee:	But I, like I, I just notice like I'll be driving fast and then I would get on the phone and I'll drive 10 miles slower
Interviewer:	Are you always speeding?
Kaylee:	No [laughs] no
Interviewer:	Lot more slower
Kaylee:	Yeah, I think it's 'cause I'm trying to like concentrate better and I can't ( )
Interviewer:	But you just want to be on the phone just for that
Kaylee:	Like I don't purposely try and drive slower
Interviewer:	No, no
Kaylee:	I just do
Interviewer:	Yeah
Kaylee:	Like
Interviewer:	That's interesting because you're aware of that
Kaylee:	Yeah, I always think it's kinda weird that I, just using the phone makes

Such daily monitoring of cell-phone usages in the car are part of social experiences and contribute to the construction of a social problem. "Erratic" driving maneuvers are problematized in the United States as well as in other countries. According to the Cellular-news (Cellular-news website 2006), around fifty countries have banned cell-phone use while driving unless hands-free kits are used. In the United States, the issue has been widely contested and bills are being debated by the Federal government. On a state level (including the District of Columbia), there have been only four states (Connecticut, the District of Columbia, New Jersey and New York) that have the ban. There are fourteen states have partial-bans (such as restrictions on minors and bus drivers), five states are currently debating the issue in 2006, and twenty eight states have no legislation, or,

a bill was proposed but failed. In addition, there have been attempts to regulate cell-phone use in the car at the municipal level (e.g., Brooklyn, Ohio and Lebanon, PA) (Staff-Editorial-Daily-Collegian 2000; Staff-Editorial-lndiana-Daily-Student 2000; Staff-Editorial-The-Daily-Free-Press 2000).

Finally, cell-phone technology is associated with electronic surveillance by "big brother" and "corporate eyes" over normal citizens. David Lyon argues in his study of electronically mediated modern surveillance that today's privacy "is tightly tied to avoiding surveillance. As surveillance intensifies in all spheres of social life, so more and more appeal is made to privacy as a spheres of social life, so more and more appeal is made to privacy as a reason for withholding personal information, or trying to control its unrestricted circulation," "especially that relating to new technology, is on the rise" (Lyon 1994, 180). According to Lyon, the public interest over privacy concern in the United States was given in successive wave in the recent decades. He states that

> [a]fter the Watergate affair subsided in the mid-1970s, so did expressions of concern about privacy. But from the mid-1980s indicators started to quiver and climb again, this time more in relation to the diffusion of computer technologies and a growing realization of their potential. By the early 1990s, when particular technologies—such as caller ID—and processes—direct mail—were singled out for attention, interest in privacy protection was again high" (Lyon 1994, 181).

At Penn State, the privacy issue has been epitomized in the placement of surveillance cameras in off-campus student residential areas to prevent riots and crimes such as sexual assaults. As the headlines from *The Daily Collegian* such as "Cameras on Balconies Would Eliminate Rights" (Staff-Editorial-Daily-Collegian 2001), "Penn State U. Cameras Approved Despite Opposition" (Brooks 2002), "Penn State Campus Groups Protest Cameras" (Walbert and Dobo 2002), "Penn State Rally Protests Surveillance Cameras" (Freyvogel 2003), and "Police Use of Surveillance Cameras Divides Penn State Students" (Boettinger 1977) suggest, electronic surveillance is a highly contested issue since many students and organizations such as "The Pennsylvania State University American Civil Liberties Union and Penn State Young Americans for Freedom" (Walbert and Dobo 2002) feel "their privacy rights are being infringed upon" (Boettinger 1977).

Cell-phone technology is considered as part of the range of domestic and information and communication technologies that can be used for governmental monitoring of citizens as well as for businesses monitoring of consumer behavior. The following statement was one of the written questionnaire responses:

- I use them [wired phones] more often because I feel cell phones to negatively impact my quality of life & allow others to invade my privacy

The association of cell phones with privacy issues has multiple dimensions. For example, writing in reaction to the cell-phone industry's consideration of listing cell-phone numbers to "its existing directory assistance feature", Gaskamp argued:

> Then there is the issue of the invasion of privacy. Telemarketers calling you on a line reserved for your personal use is like opening the stall door while you're using the restroom. The bathroom may be public, but that space at that moment isn't. And the most important issue is money who's going to pay for the wasted minutes you spend talking to telemarketers? I know Cingular or Verizon will not be happy to reimburse you for those minutes (Gaskamp 2003).

His comments involve the view that cell phones are perceived as personal domain. Furthermore, cell-phone bills reveal users' cell-phone activity, including which numbers they called and how long they talked. In relation to 2001 September 11th terrorist attacks, Gina made the following comments:

Gina, 20, junior, Penn State	
Gina:	No I think like only thing that might be complicated by the whole terrorism thing, security people like the government want to have more and more contact with what's you are doing ( ) what you send in your E-mails, IMs and what's your saying in the cell phones, so people might become more resistant to talk on the cell phones because they might be invaded your privacy might be invaded that way
Interviewer:	You mean like surveillance kind of thing
Gina:	Yeah, surveillance like you know how people tap phones, they can tap cell phones, I think that's the only way you know like people might have problem with like ( ) terrorism and the war, other than that [Edit] Because even I get my bill, it says exactly like the time, I understand they needed this for their purposes, the time, who I called, when the call ended, dates, duration of the call, call waiting, ( ) every single aspects minus the conversation is recorded, and of course if you have any problems you call someone to deal with the problems then your call is recorded for quality assurance or whatever else you know and then you're talking to someone there, so I think we definitely having much more surveillance, and if you (..) actually I ( ) someone but you don't have direct like recording or surveillance unless someone is doing it from outside, you know someone can tap E-mails ( )

From depictions in the movie "Enemy of the State" (1998) to debates on the Patriot Act, student newspaper commentaries and movie reviews have been problematizing the electronic surveillance enabled by various technologies (e.g., Mitenbuler 1998; White 1998; Janik 2001; Blanford 2003; Farber 2003; Leingang 2003; Wernecke 2003, Hansel 2004; Platfoot 2004; Staff-Editorial-The-Oracle 2004). However, such surveillance can be part of securing "protection." One female student described how her friend was in a fight with another female student on campus but she was able to call 911 where the police was able to eavesdrop on the situation:

Jane, exact age and status unknown, Penn State	
Jane:	Yeah, when you first call and like 911, "may I help you," they were doing the whole thing because they can hear the scuffling and the fighting whatever so they recorded the whole thing and they can tell by the voices, who started [the fight] and who didn't and when she said "oh no she started it" they're [the police] like "we have it you started it" so

Uses of cell-phone technology, therefore, involve negotiations of multiple layers of "surveillance" from family members, peers, co-present others in public spaces, government, corporate companies, and law-enforcement authorities.

Assessments of cell-phone consumption

Perceptions and problematizations

Monitoring practices—whether they are welcomed or resisted—result in a variety of assessments of the cell-phone phenomena. Part of the social-construction of technology is the process of "claim" making on what are appropriate cell-phone usages and their social "consequences." The cell-phone phenomenon has been associated with a range of public experiences and perceptions. There are always "debunkers" and "praisers" of technologies and various views towards technology are part of its social construction. Some of the benefits of having cell phones are associated with both security issues and convenience. Moreover, micro-coordination has been discussed in relation to "economic" productivity and efficiency (Janelle 2004). For example, there have been studies measuring whether there have been changes in journey distance (Ling and Haddon 2003) because of cell-phone uses and whether information communication technologies replace and / or facilitate needs of travel (Urry 2002). Such "consequences" are interesting to examine as part of technologically-mediated-spatial experiences, but such analyses are beyond my scope. Instead, I focus here on the "subjective" dimension of the phenomena by exploring the perceptions and opinions towards cell-phone consumption by young people.

In exploring the various perceptions attached to cell-phone usages, I asked the questionnaire respondents to indicate their perceptions from a list including—*annoying*, *convenient*, *fashionable*, *fun*, *necessary*, *noisy*, *professional*, and *unsafe* (Appendix A, Q # 25). I identified and selected these attributes as common key words used to describe cell-phone use in everyday contexts during my preliminary exploration of newspaper articles. Figure 7.1 shows the percentage of the respondents that indicated that they held each perception. Among these

perceptions, 93.2% indicated that cell phones are *convenient* and 50.9% of the student indicated that cell-phones are *necessary*. Thus, half of the respondents still did not perceive cell phones as "necessity" as much as convenience. Other perceptions were somewhat minor compared to *convenient* and *necessary*. About one-third of the students considered cell phones *annoying* (34.6%), *fun* (30.8%), and *professional* (27.1%). Less than twenty percent of respondents indicated that cell phones were *noisy* (18.8%), *fashionable* (14.9%) and *unsafe* (10.1%).

In addition, I conducted series of crosstab / chi square analyses using the number of students who selected each category of perceptions and various sub-groups. There were no statistically significant difference between each perception and residency. In addition to gender (Table 7.1) and race / ethnicity (Table 7.2), there were some variations according to age group (Table 7.10), place (Table 7.11), and cell-phone ownership (Table 7.12). The 18-19 age group tended to emphasize f*un* compared to the age group of 22-25. Interestingly there was a higher count of students (48) in the 20-21 age group that choose *unsafe* than expected (37.6). Penn State students tended to emphasize *annoying* and *noisy* more than Shippensburg students. On the other hand Shippensburg students tended to emphasize *fun* and *professional* more than Penn State students. Not surprisingly, non-cell-phone owners emphasized negative perceptions such as *annoying* ($p < 0.001$) and *noisy* ($p < 0.001$). In contrast, cell-phone owners emphasized *convenient* ($p < 0.001$), *fun* ($p < 0.001$), and *necessary* ($p < 0.001$) perhaps due to their experience of using cell phones.

Figure 7.1: Perceptions towards cell-phones

Source: based on questionnaire data (N = 754)

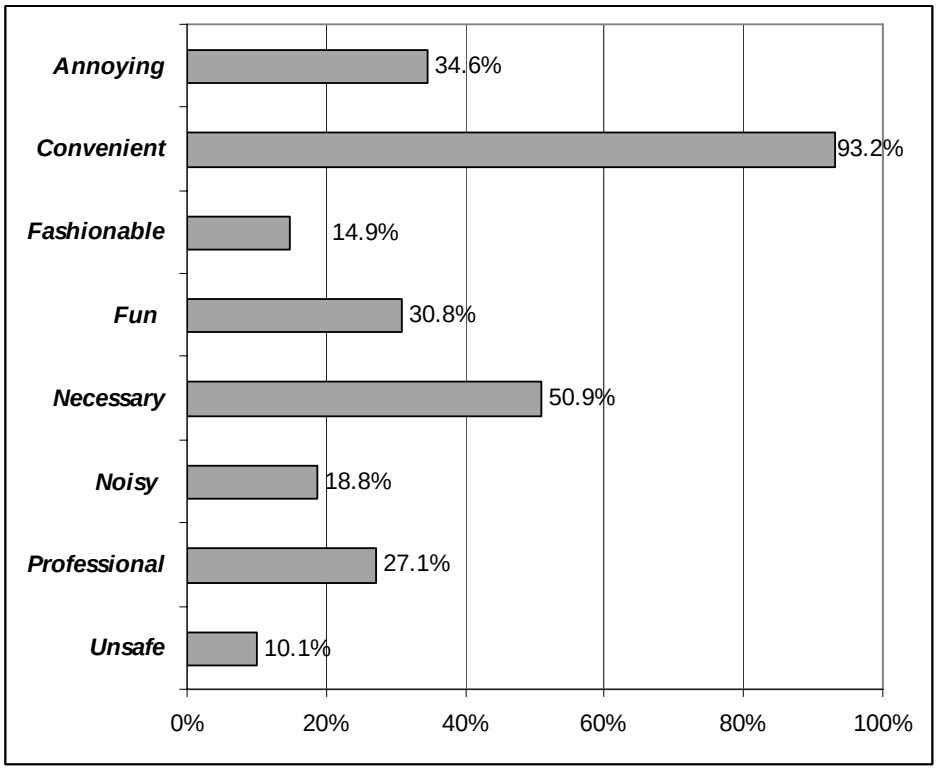


Table 7.10: Crosstabulation students with perceptions according to age group Source: based on questionnaire data				
N = 754		**18-19**	**20-21**	**22-25**
Annoying *Chi-square Sig. (p = .167)*	*Count* *(Expected)* *% within age group*	69 (80.3) 29.7%	136 (129.1) 36.5%	56 (51.6) 37.6%
Convenient *Chi-square Sig. (p = .698)*	*Count* *(Expected)* *% within age group*	219 (216.3) 94.4 %	346 (347.8) 92.8 %	138 (138.9) 92.6%
Fashionable *Chi-square Sig. (p = .265)*	*Count* *(Expected)* *% within age group*	41 (34.5) 17.7%	48 (55.4) 12.9%	23 (22.1) 15.4%
Fun ***Chi-square Sig. (p = .006)***	***Count*** ***(Expected)*** ***% within age group***	**84** **(71.4)** **36.2%**	**117** **(114.8)** **31.4 %**	**31** **(45.8)** **20.8 %**
Necessary *Chi-square Sig. (p = .559)*	*Count* *(Expected count)* *% within age group*	120 (118.2) 51.7%	194 (190.0) 52.0%	70 (75.9) 47.0%
Noisy *Chi-square Sig. (p = .509)*	*Count* *(Expected)* *% within age group*	38 (43.7) 16.4%	75 (70.2) 20.1%	29 (28.1) 19.5%
Professional *Chi-square Sig. (p = .884)*	*Count* *(Expected)* *% within age group*	64 (62.8) 27.6%	98 (100.9) 26.3%	42 (40.3) 28.2%
Unsafe *Chi-square Sig. (p = .039)*	***Count*** ***(Expected)*** ***% within age group***	**16** **(23.4)** **6.9%**	**48** **(37.6)** **12.9%**	**12** **(15.0)** **8.1%**

Table 7.11: Crosstabulation students with perceptions according to place Source: based on questionnaire data			
N = 754		**Penn State**	**Shippensburg**
Annoying ***Chi-square Sig. (p < .001)***	***Count*** ***(Expected)*** ***% within place***	**145** **(122.2)** **41.1%**	**116** **(138.8)** **28.9%**
Convenient *Chi-square Sig. (p = .744)*	*Count* *(Expected)* *% within place*	328 (329.1) 92.9%	375 (373.9) 93.5%
Fashionable *Chi-square Sig. (p = .363)*	*Count* *(Expected)* *% within place*	48 (52.4) 13.6%	64 (59.6) 16.0%
Fun ***Chi-square Sig. (p = .005)***	***Count*** ***(Expected)*** ***% within place***	**91** **(108.6)** **25.8%**	**141** **(123.4)** **35.2%**
Necessary *Chi-square Sig. (p = .795)*	*Count* *(Expected count)* *% within place*	178 (179.8) 50.4%	206 (204.2) 51.4%
Noisy ***Chi-square Sig. (p = .032)***	***Count*** ***(Expected)*** ***% within place***	**78** **(66.5)** **22.1%**	**64** **(75.5)** **16.0%**
Professional ***Chi-square Sig. (p = .011)***	***Count*** ***(Expected)*** ***% within place***	**80** **(95.5)** **22.7%**	**124** **(108.5)** **30.9%**
Unsafe *Chi-square Sig. (p = .919)*	*Count* *(Expected)* *% within place*	36 (35.6) 10.2%	40 (40.4) 10.0%

Table 7.12: Crosstabulation students with perceptions according to cell-phone ownership Source: based on questionnaire data			
N = 754		**Owner**	**Non-owner**
Annoying ***Chi-square Sig. (p < .001)***	***Count of students*** ***(Expected)*** ***% within ownership***	**182** **(210.1)** **30.0%**	**79** **(50.9)** **53.7%**
Convenient ***Chi-square Sig. (p <.001)***	***Count of students*** ***(Expected)*** ***% within ownership***	**586** **(565.9)** **96.5%**	**117** **(137.1)** **79.6%**
Fashionable *Chi-square Sig. (p = .763)*	*Count of students* *(Expected)* *% within ownership*	89 (90.2) 14.7%	23 (21.8) 15.6%
Fun ***Chi-square Sig. (p <.001)***	***Count of students*** ***(Expected)*** ***% within ownership***	**215** **(186.8)** **35.4%**	**17** **(45.2)** **11.6%**
Necessary ***Chi-square Sig. (p < .001)***	***Count of students*** ***(Expected count)*** ***% within ownership***	**362** **(309.1)** **59.6%**	**22** **(74.9)** **15.0%**
Noisy ***Chi-square Sig. (p < .001)***	***Count of students*** ***(Expected)*** ***% within ownership***	**91** **(114.3)** **15.0%**	**51** **(27.7)** **34.7%**
Professional *Chi-square Sig. (p = .232)*	*Count of students* *(Expected)* *% within ownership*	170 (164.2) 28.0%	34 (39.8) 23.1%
Unsafe *Chi-square Sig. (p = .202)*	*Count of students* *(Expected)* *% within ownership*	57 (61.2) 9.4%	19 (14.8) 12.9%

It is interesting to note, however, that there were variations in students' perceptions even among cell-phone owners. This illustrates that there are multiple, sometimes competing, ideas toward cell-phone technology and that usage experience can be multi-dimensional. Groups of students were created based upon the perceptions they indicated using hierarchical cluster analysis (employing the Wards method as the clustering technique). The cluster analysis indicated three groupings among cell-phone owners (see actual dendrogram in the Appendix F). Table 7.13 shows the number of students in each group held the perceptions described above as well as other characteristics (note that only the statistically significant results are shown.) There were no statistically significant differences between the three groups and student composition according to gender ($p = 0.391$), age group ($p = 0.143$), length of ownership ($p = 0.912$), and residency ($p = 0.349$). On the other hand, there was a statistically significant difference between students who were white and non-white ($p = .007$). This corresponds with the earlier discussions that suggested the general tendency of non-white students to be "enthusiastic" and "all-embracing" users. Furthermore, there were differences between three groups in terms of talk time ($p = 0.002$), average number of calls made ($p = 0.019$) and received ($p = 0.019$), and, cell-phone bill ($p = 0.004$).

Group 1 was "practical users," who tended to overwhelmingly emphasize the *convenience* of cell phones. There were less than three people who selected "judgmental" perceptions such as *annoying, fashionable, noisy, professional,* and *unsafe* in this group. Group 1 had fewer students (42) who did *not use cell phones everyday* than expected (47). This indicated that "practical users" of cell-phones use them daily but primarily as "just a phone" and do not see the additional symbolic or entertainment value of the device. Group 2 was "disapproving users" who emphasized the negative aspects of cell phones including *annoying*, *noisy,* and *unsafe.* There were more students who did *not use cell phones everyday* than expected (54) and that used them *less than an hour per day* (91) than expected (89.5). The average number of calls made and received per day as well as their cell-phone bill was significantly less than the Group 3. "Disapproving users," therefore, did not use cell phones daily and heavily. In comparison, Group 3 consisted of "enthusiastic users" who emphasized positive perceptions such as *convenient, fashionable, fun, necessary,* and *professional.* This group consisted of students who were heavy users as reflected in the fact that Group 3 made and received the most calls per day as well as had the highest cell-phone bills. Expectedly from the earlier discussion, there were more students (32) than expected (21.0) in this group who were non-white (minority).

Table 7.13: Cluster groups according to perceptions—cell-phone owners only

Source: based on questionnaire data

			Group 1 Practical users (N = 252)	Group 2 Disapproving Users (N = 205)	Group 3 Enthusiastic Users (N = 150)
Annoying *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		3 (75.6) 1.2%	169 (61.5) 82.4%	10 (45.0) 6.7%
Convenient *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		252 (243.3) 100%	187 (197.9) 91.2%	147 (144.8) 98%
Fashionable *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		0 (36.9) 0%	17 (30.1) 8.3%	72 (22.0) 48.0%
Fun *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		64 (89.3) 25.4%	58 (72.6) 28.3%	93 (53.1) 62.0%
Necessary *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		140 (150.3) 55.6%	106 (122.3) 51.7%	116 (89.5) 77.3%
Noisy *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		0 (37.8) 0%	86 (30.7) 42.0%	5 (22.5) 3.3%
Professional *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		3 (70.6) 1.2%	40 (57.4) 19.5%	127 (42.0) 84.7%
Unsafe *Chi-square Sig. (p < .001)*	*Count* *(Expected)* *% within group*		1 (23.7) 0.4%	54 (19.3) 26.3%	2 (14.1) 1.3%
Race / ethnicity *Chi-square Sig. (p = .007)*	*Count* *(Expected)* *% within minority*		33 (35.3) 38.8%	20 (28.7) 23.5%	32 (21.0) 37.6%
Talk time *Chi-square Sig. (p = .002)*	*Don't use it everyday*	*Count (Expected)*	42 (47.0)	54 (38.6)	18 (28.4)
	< 1 hr per day	*Count (Expected)*	112 (108.9)	91 (89.5)	61 (65.7)
	> 1 hr per day	*Count (Expected)*	93 (91.1)	58 (74.9)	70 (55.0)
Average # of calls made Per day *One-way Anova Sig. (p = .019)*			4.22 calls	3.68 calls (Statistically significant from Group 3)	4.87 calls (Statistically significant from Group 2)
Average # of calls received Per day *One-way Anova Sig. (p = 0.19)*			4.03 calls	3.54 calls (Statistically significant from Group 3)	4.76 calls (Statistically significant from Group 2)
Cell-phone bill *One-way Anova Sig.(p = .004)*			$40.49 (Statistically Significant from Group 3)	$39.54 (Statistically significant from Group 3)	$46.40 (Statistically significant from Group 1 and 2)

The series of analyses on perceptions above illustrates the multiplicity of views held by students. Some of the perceptions were more prevalent among the sub-groups based on gender, race / ethnicity, age group, place, and cell-phone ownership. Generally speaking, the heavier their cell-phone usages, the more students tended to identify the positive aspects of cell phones. In the light of the above findings on perceptional differences, I further explore the various assessments of cell phones in relation to the major problematizations of their daily uses by young people. These include social debates on:

- defining legitimate cell-phone users;
- what constitute cell-phone etiquette;
- the appropriateness of cell-phone use in classrooms, libraries and other public spaces;
- whether to publicly ban or restrict cell-phone use while driving.

There were three key ideas among the various "claims" on assessments towards cell-phone usage by young people identified in the interview transcripts and newspaper articles. They were "claims" about *necessity*, *competency*, and *personal freedom*. These three axes of claims involve the assessments derived from students' daily observations. They also intersected with views on surveillance issues and their social identities. In the final section, I discuss each of the three claims in relation to the problematizations of cell-phone use by young people.

Necessity, competency, and personal freedom

Legitimate user and appropriate use

In 1998, *Harvard Crimson*'s (Harvard U.) reporter Darah Hacoby's observations included astonishment towards the "sudden" change in the Harvard's campus landscape.

> You see them as you walk through campus. Some of them are dialing as they cruise through the Yard, others briskly chatting as they linger near the steps of Sever. Are these folks so popular that being inaccessible for several hours would be fatal to their social lives? Why all of sudden is our campus studded with cell-phone owners? (Hacoby 1998)

Her questioning of the necessity of cell-phone uses by university students, especially those related to non-emergency use implies that cell-phone consumption was somewhat "out of place" because cell-phone uses were considered unusual on her campus. The following year in October, Resnick also writing for *Harvard Crimson* stated that "Harvard students are going wireless at a breakneck pace this year—making the "cell" the newest and most fashionable accessory on campus. Signs

of the trend are both audible and visible on any walk through the Yard" (Resnick 1999). Similarly, Kelley Pipitone writing for *Badger Herald* (U. of Wisconsin) claimed that "downtown Madison may look a bit like Manhattan this year, as more students are choosing to invest in cellular phones" (Pipitone 1999). As I mentioned in Chapter 5, beginning in 1999-2000, cell phones became much more visible on university campuses across the nation. Around 2000, the descriptions of cell phones in newspaper articles shifted from that of "surprise" to reporting on how cell-phone consumption had permeated into different aspects of students' lives, information on cell-phone technology and plans, and emerging social issues associated with cell-phone usage on campus and beyond.

Students' assessments toward cell-phone ownership and usages most often concerned the degree of actual and perceived *necessity* to carryout everyday activities. Hernandez of *Daily Californian* (U. California-Berkeley) states that

> [m]ost cell phone users I see everyday are snot-nose students like myself whose principal concerns through the day include the location of lunch and the assignment due tomorrow. We are not doctors (not yet), we are not business folk (heaven forbid), we are not lawyers (heaven help us). And so it seems to me that all conversation had on cells could wait, or be avoided completely (Hernandez 2000).

By listening to the content of the conversations, eavesdroppers' often make assessments of whether the cell-phone talker has a "legitimate" purpose for using the phone at that particular moment. Seth also articulated similar sentiments:

Seth, 22, junior, Penn State	
Seth:	No, not, I wouldn't say anything ( ) let's say, there's, I see a lot more girls using them in public than guys
Interviewer:	Oh yeah?
Seth:	I think, I think I mean, I'm sure just as many guys have them
Interviewer:	Ok [chuckle]
Seth:	It just seems like, whenever the one's I catch my attention, it's always ( ) talking about some, silly little thing, that doesn't need to be discussed out in the middle of the street or something like that
Interviewer:	Ok
Seth:	I gue[ss], I don't know if that's, you know, if they're all actually more they're doing that, it's just one's that stick in my
Interviewer:	Right
Seth:	In my head because it seems ( ) like you know, most of the time, I ( ) sit, you're trying to sit there [student union building] and being you know relaxed, talking quietly you know doing whatever, there's like [shouting] "oh my god, did you, did you hear this?"
Interviewer:	[Laugh]
Seth:	That that I swear at least half of them start that way, did you hear about so and so

	and so
Interviewer:	Ooohh
Seth:	This and this and this
Interviewer:	Ok
Seth:	It's like you know, you can wait 5 minutes till you walk home to do that
Interviewer:	Yeah
Seth:	You don't have to do it right now
Interviewer:	[Laugh]
Seth:	But I don't know
Interviewer:	Ok
Seth:	That's just the way it seems

Seth's assessments of girls gossiping and mundane chatting were that the conversations were not "urgent" or "necessary." Therefore, he felt it was generally not legitimate to use cell phones in the middle of the street or at the student union building. Similarly, Joseph Pete of *Indiana Daily Student* (Indiana U.) made assessments based on the identity of the callers:

> When I see a slickly dressed urban professional in Chicago or San Francisco yapping away in a sushi bar over a Heineken, I have no trouble accepting that. While he doubtlessly uses it mostly for inane chatter, at least he appears to have some legitimate reason to own one in the first place. [Edit] But nowadays I constantly pass by vacuous blond bimbos with cell phones plastered on their ears while they walk to class. My first thought on such an occasion is that she's probably not even gainfully employed. "And like, we were with Todd… And like, we got soooo trashed … So then Dan starts giving us all this crap … And I was like, 'yeah.'" Then I realize the she has no marketable job skills whatsoever—she can't even speak English. So since when did these bleached-out halter-top morons become so important that they need to be immediately reached at any time, day or night? After all, these are the geniuses that keep tanning salons open in the summer (Jackson 2001).

Both of the comments above that were from a point of view of male students describe the stereotypical female as an example of what was not considered a "legitimate" user. Their downplaying on female users was based on gender performance. As discussed earlier, male students tended to emphasize the negative perceptions of *annoying* and *noisy* (Table 7.3).

Furthermore, many of the claims on legitimate cell-phone uses intersected with ideas about age, generation, and life stage identities. As examined in chapter 6, there was no difference in consumption patterns between different age groups. However, the interviewees' assessments involved how necessary cell phones were for different age groups. For example one male interviewee did not own a cell phone at the time of interview but foresaw himself getting one if "he had kids" because he would need to get in touch with his children. Others forecasted how it would become particularly useful when they entered graduate schools and the workplace. For example, Seth stated the following:

Seth, 22, junior, Penn State	
Seth:	I guess ( ) [laugh], it's just a personal thing, I just can't stand it when always people talk on their phones
Interviewer:	But if everybody has it you might ( ) or
Seth:	Right, I mean, no, I have mine, I just, ( ) I doubt I'll keep on carrying, I'll carry it around
Interviewer:	Ok
Seth:	Unless it's, unless I need it for, if I need it for work when I graduate you know obviously ( )
Interviewer:	Mm-hmm
Seth:	I'll carry it around because they pay me to carry it around, so that's alright you know, if somebody's paying me to carry it now, I would do it too
Interviewer:	Ok
Seth:	Just, just for personal use thing I don't

In addition, a female student mentioned how her business professor mentioned the importance of having cell phones when they seek jobs. Cell-phones uses were strongly tied to the productive and reproductive spheres in students' minds, and therefore, their use was legitimized for such purposes. Older students tended to use cell phones at their work compared to students who were in their teens (Table 7.14).

Table 7.14 Crosstabulation count of cell-phone use at work according to age group

Source: based on questionnaire data

N = 628		**18-19**	**20-21**	**22-25**
Use at work	Count (Expected count) % within age group	87 (99.4) 44.2%	159 (156.5) 51.3%	71 (61.1) 58.7%
Do not use at work	Count (Expected count) % within age group	110 (97.6) 55.8%	151 (153.5) 48.7%	50 (59.9) 41.3%
Pearson Chi-square sig. (p = 0.039)				

Cell-phone use can be seen in conjunction with young people moving into different life stages. In Chapter 5, I discussed how starting to drive was strongly associated with initial cell-phone ownership for many students. But interviewees expressed how it became even more *necessary* for them to have cell phones as a university student since they need it for long-distance calling purposes. In addition, Austin described how it is important to have cell phones for social purposes:

Austin, 20, sophomore, Shippensburg	
Austin:	I'd say, I mean friends they're, friends are huge right now, you know I mean, you know we are at school getting good grades and you know being social and meeting a lot of new people

Hannah pointed out why she needs a cell phone more than younger teens:

Hannah, 19, Freshmen, Penn State	
Hannah:	Few years ago, it wasn't like that all but I know people who, one of my friend's little sister is like 13 and she has a cell phone, like she doesn't need a cell phone, like all she is going to do is call her friends that live a block away from her, but I mean everybody has one, you see little kids walking around with them all the time
Interviewer:	Right, college it's much more, you use it in other ways?
Hannah:	I use it a lot just because to get in touch with my friends and they live so close like I can just ask them to meet me, um, I can call my parents a lot, I think that I use it more a lot now in college than I did when I was in high school, because in high school you just use it to call somebody and say oh you know, "are you going out to dinner," "I will meet you here," I was, I lived with my parents, I didn't need to call them too much, my friends all went to school with me so I saw them a lot more time, so, I can used it a lot less in high school

According to Hannah, university students have more use for cell phones in order to micro-coordinate on campus, compared to high-school students, who will have less *necessity*. Similarly, several interviewees such as Faith and Shannon compared their uses as university students with younger people:

Faith, 19, sophomore, Shippensburg	
Faith:	When you're young like that like 9th grade I've seen these girls walking around this little "punk" I call them "punks" these little like punks that are walking around with the phones ( )
Interviewer:	Did you say "punk" or
Faith:	Punks
Interviewer:	Punks, ok
Faith:	Just like
Interviewer:	I thought ( ) or punks or, ok
Faith:	I don't know, that's just what we call them, this little like just like they're walking around and would be on the phone and you're just like what you're doing like that's not necessarily, I think they are trying to like socially become you know "well here I am and I'm gonna become older," I think that's more of a trend to them than it is to me, like walking in the mall, cell phone I don't ( )
Interviewer:	[Laughs]
Faith:	It's not the cool thing for me to do you know
Interviewer:	So, what so for you guys it's more of a you said a, necessity, is it a necessity then
Faith:	Cell phone?
Interviewer:	Cell phone, in your age group like your, I'm looking at young adults but

Faith:	I mean I think (...) I won't say it's a necessity except, putting a lot of pressure on it but I think I just think it's just the so common that like you kinda just have one, I mean if you don't have one, I'm sure you can make by without having one definitely but you know
Interviewer:	Ok
Faith:	But um, it just becomes more convenient, so then you feel like it's a necessity sometimes
Interviewer:	But younger, it's much more of a
Faith:	Yeah
Interviewer:	Just to have is a cool thing
Faith:	Right, because like I just feel (...) when you're I mean the high school okay, you're getting little older so you know you might wanna, your driving and my main thing is the driving but um, in like a 9th grade, all your friends are at school you see them 8 hours a day like why do you have to have like a phone to see them, like here more likely if you keep in contact with not necessarily people within Shippensburg but people like outside Shippensburg
Interviewer:	That's right
Faith:	I mean that's, that's better I think you know
Interviewer:	Ok
Faith:	I think these kids see each other and they have after school activities, they don't they don't see each other for 12 hours, and they go back to school like I really don't feel that they need to be talking but you know that's just

Shannon, 21, junior, Shippensburg	
Shannon:	[Laughs] I was always discouraged, I remember one incident, I don't know if this will help you or not, um, it was, my freshmen year in college and that's when, that for me was the moment when (all my friends are getting their) cell phones, in high school you really didn't have a need for it
Interviewer:	Right
Shannon:	Now I'm seeing now with my brother, all of his friends have cell phones, I don't think he even had a car
Interviewer:	Yeah [giggle]
Shannon:	But their parents are using it as, as a way to know where they are
Interviewer:	Oh right
Shannon:	Kind of it as like an identification device that tracks them
Interviewer:	Yeah
Shannon:	Um, I was with some friends and they pulled out their phones and called each other but they were both sitting in the rooms
Interviewer:	Really
Shannon:	Just to prove that they could call each other
Interviewer:	Wow amazing
Shannon:	That discouraged me, I'm like, you know "what are you, what are you thinking like you don't need that"
Interviewer:	Yeah right
Shannon:	That just proves that you don't need that cell phone, you're calling someone whose sitting in the same room with you

As mentioned earlier, about half of my questionnaire respondents indicated that cell phones were *necessary* (Figure 7.1). Cell phone uses for mere chatting and as a fashion statement to look "cool" and "older" were down played by Faith and Shannon compared to uses for emergencies, and professional and family settings. In fact, the emphasis on "fun" aspects of cell phones—often the case for younger teens and high school students—was often seen as "immature" by my interviewees. As seen in Table 7.1, *fun* was emphasized by 18-19 year old students compared to students who were in their early twenties.

The convenience offered by cell-phone technology has brought personal meanings that were both considered welcoming and disapproving for each student. For example, the fact that there were phone numbers stored in their phones meant that private conversations was easily initiated by scrolling down the list of names on the cell-phone screen and were sometimes just a speed-dial away. Such convenience contributed to a sense of "empowerment" for some students. Austin described his use of text messaging—especially during class—below:

Austin, 20, sophomore, Shippensburg	
Austin:	You know as far as from a business stand point, AT&T knows that if we allow people you know to have this technology to text message people, they gonna do it because they can, you know and then we're gonna make money off of that so [Edit]
	Yeah, I mean it's nice, I mean you know it feels good when you get one from somebody, you know maybe you're thinking about a girl that you know maybe you like or whatnot
Interviewer:	Mm-hmm, sure
Austin:	You know, and you just want to say hi to her see how's she's doing
Interviewer:	Ok
Austin:	Maybe you want to meet ah, you know a guy for lunch and whatnot
Interviewer:	Right, right ok
Austin:	Um, sometimes I even will have discussions with people in class
Interviewer:	Oh
Austin:	There was a guy
Interviewer:	Somebody sitting
Austin:	Yeah, yeah [laughingly]
Interviewer:	No kidding
Austin:	Well, I mean it's easy, 'cause you can, so you do it
Interviewer:	Ok, nobody notices that you guys are doing that
Austin:	No, the kids do but the teachers don't
Interviewer:	It doesn't beep or anything
Austin:	No, it's cause they have been on a silent modes, so
Interviewer:	Ok [laugh] so what do you guys say to each other, just make fun of the professor or [laughs]
Austin:	[Laughs] it could be that, um, I remember you know ah, specific example, a guy on a [same Athletic] team with me, we're in class and we got our test back
Interviewer:	Mm-hmm

Austin:	And I you know I'll say what you get on the test, you know through the phone, he wrote back, wrote back
Interviewer:	Oh ok, instead of calling [laughs]
Austin:	I mean it's, right, instead call me up, and it's, it's certainly it could've waited
Interviewer:	Yeah [laughs]
Austin:	But
Interviewer:	You're just curious
Austin:	Well that, and it's just it's not so much you want to, it's just the fact that you can, and therefore you do

The phrases such as "'cause you can, so you do it" and "it's just the fact that you can, and therefore you do" indicated a sense of "power" over using as well as "owning" the ability to initiate communication whenever he decided to do so. In addition, as Austin articulated, empowerment comes from the "affordances" of cell-phone technology, regardless of "necessity."

On the other hand, the ability to initiate phone calls and send text messages sometimes led to the situations in which "unnecessary" and "inappropriate" communications were easily initiated and received. Claire mentioned about her friend that calls her without any purpose:

Claire, 20, senior, Penn State	
Interviewer:	Ok, you said you don't contact your friends on the cell phone. Do they contact you on the cell phone?
Claire:	No, actually only one of my friends has a cell phone. Only one.
Interviewer:	Oh really?
Claire:	He uses it a lot. Um (….) like to the point where he would be watching television and he will call someone because he has nothing else to do.
Interviewer:	He has a TV on but he is just bored and
Claire:	Ah-huh, sometimes he will call me and I'll say, "you know what ( ) talking on the phone, if you want [to] talk, come over," so, ( )

Another example involved Monica receiving "trivial" text messages from her friend excessively:

Jasmine, 20, junior, Shippensburg and Monica, 20, junior, Shippensburg (Group interview)	
Monica:	Right, yeah but, but my one friend sends me text messages "I'm home from work" or ah, "I'm going to get a hair cut" says awful things and I [chuckles] just, unnecessary things
Interviewer:	Just to let you know or
Monica:	Just, I don't know, he
Interviewer:	That's interesting
Monica:	He's so, so good at sending text messages you know, you have the number, the letters on the phone, and the keys
Interviewer:	Those are
Monica:	He can, not, doesn't even have to look at it anymore
Interviewer:	[Laughs]
Monica:	He can type out sentences

Jasmine:	[Chuckles]
Monica:	I think that's a little overboard
Interviewer:	Yeah, but just to let you know that he's home and
Monica:	Just little things like that, he wants me to call him later
Jasmine:	[Chuckles] and they're not dating, and they're just friends
All:	[Laughs]
Interviewer:	Right
Jasmine:	It's
Monica:	He does it to all of his friends and we all complain about it

Sometimes, the ease of using cell phones (e.g. pressing one key for few seconds) led to situations in which calls were initiated without callers' knowledge. One of the questionnaire respondents commented on "the context in which cell phones to be least useful" (Appendix A, Q#22).

- don't know if this applies but I think all cell phones should automatically have a key pad lock system. I receive many voice mails from ppls. [people]
  phones calling me from their purse & I have to listen to the whole message before I can erase it.

In addition, Tammy mentioned how while she was "drunk," she tended to initiate communication from her cell phone and IM:

Tammy, 19, sophomore, Penn State	
Interviewer:	You did mention before about people use cell phone when they are drinking
Tammy:	Yes, yes, yes
Interviewer:	( ) I think that's really interesting
Tammy:	I've done that
Interviewer:	You've done that, it was you [who did it], ok
Tammy:	Um
Interviewer:	Without really thinking about it?
Tammy:	Yeah, you're like I wanna, look, I can talk to all these people right now, why don't I talk to them, you know like, lowers your inhibitions, like that inhibitions of calling people
Interviewer:	[Laugh] right, just call them up
Tammy:	Yeah
Interviewer:	But which you don't normally do
Tammy:	Ah-hun
Interviewer:	Ok
Tammy:	It's like I'll talk to, I'll just call people going "hey what's up" you know, but it's definitely like it lowers your cell-phone inhibition
Interviewer:	Ok, ok, how about then, how about other people, other people doing the same thing and?
Tammy:	Yes!
Interviewer:	So everybody is calling everybody else?
Tammy:	Yeah, you get a lot of that on IM as well, you'll get drunk and IM some people
Interviewer:	So you physically [you] go up to the, in front of the computer when you talk?
Tammy:	Yeah! I've done it like I tried to talk to people drunk [starts laughing]

Interviewer:	But they know that you're drunk?
Tammy:	You can tell by the typing
Interviewer:	Oh, it's not coherent?
Tammy:	Yeah, it's even just the way their typing or if you have like random letters [starts laughing]
Interviewer:	Do you respond to those kind of [messages] somebody else is doing that to you?
Tammy:	[I respond in] child like [way], like "hi, how are you?" [in a tone that is used to talk to a little children], you know, I'm not gonna [ignore them] ( )

"A phone call made when drunk" is called "drunk-dialing" (Miller 2005) and has been reported in university newspaper articles as common cell-phone experience among university students (Payton 2001; Christensen 2003; Wacker 2004; Miller 2005; Hayes 2006). This phenomenon has also been observed in Australia where a phone service has been marketed which allow users to restrict themselves from initiating drunk-dialing (Krug 2004; Kowalkowski and Kraemer 2005; Widmark 2005).

Personal choices and competent driver / consumer

Among the various problematizations of cell-phone uses that have arisen, the most contested social debate has been whether the use of hand-held cell phones should be banned while driving. As explored previously, cell-phone use has been intimately tied with automobile travel. About eighty-two percent of my questionnaire respondents answered that they used cell phones while driving (Figure 6.3). Ironically, cell phones that are associated as security tool on the road are now considered a social problem that pose a danger for drivers on the road. There are multiple factors and actors contributing to this making assessment. Politicians, such as New York Governor Pataki, who are advocating bans, take the view that the use of cell phones "poses an enormous threat to public safety" (Bader 2001). A high-profile case such as an accident involving supermodel model Niki Taylor, as well as cell-phone accidents involving children, contributed to the mobilization of campaigns for bans (Johnson 2001; Payton 2001; Staff-Editorial-The-Daily-Athenaeum 2001; Staff-Editorial-Daily-Collegian 2005). Furthermore, everyday observations made by drivers, including legislators and students, contribute to making claims that cell-phone use is "unsafe." For example, Alex Lee writing for *Daily Utah Chronicle* (U. Utah) argued that:

> [i]f you have ever been stuck behind a driver talking on the phone, you know exactly what I mean. They always drive more slowly, they don't notice the light has changed or they are just simply unpredictable. They may not get in an accident themselves, but they provoke other drivers to take unnecessary risks to pass them (Lee 2001).

In relation to the legislation on cell-phone use while driving, a Staff Editorial in *The Technician* (North Carolina State U.)claimed that "the reason cell phones are being so fiercely attacked is that cell-phone use while driving occurs much more frequently and in more visible ways" (Staff-Editorial-The-Technician 2001).

One of the first studies that made a link between cell-phone use while driving and the increased the risk of an automobile accident was a 1997 study by Redelmeier and Tisbshriani published in *New England Journal of Medicine* called "Association between Cellular-Telephone Calls and Motor Vehicle Collision" (Redelmeier and Tibshirani 1997). One of the study findings was that there is fourfold chance of getting in an accident while using a cell phone in a car. It has also been suggested by some that using a cell phone while driving "is the same as getting behind the wheel when you are legally drunk" (Taylor 1997). In fact, the analogy between the consequential behaviors of cell-phone use while driving and DUI (driving under the influence) has frequently been made to strengthen arguments for supporting the bans (e.g., Huffines 1999; Staff-Editorial-Michigan-Daily 2002). Russ Cobb of *Daily Texan* (U. Texas-Austin) gave an example of such association:

> If you haven't been guilty of it yourself at least once, you've probably seen the crime committed hundreds of times. Here's the scenario: You're driving down the highway soaking up the midsummer Texas sun with the windows rolled down when all of the sudden some moron nearly swerves right into you for no good reason. You look over expecting to see a beer-guzzling redneck blitzed out of his mind, but wait that's no redneck, it's a soccer mom! And that's no beer in her hand it's a cell phone! (Cobb 2000).

Cell-phone use while driving is comparable to DUI because it poses risks not just for the drivers but to "others" co-inhabiting the road. Cell-phone uses in the automobile are contested in the public arena because "erratic behaviors" associated with their use are seen to pose threat to "public health" (Wereschagin 2000).

The social-construction of cell-phone use in automobiles as a social problem in the United States, as well as other countries, warrants further exploration since it encompasses wide range of actors, claims, and social processes. But in this last section of this chapter, I'm going to focus on young people's opinions against bans, especially as it relates to issues of *personal choice*, as well as their assessments on their *competency* level to use cell phones appropriately, safely and responsibly.

Legislation over cell-phone restrictions have been rejected and contested in various arenas including the editorial columns of university publications. There is a range of claims opposing bans including "the benefits of motorists using cell phones outweigh the drawbacks"

because "both time and productivity will be lost if employees cannot use their cell phones while driving to meetings or a client's home" (Staff-Editorial-Iowa-State-Daily 2001a). On the other hand, some, such as The Staff Editorial in *The Post* (Ohio U.), argued in 1999 that there is inconclusive proof that cell-phone use will lead to accidents:

> Cell phones are a distraction, not an impairment. They do not incapacitate the driver the way alcohol does. Until there are statistics proving cell phone use is a problem, like drunk driving is and like driving without a seat belt was proven to be, people should not be told they cannot call someone while driving (Staff-Editorial-The-Post 1999).

There is also the enforcement issue of how to "police" the use of cell phones when cell prevalent activity during driving (Staff-Editorial-Indiana-Daily-Student 2004). A Staff Editorial for *Kentucky Kernel* (U. of Kentucky) points out that it is not realistic to have bans on cell phones while driving:

> We applaud the state for not acknowledging this bill. It is ridiculous to ask people in Kentucky to pull off the side of the road when they need to make a phone call. Not only is it illegal to pull off on the side of an interstate, but there are plenty of places where you wouldn't feel safe stopping in the middle of the night (Staff-Editorial-Kentucky-Kernel 2001).

In addition, there are two major claims expressed by university students that serve as oppositional views to the ban. They are the ideas of personal freedom and the competency level in multitasking, which both are connected to the meanings associated with the automobile environment.

There have been a substantial number of scholars who have theorized automobile culture from socio-cultural perspectives, beyond the aggregated statistics on commuting patterns. Interestingly, like telephones, there has been an absence of sociological studies on automobiles. But there has been resurgence of studies on "automobilities" since the early 2000 (Miller 2001; Collection of articles in *Theory, Culture & Society* 2004, vol.21 (4/5)).[18] Bull (2001) points out that automobile space is a highly privatized space that mimics the domestic environment. One of the ways to achieve privacy is by listening to music which gives the driver "the private experience of listening" in parallel "with the public occupancy of the space of the road" (Bull 2001, 198). At the same time, "the intensity of music and voice in the car in a manner that makes this more of a home space than the actual house" (Miller 2001, 27) since "houses have other occupants or neighbors to inhibit" (Bull 2001, 196). Furthermore, Bull argues that "the privatized

[18] Mike Featherstone states that the term "automobility" refers to "autonomy and mobility," but also related to the "automobile" (Featherstone 2004).

aural space of the car becomes a space whereby drivers reclaim time, away from the restrictions of the day. The mundane activity of the day is transformed into a personally possessed time. Listening to music / radio enhances the drivers' sense of time control / occupancy" (Bull 2001, 193). Uses of cell phones are integrated as part of achieving such private experiences and personalization of public spaces.

An editorial by Erin Ghere of *Minnesota Daily* (U. of Minnesota) mentions how she loves driving since it relaxes her and provides time to "crank up the radio, let the wind blow through" her hair, and collect her thoughts. It is also the time for her to multi-task such as changing the music in her CD player, talk on her cell phone, and eat fast food (Ghere 2001). She states in reaction to the 2001 New York hand-held-cell-phone ban in the vehicles:

> Please don't tell me that in this country where freedom is sacred and source of nationalistic arrogance, there are now 18.9 million people in New York who can't make the personal choice to talk on their personal hand-held cell phones in their personal cars as they drive to and from work, home, school or any other personal place. See a theme here? Personal freedom (Ghere 2001).

Ghere then argues that "once you pass this type of law, it's a slippery slope. By passing such legislation, legislators are opening the flood gates for revocations of all kinds of personal rights" (Ghere 2001). She furthermore states:

> The New York hand-held cell-phone ban is simply another shot at personal liberties in this country. Unless these laws are squashed in the beginning, there is a slippery slope other states will begin to slide down, and soon none of us will be allowed to use cell phones in our cars. A law I would support would ban those people who lean down to pick up something off the passenger-side floor or reach back to grab something in the back seat while they are driving. During the course of their vehicular gymnastics, their cars are careening all over the road. These are the people who drive me nuts (Ghere 2001).

Multiple student editorials pointed to the fact that cell-phone use is not the only distraction occurring in the automobile, and, if cell phones are banned, these other activities—changing the radio station and sipping coffee—can be eventually restricted (Canham 2001; Jackson 2001; Staff-Editorial-Daily-Nebraskan 2001; Staff-Editorial-Minnesota-Daily 2001; Staff-Editorial-The-Technician 2001; Kurash 2002; Staff-Editorial-Indiana-Daily-Student 2004). Harold Morgan Jr. of *Daily Mississippian* (U. Mississippi) states:

> New federal legislation that would force states to pass laws banning automotive cell phones is an ill-advised waste of time since a new study reveals that car radios cause eight times as many accidents as cell phones. Fiddling with a radio dial is eight times as deadly as dialing a cell phone. So when will politicians start legislating against the carnage caused by DW-AM and DW-FM—Driving While

> listening to AM Or FM radio? Adjusting your car's air conditioner is also twice as dangerous as using a cell phone. Why don't politicians require federally mandated locks on your car's climate controls? Even eating and drinking while driving causes more accidents than cell phones. So, why not have it their way and make a Whopper-to-go a federal crime? (Morgan 2001)

In contrast, there are some editorials that support bans and describe how dangerous multi-tasking in general is. A Staff Editorial in *The Technician* argues that:

> Technician, with chagrin, must say that cell phones are bearing the brunt of responsibility for problems of which they are only a part. The cell phone legislation must not be eased; rather, it should be applied equally to all acts while driving (Staff-Editorial-The-Technician 2001).

These arguments indicate the tension between the efforts to maintain public order and privacy issues and / or protecting private property.

The opinions that people have towards cell-phone bans on the road are connected to how people perceive their personalized space in automobile. Since the automobile is perceived as an extension of private spaces, what goes on in the automobile becomes highly personal and is intimately tied to the idea of civil liberties. Bull states that:

> [t]he metaphor of the car as a home has a long anecdotoal history in cultural theory. The root of this is discerned in the automobile as metaphor for the dominant western cultural values of individualism and private property which is coupled to the romantic imagery embodied in travel as signifying individual freedom. The cultural meaning of the automobile as a privatized entity is inscribed into its very origin (Bull 2001, 186).

Because of the connection with personal property and private space, cell-phone uses in the cars are often talked about emotionally. McKendry, writing for *Massachusetts Daily Collegian* (U. Massachusetts-Amherst), states:

> People can shove statistics in front of my face about accident rates, mental distraction and whatever else they care to study. I don't care! I am not giving my cell phone up. It is my personal phone that I use almost wherever I want (I'm not yet ready to battle wit my professor about making a phone call in class, but I have gone out into the hall to answer one) (McKendry 2002).

This idea of regulation over private space overlaps with the notion of surveillance by a "big brother." Nancy Duncan states that "the idea of privacy is deeply embedded in Western political theories of freedom, personal autonomy, patriarchal familial sovereignty and private property" (Duncan 1996, 129). And, the highly personalized space of the automobile is defended by arguments against governmental control.

Automobile environments are increasingly becoming personalized through the uses of electronic devices. Mimi Sheller points out that a recent "key development in the automotive industry has been to bring mobile communications and electronic entertainment into the moving car." The examples include "General Motors' OnStar voice-activated service" and Ford's "plug and play" system that "allows car drivers and passengers to use a wide range of electronic devices, including laptop computers, navigation systems, games consoles, and DVD players" (Sheller 2004, 43). Cell phones are one of the electronic technologies that personalize spaces while on the road. This means that there are more possibilities for a driver to multi-task. Cobb writing for *Daily Texan* (U. Texas-Austin) argues that:

> It is a curious development in American car culture: By spending more time in and money on their vehicles, Americans are transforming their cars into extensions of the office or home. Suburbanites, especially, have converted the car into a mobile office, as many vow to get work done on the hour-long commute. The results of all this so-called "multi-tasking" is the all-too-common sight of an SUV swerving in and out of lands on the interstate at about 20 miles under the speed limit. [Edit] Unlike road rage, driver distraction is a market-driven phenomenon. American are willing to overlook the dangers of driving while under the influence of a cell phone as long as they are intoxicated by the myths of the new economy" (Cobb 2000).

Many cell phone companies have challenged the bans (Taylor 2004). However, Verizon has been known to support the bans since they prefer to have consistent regulation of cell-phone use in automobiles across the nation (Bader 2001). Moreover, it has been pointed out that cell-phone companies do not necessarily lose business due to bans, since they profit from marketing of hands-free ear pieces (Lee 2001; Lucy 2001).

The assumption behind the current legislation has been that drivers cannot safely operate their cars with one hand while they dial and hold the phone against their ears. Therefore, ear pieces allow drivers to have two hands on the wheel. However, some argue that the mental absence or partial presence—a state in which one becomes engrossed in conversation—is equally as risky (Parry 2001). Along with the idea of personal freedom, another common counter argument for cell-phone bans found in university publications is that they penalize people who are able to multi-task while driving (Staff-Editorial-Daily-Forty-Niner 2003; Staff-Editorial-The-Daily-Universe 2003). McKendry writing for *Massachusetts Daily Collegian* (U. Massachusetts-Amherst) is an example of expressing such views:

> Driving is all about concentration and multitasking; some people just do it better than others. The skilled driving style that defines a commuter in metro Boston may be mistaken as reckless in other parts of this nation, but in actuality, it is nothing more than drivers who are at the top of their game. As one of that flock, I

> have no fear in my mind driving 80 mph down a crowded highway listening to potentially distracting music or even talking on my possibly deadly cell phone. [Edit] As I said before, the ability to multitask, or even just to drive an automobile well even without a cell phone, is not possessed by everyone. Some people have it; some people don't. [Edit] if you know that you have a hard time driving and talking on the phone at the same time (or just driving period), then don't try to bite off more than you can chew. Get yourself a cell phone, and just don't use it when in the driver's seat. Simple! (McKendry 2002).

Furthermore, competency is not just about maneuvering the automobile, but competency in making right decision on the road as well (Morgan 2001; Staff-Editorial-Daily-Egyptian 2001). Staff Editorial of *The Daily Collegian* (Pennsylvania State U.) argues:

> While irresponsible usage of cell phones does pose a serious threat to the safety of everyone on the road, there is no need for the government to pass such frivolous legislation. The responsibility should simply fall on individual phone users to act carefully and considerately when using their phones (Staff-Editorial-Daily-Collegian 2000).

Therefore, competent driving is not only about operating the automobile safely, but also recognizing responsibility to others on the road.

Some of the passed and proposed legislation in some states (e.g. California, Colorado, Maine, Minnesota, and Virginia) restrict cell-phone uses while driving for minors (Cellular-news Website, 2006). After citing figures by the National Center for Health in 1999—where "motor vehicle accidents were the leading cause of death for 15- to 20-year-olds," Staff Editorial for *Iowa State Daily* (Iowas State U.) commented that "at age 16, teenagers are too young to think about the dangers" (Staff-Editorial-Iowa-State-Daily 2001b). These stereotypes, and the fact that "statistically teenagers aren't very good drivers," as well as the idea that "cell phone usage undoubtedly inhibits overall driving ability" leads to the claim that "combining the two only making things worse" (Staff-Editorial-Daily-Trojan 2004). There are also study findings that show "teenagers tended to look at the cell phone more than older generation" while they drive (Staff-Editorial-Daily-Trojan 2004). Moreover, and perhaps unexpectedly, other studies found that "when people between the ages of 18 and 25 talk on cell phones while driving, their reaction times are similar to that of an elderly person," making their driving behavior more hazardous (Milazzo 2005).

Some of the reactions to proposed bills banning cell-phone use by teenagers is fueled by the opinion that the bans are targeting the population that has the least resistance. Staff Editorial of *Daily Trojan* (U. of Southern California) agreed with the argument presented in the *LA Times* that "legislators are considering restrictions on groups with minimal political clout" and argues

that the "supporters of this bill are targeting teenagers less for their greater accident rate and more because they can" (Staff-Editorial-Daily-Trojan 2004). Katie Cristol writing for *Cavalier Daily* (U. Virginia) points out that "our legislators in Richmond (Virginia) agreed that while teenage brains were too underdeveloped to multitask, those brains and bodies were developed enough to execute" by juvenile death penalty (Cristol 2005). Furthermore, Erin Wiley in *University Daily Kansan* (U. Kansas) expressed that general bans on cell phones while driving is "unfair to [the] multitasking generation." She describes this generation as "young, technologically advanced college students who have a desire to be connected to friends and family at all times" (Wiley 2006).

In contrast to the idea of being incompetent drivers, young people are seen as competent consumers of electronic technologies. The young generation is called the "digital generation", the "generation Y," "millennium generation," and the "wired youth" since today's "tweens" (9-12) "teens"(13-19) and "young adults" (20-25) that take the presence of electronic communication technologies in everyday life as granted. They are not so much categorized as "adolescents" who are going through biological transformations but as people who are " technology savvy" and consumers who are fashion conscious (Thomas 1997; Swartz 2000; Carr 2002; Allison 2004). These social categories of age groups, which are simultaneously social, sub-cultural and economic in nature, are of great importance for the marketing of new products. My interviewees compared their own uses with those of older and younger generations, and they generally expressed that their grandparents did not own their cell phones or "had no clue" how to use them. Within their parents' generation, there was a multiple competency level described. Meanwhile younger generations (high school or younger) were often described as more capable in using information and communication technology. So even among the university students, they held the general view that kids younger than themselves—such as their siblings—are much more capable in using various technologies. This was interesting since cell-phone use by younger kids was often seen as *unnecessary.*

Since young people are more likely to be tied financially to their parents (Chapter 5), consumption of cell phones is often negotiated. In addition to negotiations between family members, cell-phone use is also negotiated in classrooms. Moreover than being used for cheating in class, they have become frequent disruptions in the classroom. As mentioned earlier, thirty-five percent of students mentioned that cell phones are *annoying* (Figure 7.1). Part of this perception is about cell phones ringing in class. Almost all of my interviewees mentioned that they have witnessed somebody's cell phones ringing loudly in class or in the library. University newspaper

editorials, pointing out inconsiderate cell-phone uses, have often urged students to turn their cell phones off. The reactions by professors has been multiple from getting angry to laughing to ignoring the rings. Some professors have a policy of taking the call when students' cell phones ring, making the situation embarrassing to the students. Other students mentioned that they let the professors know that there may be an emergency call during class. The common assessments by my interviewees are that those instances of cell phone ringing during class were more of a consequence of students forgetting to turn the ringer off than being disrespectful to others.

Even though the cell-phone use in classrooms and libraries is highly problematized by many students, it has not led to university-wide banning of cell phones on campuses. Such uses are often seen as matter of personal choice and responsibility to make individual decisions when and where cell-phones are used. Faith described her friend's use of cell phones during class:

Faith, 19, sophomore, Shippensburg	
Faith:	Yeah, like oh I know one girl behind me
Interviewer:	People sending you
Faith:	Yeah like your in class and I just get this message and I'm just like, they're like "I'm so bored," I'm like "ok, sorry" you know
Interviewer:	Ok
Faith:	But like I know that's definitely negative ( ) a lot of people I know the girl behind me that's sits in my soci. class definitely, you always hear her tapping at the keys
Interviewer:	Ahh
Faith:	( ) You know she's sending someone a message
Interviewer:	Yeah, yeah
Faith:	I mean like, so I guess like you're so depend upon it and that it kind of like takes away from your class, and not like I'm here to learn like that's my main thing and like
Interviewer:	Yeah right
Faith:	Um, I, I'm kinda strict on that like myself so I mean
Interviewer:	That's good
Faith:	That's why I'm like you know put the phone away but that's what she wants to do that's what she wants to do but she definitely, you'll always get a click, click, click, click, so someone else's text messaging back
Interviewer:	So people ( ) around or
Faith:	Yeah, I'm like, that's just so you don't have to talk, so now you're not in class, necessarily not that library itself but now you're in class and you don't pay attention so let me talk to somebody you know so (…) it's kinda (…)

Also, Alyssa comments on her feelings about cell phones ringing in the library:

Alyssa, 21, senior, Shippensburg	
Alyssa:	I got, I know there was one that I was in there with my roommate, [chuckling] and I was so angry because I will leave my phone turned off or make it silent or something 'cause I just think it's really rude you know
Interviewer:	Mm-hmm

Alyssa:	People come there to study to have a quiet place, so they can't be disturbed and I was studying for a major exam about two weeks ago and working on a paper and I think that the, I don't know, there were like three or four cell phones that went off, just in like an hour and a half that I was there, and I was just so angry, just hate it [chuckles]
Interviewer:	It just inter, interrupt you what you're doing and
Alyssa:	Yeah, but at the same time I knew, you know, I can't really say too much bad about cell phones, 'cause I like mine
Interviewer:	[Laughs]
Alyssa:	And I love the convenience
Interviewer:	You don't want that to go away
Alyssa:	It's just people need to respect the rules more I guess

Therefore, the convenience for students to initiate phone calls anywhere brings expectations of users to be competent at managing their personal phones and making the right decisions while in various socio-spatial contexts. Along with cell-phone uses while driving, how cell-phone uses in campus settings such as a classroom are going to be incorporated and negotiated throughout time can be part of a future research agenda.

Summary

In this chapter, I have explored three dimensions of the social significance of young people's cell-phone consumption:

- gendered dimensions of cell-phone use;
- meanings and experiences of monitoring processes mediated by cell phones;
- negotiations and assessments of cell-phone uses in different spaces.

Students' comments presented in this chapter reveal their understandings of their own abilities and their social positioning as it relates to gender, age, and citizenship. Cell phones have roots in the gendered aspects of wired telephones, but they also have acquired additional gendered meanings with uses for security purposes. In addition, as a new form of portable electronic technology, their use may lead to a reconstitution of feminine and masculine associations. What has been central to the public experiences of cell-phone usage is the daily monitoring processes mediated by and experienced through cell-phones. There are multiple levels of "surveillance" mentioned by students ranging from that of family, friends and peers, and others co-present in public spaces, to corporate and governmental issues. Some of these "looks" are welcomed as well as resisted to achieve security and privacy as well as to express and conceal identity. Among the university student population, there are multiple perceptions and opinions on the cell-phone

phenomena based on personal observations and experiences. How students describe their own and others' cell-phone usages in various contexts reveal the tensions between sets of "claims" defining the necessity and the competency over technological uses. Part of the idea of the competent consumer is not only about the ability to use the technology but also the responsibility of using the cell phones appropriately, safely and courteously. In addition, the personalized spatial practices and the use of cell phones in automobiles—a privatized space—is intimately tied to ideas of privacy issues and personal freedom.

Chapter 8—Socio-spatial implications of cell-phone consumption by university students

Major findings

This dissertation presented both quantitative and qualitative findings from the time period in which cell-phone usage became an observable and commonplace phenomenon on American campuses. It contextualized the early diffusion processes of cell phones, the various positions of cell-phone technology in students' daily routines, and the various meanings and socio-spatial negotiations involved in using cell phones. In the light of those findings, I discussed the personal as well as social spaces, experiences, and meanings associated with cell-phone consumption by exploring the dimensions of mobility, extensibility, and surveillance. I also explored how multiple identities, infrastructural set ups, and competing ideas are involved in using cell-phone technology by highlighting young people's voices. In this concluding chapter, I outline the three socio-spatial implications identified in this study by summarizing the major findings presented in this dissertation. This will be followed by a brief outline of proposed future research directions. I conclude with providing reflections on my research processes and contributions.

Multiplicities and tendencies of cell-phone users

The previous pages identified both quantitatively and qualitatively that there were a *multiplicity* of groups with a variety of *tendencies* with regard to the uses, experiences and views on cell phones. The purpose of highlighting these tendencies was to illustrate the variations within Generation Y. The primary aim was not to classify students into rigid categories of consumers, but rather, to identify some of the cultural boundaries and social practices related to various social identities and places. Variations as well as commonalities associated with cell-phone consumption can be summarized as follows.

- The intensity of cell-phone usages can be understood in relation to uses of other types of information and communication technologies including wired phones and Internet-based communication systems (e.g., Instant Messenger and e-mail). There were differences in the method of communication used depending on the purposes, whom students were contacting, and their preference for cell phones over alternate systems because of their mobility, availability, reliability and cost.

- Campus settings (e.g., the level of commuting by the student body, the size of campus, and available communication systems) and residential connections (e.g., dorm and residential wired phones, computer labs, cable connectivity) were related to the availability and intensity of uses of various communication systems including cell phones. The differences between heavy or non-heavy users of cell phones depended on a variety of aspects of ownership—such as the initial reasons for purchasing a phone and who financed their use. Non-cell-phone owners tended to utilize Internet-based communication more frequently than cell-phone owners.
- The magnitude of cell-phone usage varied according to whether students treated cell phones as "just a phone" that facilitates voice-based communication and long distance calls or as "more than a phone." Heavy users not only made and received more phone calls and spent more time on their cell phones than light and basic users but also carried the device with them into different spaces. Moreover, cell phones also allowed students to navigate university life by orienting them in time and space and permitting them to micro-coordinate and socialize with others. Some of the functions of phones were also utilized for personal entertainment and customization of spatial experiences. On the other hand, light users did not carry their cell phones everywhere they went and tended to designate the phone for only emergency and long-distance calls.
- Gendering of cell-phone technology involved the tendency of female users to emphasize the security dimensions of cell-phone consumption. Females tended to own cell phones more than male students. Some of the gendered stereotyping such as that of the "chatting female" persisted among both female and male students and perceptions corresponded with the tendency of female users to spend a longer period of time using cell phones daily than their male counterparts. On the other hand, there were no other gendered patterns in how cell phones were used. However, there was a general tendency for male students to emphasize the negative perceptions of cell phones such as *annoying* and *noisy* compared to female students who emphasized positive perceptions such as *convenient*, *fun* as well as *necessary*.
- There were statistically significant differences between white and non-white students in terms of their family ownership, intensity of uses, and emphasis on particular perceptions. Non-white students tended not to be part of family-based cell phone ownership, tended to be heavy users of cell phones, tended to use more functions on the cell phones and

emphasized positive attribute such as *necessity*, *fashionable*, and *professional* aspects of cell phones.

Personal management

A second implication identified in my study was related to how individual students managed their communication systems and contacts. Students maximized as well as minimized the extensibility of various communication "portals" and their availability to others. Some students simply did not carry or acquire cell phones in order to limit their spending and / or unwanted "distractions." Generally, students felt that they were *in control* of the degree of their extensibility and availability. For example, my interviewees felt that they can simply turn their cell phones off if they want to be alone or do not want to take a call. In addition, they utilized functions such as caller id, answering machine, voice message, and IM's away message to screen unwanted communication, avoid the "caller hegemony" associated with phone communication, and / or combat unwanted "surveillance" by others. The distribution of cell-phone numbers was carefully managed to avoid circulation of their numbers to telemarketers and to the public domain. Some students restricted carrying their cell phones with them because they designated the use of cell phones strictly for emergencies associated with driving, or, used them only as a home phone. In addition, students also managed their personal spatial experiences using cell-phones by orienting, generating a sense of security and "filling in" the transitional spaces—walking to and from class, sitting alone, or driving—with personal entertainment. Therefore, students' personal management of various communication technologies was both about their sense of and actual control over the connections facilitated by communication technologies and their means to create personalized spatial experiences.

Part of personal management also involved controlling the degree of visibility / audibility of their usages to others. According to Tim Cresswell, mobility is a "socialized movement" since "mobility is embodied differentially" and "the act of moving is reflected in and constructed through different bodies" (Cresswell 1999, 176). Correspondingly, students "project" certain images as they use cell phones in transitional spaces. The performance of cell-phones uses involved "displaying" one's identity by using, carrying and accessorizing cell phones in certain ways. In addition, students also expressed their identities through types of cell-phone rings and by "leaking" the content of conversations. Some students felt uncomfortable with the "look" of others. Instead, text messaging could be discretely used in places where students needed to conceal their communications with others. Students' interactions with the potential and actual

gazes are part of their personal control over cell-phone communications. And, the visibility of students as mediated through various information and communication technologies also has significances for creating various youth spaces and in terms of potential public and political participation.

Socio-spatial negotiations

The significances of young people's cell-phone consumption were addressed through examination of cell-phone uses relating to different negotiations taking place in various social and physical spaces. The analysis of students' reasons for acquiring cell phones was strongly tied to domestic spaces and public roads. Students indicated that major reasons for acquiring cell phones were for emergency purposes and keeping in touch with family members. The life stages of getting driving licenses, entering university and moving away from "home" are when a majority of the students acquired their cell phones. For young teenage drivers, parents often equipped their children with cell phones for emergencies on the road. Parents also provided them with cell phone upon their departure to provide a long-distance connectivity while they are attending university. For those university students who did not have a cell phone prior to coming to university, campus life often prompted them to get cell phones as an economical alternative to wired phones. One of the reflections of this trend was the heavier intensity of uses and ownership among off-campus students compared to on-campus student. Consequently, cell phones have been replacing wired phone lines and the use of calling cards.

I confirmed students' tie to their parents through the identification of family-shared cell-phone plans which students are part of, as well as the fact that parents are financing many students' cell phones. Therefore, cell-phone connections mediate and strengthen domestic relationships between family members outside of the physical home space. Cell phones can be considered more "personal" than conventional wired phones since each cell phone has a different phone number and is often assigned to individual family members. Yet, cell phones can still be considered a "domestic" technology since they are purchased, owned, shared, and negotiated by family members in a household. Cell phones can facilitate the maintenance of their privacy but also can assist with additional parental surveillance. But the family ties diminish as students get older since they tended to finance their own cell phones. In addition, non-white students tended to be not part of family based cell-phone ownership.

In addition, cell-phone consumption involved negotiating the aspects of communication infrastructures present on campus and residences, including the cost, the reliability, the

availability and the accessibility. Students often complained about the poor cell-phone coverage and the reliability of the cell-phone technology (e.g., dropped calls) experienced in various places. In some cases, students were not able to use their cell phones on some parts of public roads, campus buildings, and inside their residences. Cell-phone coverage sometimes varied according to topographical features. Instant Messenger became a popular choice on university campuses because of free or inexpensive access to the Internet. On the other hand, wired phones were rejected by many as immobile and costly. Students negotiated different types of communication outlets in terms of communication time lag (e.g., e-mail) and their accessibility to the communication outlets (e.g., computer labs and residential phones).

For many university students, cell-phones represented their social life. Students generally felt it was more legitimate for them to have cell phones compared to younger age groups because of the necessity to socialize and navigate in campus settings and beyond. The fact that cell-phones became an integral part of the daily routines of students was evident from the fact when students forgot to bring or misplaced their cell-phones, they felt at a loss because they rely so heavily on them. The increased popularity of cell phones meant that there were subtle pressures for individuals in owning and using cell phones. For example, some students received surprised reactions from their peers when a student did not own a cell phone because of the fact "everyone has cell phones." Since cell-phone communications were seen as a large part of college student life that some students observed that non-cell-phone owners were often left out from social networking. Additionally, there were cultural boundaries of stereotypes or associations with cell-phone uses that were negotiated. For instance, a male student remarked that in addition to considering the necessity and cost associated with cell-pone uses, he did not want to own a cell phone because he did not want to buy into the "mainstream image." This was because cell phones have been associated with a "fad" and with the notion of "popularity."

Furthermore, surveillance was often an issue that was expressed by students in describing cell-phone usages and experiences. Different types of surveillance mediated by cell phones on multiple scales—including governmental, corporate, institutional, domestic, and individual levels—were both welcomed and resisted. Female students tended to use cell phones that allow remote monitoring by others in order to combat the dangers of walking at night and driving on a highway. Some students preferred not to have cell phones or turned theirs off because they did not want to be "tracked down" by their friends and / or family. Co-peers' surveillance over their cell-phone usages involved monitoring the types of phones and ringtones used and also how cell-phone usages were performed. For instance, female students were often described to be generally

talking longer and socializing on their phones. On the other hand, male students tended to have short and concise conversations. Some students felt uncomfortable eavesdropping on conversations (most likely unintentionally) since personal and / or inappropriate information was revealed. The content of the conversation heard by bystanders was often evaluated according to its *necessity* based on the urgency and the nature of instrumental calls. Moreover, governmental and corporate surveillance were often seen as an intrusion into private and personal spaces and properties.

Finally, the uses of cell phones in transitional, public and private spaces brought social negotiations between users and others co-present since they resulted in various reactions and assessments among bystanders. Mobility associated with cell-phone uses—the fact that people use them within the cellular network area and beyond fixed residences, offices and phone booths—means that the boundaries of private, public, institutional, workplace, and domestic spaces have been maintained, reconfigured, contested and / or negotiated. Consequently, the recent theorization of wireless information and communication technologies including cell phones involves the re-conceptualization of "fluidity" and "flexibility" of public and private spheres (Sheller and Urry 2003). Students expressed that it is matter of personal choice to use cell phones in various spaces—but, that with the convenience and privilege was the need for *competency* in being a courteous and responsible to those who were co-present. In class, meetings, and in libraries, students are expected to turn their cell phones' ringers off as well as to abstain from using them. One of the contested behaviors has been driving while talking on the hand-held cell phones and the act has been seen as a social problem for many—an issue of protecting public safety. The range of claims on cell-phone use while driving involve competing ideas on competence level of drivers / consumers as well as degree of *personal freedom* exercised in a highly privatized automobile space traveling on public roads.

Future research questions

Some of the findings discussed in this dissertation warrant further examination. In particular, there are three future research areas that emerged from my research. They concern the investigations of socio-cultural boundaries, social negotiations and interactions as well as technological landscapes that were identified in this study. They are: 1) the study of cell-phone consumption in domestic settings; 2) an updated and expanded inquiry on young adults' uses of

information and communication technologies, and; 3) examinations of the construction of social problems associated with cell-phone uses.

1) One of the major findings in this study was that cell phones are simultaneously a personal as well as domestic technology. Cell-phone technology is continuously marketed as "family-shared," and new services are being introduced targeting parents with younger children indicating the fact that cell phones can act as a tracking device. Also, the long-distance feature of cell phones also aids in connecting family members living far and near. Like other domestic technology, cell phones are incorporated and negotiated among individual(s) in a household. Different life stages and events can contribute to shifting the positioning and meanings associated with cell-phone technology. In future research, a domestication approach (Silverstone and Hirsch 1992; Haddon 2003) can be adopted in order to investigate the processes involved with the incorporation and uses of mobile phones over various life stages of individuals and the resulting family negotiations involved in their use. Part of the examination of domestic contexts needs to involve the gendered dimensions of uses. Such research can incorporate feminist perspectives on domestic technologies. Moreover, it can be built on findings concerning telephone and cell-phone uses which indicate the variations in intensity and nature of uses relating to life stages and age groups (Yoshimi, Wakabayashi, and Mizukoshi 1992; Ling and Yttri 2002; Okada and Matsuda 2002; Dobashi 2005; Habuchi 2005; Miyaki 2005). One of the interesting aspects to explore will be when the current university students, who have now become heavy users of cell phones, enter the workplace and become parents. How will their usages differ from the parents' generation? What are the implications of having personal cell-phones rather than a family phone in a household in terms of family dynamics, parenting practices, the nature of domestic space and the family as a social institution?
2) This dissertation can serve as a historical study that examines how cell phones and other information and communication technologies have been incorporated into campus settings. My research was set in an early mass-diffusion period when cell phones became observable but also quickly turned into a mundane phenomenon on college campuses. Subsequent studies can also examine the phenomenon by examining the ownership, magnitude of uses, and perceptions but with an updated scope. For example, uses of various functions on cell phones such as text and picture messaging, Internet connections, camera and video functions and television broadcasts can be taken into consideration,

since these capabilities are starting to become popular in the mid-2000 in the United States. Future examinations of cell-phone consumption also need to take into account how students utilize multiple communication and technological systems. University campuses are increasingly incorporating new forms of technology into the classrooms, residences, and buildings. For example, many universities have been proposing or have been implementing the infrastructure to facilitate the "wireless campus" where on-campus students equipped with cell phones and / or can access wireless Internet from almost anywhere on campus (Gatling 2000; Creedon 2002; Robbins and Turner 2002; Brannon 2003; Lipaj 2005; Tingle 2005). One of the interesting aspects that could be explored in such a technological environment is how wireless technology can mediate communication between students, educators, and administrators. Texas A&M proposed in 2000 to implement a "wireless" campus to use cell phones as a way to notify students of "bad weather or other emergency situations" (Gatling 2000). In relation to the "wireless" environment and the multiplicity of communication technologies used by students, future research examining cell phones in institutional settings can follow up and / or explore the following issues:

   a. How is the positioning of cell phones in students lives evolving as the technology is increasing in its capabilities and functions?
   b. What are the implications of the multiplicity of communication systems as well as the wireless environment in terms of social networks, public participation and institutional management?
   c. Are the racial / ethnic differences of cell-phone consumption identified in this study persisting or lessoning?
   d. Are the gendered meanings and uses associated with cell-phones transforming or solidifying?

3) Lastly, another study can examine the social construction of social problems associated with cell-phone uses. Among the various problematizations, driving while talking on hand-held cell phones is an especially relevant issue in the Untied States. This is because automobile travel is strongly ingrained in people's daily routine and the idea of personal freedom associated with private space is fiercely defended. In conjunction with user experiences of cell-phones in automobile space, claim-making activities can be examined by taking into consideration the processes, the actors, the scale (e.g. state level) and perhaps involve an international comparison. The analyses can consult literature on

"automobility," various theorizations on mobility as well as the field of the social construction of social problems.

A final reflection

This study was motivated by and situated in agendas and frameworks developed in the field of *young people's geographies* and a collection of studies which examine *social dimensions of technology* including cell phones. *Young people's geographies* has been an emerging subfield in geography that offers critical and reflexive discussions on aspects of the lives of young people. Works in this field should not only be seen as examining a specific social population that has been mostly neglected in the discipline, but rather also as a representation of geographers who take the particular academic stance of recognizing that young people are active agents in society and are situated in particular socio-spatial relations and conditions. Moreover, this body of work illuminates the importance of working directly with young people in order to bring the voices of young people to the academic platform. Various researchers studying the social dimensions of technologies also attempt to emphasize the role of consumers involved in the social construction of technology and the roles that technologies have in mediating and transforming social aspects such as gender relations and domestic environments.

Today's young people are especially visible as consumers of information and communication technologies and the notion of "youth" is often discussed in relation to a range of "new" digital environments that they have grown up in. Studying cell phones is important for understanding young people's geographies because of the prevalence of the cell-phone technology in our daily lives. It has become essential tool for some and the fact that most have cell phones entail that young people's everyday routines, spaces, and social relationships are increasingly mediated by multiple electronic communication technologies. Young people's cell-phone consumption is often noticeable because, unlike personal computers and wired phones, cell phones are personal and mobile—carried around and used in various places. As most of my respondents commented, cell-phone uses are observed "everywhere!" Accordingly, there has been a growing number of scholars who examine uses of cell phones in many national contexts as well as those examining specific uses by particular social groups such as youth. While observing first hand the rapid diffusion of cell phones into the university student population, I also observed the lack of recognition of the significance of wireless mobile technologies in everyday lives. By collecting multiple voices and experiences from the university population, I attempted to capture the moment in time when cell phones became observable "everywhere" on American university

campuses by identifying the socio-spatial implications of the phenomena. I recognize that there are numerous possibilities of discussing the dimensions of cell phones set in geographical contexts beyond what I have presented in this thesis. In the end, I feel I was able to illuminate the major contours of spatial experiences and different shades of social meanings associated with cell-phone consumption by university students by describing and contextualizing empirical findings, including students' voices, and engaging in various theoretical discussions.

Beyond the future research directions that I have outlined, various dimensions of cell-phone phenomena and young people's uses of various information and communication technologies deserve close examination and can be incorporated into academic inquiries. This is because cell phones themselves are multifaceted and their uses involve interactions between individual bodies, but also are simultaneously set in various private, public, domestic, professional, institutional, global, regional, and local spaces. Furthermore, cell-phone technologies have become a necessity for most in order to conduct businesses, engage in reproductive activities as well as social networking. At the same time, cell-phone industries continuously reinvent and market cell-phone devices as "new" cutting-edge technology. Robin Mansell and Roger Silverstone (1996) state that advanced information and communication technologies "carry both function and symbolic significance" because they are "both machines and media." Therefore, "they are both the objects and facilitators of consumption." In addition, they have implications for the physical and symbolic organization of space and time and this, in turn, affects all producer and user communities" (p.9). Taking in considerations of such dynamic aspects of information and communication technologies, close observations on the geographical implications of cell-phone phenomena are required as cell phones and associated uses continuously evolve and also become "mundane." Predicting the specific future manifestations is beyond the scope of my research. Yet, particular attention can be paid to geographical aspects of cell-phone consumption including how cell phones allow users to co-exist in private and public spaces; how young people use cell phones to network and mobilize with various people including their peers, parents, educators, political campaigners, and strangers; how cell phones involve various surveillance processes; and, how cell-phone usages mediate negotiations of social-cultural identities.

It is important to acknowledge the fact that cell-phone technology is rapidly changing. This means that new forms of social issues and implications are emerging and transforming meanings and experiences of spaces and social relations. For example, surveillance issues are becoming more intensified as GPS (global positioning system) and camera capabilities are widely

used. Cell phones become more accurate tracking device, as many of the cell phones allow not only the marketers and authorities but citizens to track others' whereabouts. Furthermore, the ages when young people aquire their personal phone are increasingly becoming younger. GPS-enabled "Disney mobile" is one of the examples of marketing of cell phones for parents with younger children. This means that young people will become proficient in using personal and mobile technology such as cell phones from when they are at very young age. These cell phones allow parents to keep track of children's whereabouts and they can restrict who they are calling from their phones. The cell phone is part of marketing the "safe lifestyle" that appeals to particular segments of society—family with children, women and increasingly senior citizens. One spatial consequence of such a technology is whether an enhanced sense of security leads people to travel longer distances and / or to places they would not go without cell phones. Therefore, whether parents allow young children to have more spatial freedom to move about different spaces more than before and whether young people obtain spatial confidence to move in different spaces are interesting research questions for understanding young people's geographies. In my study, female students tended to utilize cell phones in public spaces especially at night when they felt insecure. Cell phones did allow them to feel more secure in walking by themselves at night. In addition, the GPS-capable cell phone has additional social significance because of intensification of governmental surveillance due to increasing security concern in the United States. Therefore, who should carry such phones including foreign nationals and children relate to discussions on power hierarchical social relations.

My research explored the degree to which young people are visible to others and in public sphere through cell-phone uses. The ways in which cell phones are becoming "more than a phone" entail additional visibility issues. Camera technology allows individuals to easily capture images that can become evidences to be used when one may get into accidents. Also, these personal images collected and circulated through cell phones have cultural significance since they serve as cultural expression and personal memorabilia. In addition, text messaging has a potential to network young people and participate in democratic processes such as popular and political voting. This aspect has already manifested in the text-message voting processes utilized by popular television programs such as "American Idol" and other talent contests where the public vote decides the outcome. At the same time, to what degree young people utilize cell-phone technology to be "under the radar" and desire to be "hidden" from multiple surveillance processes mediated by cell phones are equally significant to explore.

With the recognition of such wide array of implications as well as the fact that cell-phone technology are rapidly changing and adding new layers of meanings to uses and experiences, my study needs to be taken as a historical study that documented and initiated the discussions on socio-spatial implications of cell-phone technology adopted by the younger generation. My study is about the particular point in time when majority of students began to own and / or use cell phones in the early 2000s. This was when many students can still remember the time in which they did not have a cell phone and many of their friends also did not until few years ago. Simultaneously, this was when many students have become heavy users of cell phones that made them feel “lost” without a cell phone. My study can serve as a case study of a mass diffusion of information and communication technologies and is relevant for those who are studying the mass diffusion processes of other technologies. By mid-2000s, the attitudes and experiences towards cell phones have no doubt become much more diverse compared to what I examined during my research period. And, it will be interesting to study how public and private domain associated with domestic, automobile, work spaces become constituted when this digital generation—whom already are heavily using cell phones in daily contexts—join the work force and become parents themselves. My research then, can become a part of historical study on cell-phone consumption by providing a documentations on how the current young generation incorporated and experienced cell-phone technology as university students compared to their future uses when they enter older life stages and relate to future young generations.

Appendix A: Interview recruitment sheet and Questionnaire form

University students and uses of cell phones in everyday context

Interview (Optional)

Do you love/ hate cell phones? What are your opinions about them? How do you use your cell phone and how are cell phones transforming your daily activities and social life? I am interested in speaking with you about your experiences, observations and perceptions of cell phone uses. I can speak with you alone, or with your friends (2 to 4 people), if you prefer. Your identity will remain confidential and your privacy will be protected. Your identity will not be revealed at any time to anyone and your contact information will not be passed on to a third party. You are not committing to any obligation by agreeing to participate and you can decline at any time. You do not need to be a cell phone owner to participate in the study but must be 18-25 years old. If you are willing to participate in an interview for this study on cell phone use, please provide your E-mail or phone number. Or please contact Kaori Nomura at kxn149@psu.edu

Your E-mail: _____

Questionnaire: University students and uses of cell phones in everyday contexts *page 1 of 4*

This questionnaire is part of a study that investigates university students' cell phone uses and experiences. It will take about 10 minutes to complete this survey. Please note that this questionnaire is *anonymous* and *confidential* in nature and there will be no attempts to reveal your personal information through your participation of this survey. Participation is *voluntary* and YOU MUST BE 18-25 YEARS OLD. The completion and return of this survey is considered to be your implied consent in participating in this study. Please also take IMPLIED INFORMED CONSENT FORM FOR SOCIAL SCIENCE RESEARCH which explains your participation and nature of the study for your records. If you have further questions, please contact Kaori Nomura, Geography Department, 302 Walker Building, University Park, PA, 16802 or e-mail: kxn149@psu.edu

1) Are you ☐ male or ☐ female?

2) What is your age? _____ years old

3) What is your ethnicity? ☐ White ☐ African-American ☐ Asian ☐ Hispanic
☐ Native American ☐ Other _____ (Please specify)

4) What is your citizenship? ☐ U.S. citizen ☐ Other _____ (Please indicate country)

5) Where do you live? ☐ On-campus residents (University Park)
☐ Off-campus residents in State College
☐ Outside of State College (e.g. Boalsburg, Bellefonte, etc.)

6) For purpose of this study, please indicate where you consider home when you are not in school (e.g. home prior to coming to Penn State, home where you return during the summer break, home where your family lives). Please provide zip code (or country of residence if outside US) _____

7) Do you own a cell phone? ☐ Yes **(Please go to question #8)** ☐ No **(Please go to question #25 on p.4)**

8) How long have you had a cell phone?

☐ less than 1 year ☐ more than 1 year but less than 2 years ☐ more than 2 years but less than 3 years
☐ more than 3 years but less than 4 years ☐ more than 4 years

9) How much is your average monthly bill for cell phone usage? $_____ per month ☐ I don't know

10) Who pays for your cell phone usage? (Please check one box)

☐ Myself ☐ Parent(s) ☐ A friend ☐ Other family members
☐ Significant Other ☐ Sibling ☐ Employer ☐ Other _____

11) Which of the following features do you use? (Please check all features)

☐ Text messaging system ☐ Voice message ☐ Internet connection ☐ Games ☐ Voice dialing
☐ Long distance service ☐ Pre-paid minutes ☐ Camera feature ☐ Address book ☐ Vibrating mode
☐ Personalized ring tone ☐ Handsfree/ Headsets ☐ I don't know ☐ Other—describe _____

12) Where and when do you use your cell phone? (Please check all applicable)

☐ home ☐ school ☐ work ☐ restaurants/ bars/ shops
☐ driving ☐ walking ☐ riding public transit ☐ Other—describe_____

13) Where/how do you usually carry your cell phones when you have it with you?

* The questionnaire forms presented here have been reduced in size and cropped around the margins from the original document.

14) How important was each of the following reasons for getting a cell phone? (Please circle level of importance for each reason)

	Essential 4	Very Important 3	Important 2	Somewhat Important 1	Not Important 0
The service is affordable	4	3	2	1	0
To keep in touch with friends	4	3	2	1	0
To keep in touch with family members	4	3	2	1	0
To keep in touch with your spouse/ significant other	4	3	2	1	0
Your family member purchased for you	4	3	2	1	0
Recommended by someone	4	3	2	1	0
For work	4	3	2	1	0
To replace the home phone / answering machine	4	3	2	1	0
For paging purposes	4	3	2	1	0
For emergency purposes	4	3	2	1	0
For fun / entertainment	4	3	2	1	0
Because cell phones are convenient	4	3	2	1	0
Because cell phones are trendy and fashionable	4	3	2	1	0
For use of text message system	4	3	2	1	0
Includes free long distance plan	4	3	2	1	0

15) How much time do you spend talking and using your cell phone everyday? (Please check one box)

☐ Don't use it every day ☐ 1-2 hours ☐ More than 4 hours
☐ Less than an hour ☐ 3-4 hours ☐ Other _____

16) How many calls do you make per day on your cell phone? _____ and receive per day? _____

17) How often do you talk to the following people on your cell phone? (Please circle appropriate frequency for each person)

	Multiple Times In a day 4	Daily 3	Weekly 2	Monthly 1	Never 0
Parent(s)	4	3	2	1	0
Sibling(s)	4	3	2	1	0
Significant other/ spouse	4	3	2	1	0
Friend(s)	4	3	2	1	0
Other family member(s)	4	3	2	1	0
People at work	4	3	2	1	0
Other(s)	4	3	2	1	0

18) Whom of the following people do you call *long distance—people who are in the area code 814*? (Please check all that apply)

☐ Friends ☐ Significant other/ Spouse ☐ Mother ☐ Father ☐ Siblings
☐ Grandparents ☐ Other family members ☐ People at work ☐ Others

19) Whom of the following do you call *local—people who are outside the area code 814*? (Please check all that apply)

☐ Friends ☐ Significant other/ Spouse ☐ Mother ☐ Father ☐ Siblings
☐ Grandparents ☐ Other family members ☐ People at work ☐ Others

20) How often do you use wired phones in relation to cell phones? Why?

21) In which context do you find cell phones to be the *most* useful? Please provide examples or describe the situation.

22) In which context do you find cell phones to be the *least* useful? Please provide examples or describe the situation.

23) Has anyone ever complained about your use of cell phones? Please describe the situation.

24) Do you feel that your everyday routine and/or social relationships with your friends and family changed after you started to use a cell phone?

25) What is your perception about cell phones? (Please check all that apply)

☐ Convenient ☐ Fun ☐ Fashionable ☐ Professional ☐ Unsafe
☐ Noisy ☐ Annoying ☐ Necessary ☐ Other—describe_____

26) Where have you observed other people using cell phones frequently?

27) Who owns cell phones in your family surroundings? (Please check all that apply)

☐ Significant other / Spouse ☐ Mother ☐ Grandparents
☐ Siblings ☐ Father ☐ Other family members

28) Estimate what percentage of your friends own and use cell phones? (Please check one box)

☐ 0% ☐ 1-24% ☐ 25-49% ☐ 50-74% ☐ 75-100%

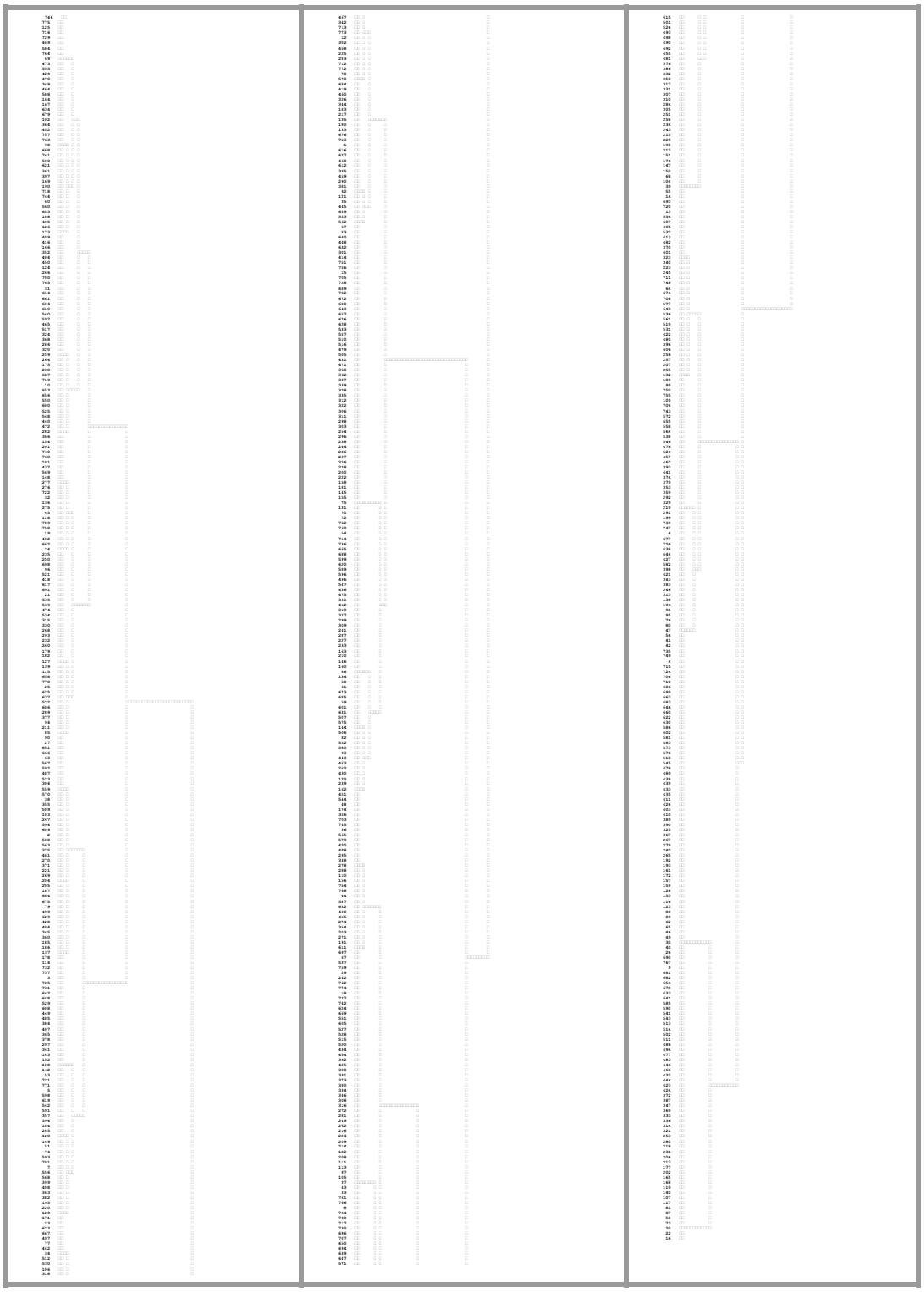
29) How frequently do you use the following items? (Please circle appropriate frequency for each item)

	Everyday/ Almost Everyday 4	Weekly 3	Monthly 2	Yearly 1	Never 0
Internet connected computers	4	3	2	1	0
Pagers	4	3	2	1	0
Wired telephone	4	3	2	1	0
Fax machine	4	3	2	1	0
Television	4	3	2	1	0
Radio	4	3	2	1	0
Walkman (Tape/CD)	4	3	2	1	0
MD (Mini-Disk) player	4	3	2	1	0
MP3 player	4	3	2	1	0
DVD player	4	3	2	1	0
Video player	4	3	2	1	0
Digital camera	4	3	2	1	0
PDA (Palm)	4	3	2	1	0

Thank you very much for participating in the survey! If you have further comments on uses of cell phones please feel free to use the remaining space to write your comments.

Appendix B: Dendrogram for Hierarchical Cluster Analysis (Ward's Method)—family ownership

Note: Dendrogram is read down and to the right



Appendix C: Supporting tables for Table 5.21

Table C.1: Crosstabulation of respondent's ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N= 167)**	**Group 2 (N =328)**	**Group 3 (N=237)**
Cell-phone owner	Count (Expected count) % within group	143 (136.2) 85.6%	175 (193.3) 73.8%	279 (267.5) 85.1%
Non-cell phone owner	Count (Expected count) % within group	24 (30.8) 14.4%	62 (43.7) 26.2%	49 (60.5) 14.9%
Pearson Chi-square sig. (p = 0.001)				

Table C.2: Crosstabulation of mother's ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N= 167)**	**Group 2 (N =328)**	**Group 3 (N=237)**
Mother owns a cell phone	Count (Expected count) % within group	149 (125.5) 89.2%	296 (246.4) 90.2%	105 (178.1) 44.3%
Mother does not own a cell phone	Count (Expected count) % within group	18 (41.5) 10.8%	32 (81.6) 9.8%	132 (58.9) 55.7%
Pearson Chi-square sig. (p < 0.001)				

Table C.3: Crosstabulation of father's ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N= 167)**	**Group 2 (N =328)**	**Group 3 (N=237)**
Father owns a cell phone	Count (Expected count) % within group	152 (119.5 91%	328 (234.8) 100%	44 (169.7) 18.6%
Father does not own a cell phone	Count (Expected count) % within group	15 (47.5) 9.0%	0 (93.2) 0%	193 (67.3) 81.4%
Pearson Chi-square sig. (p < 0.001)				

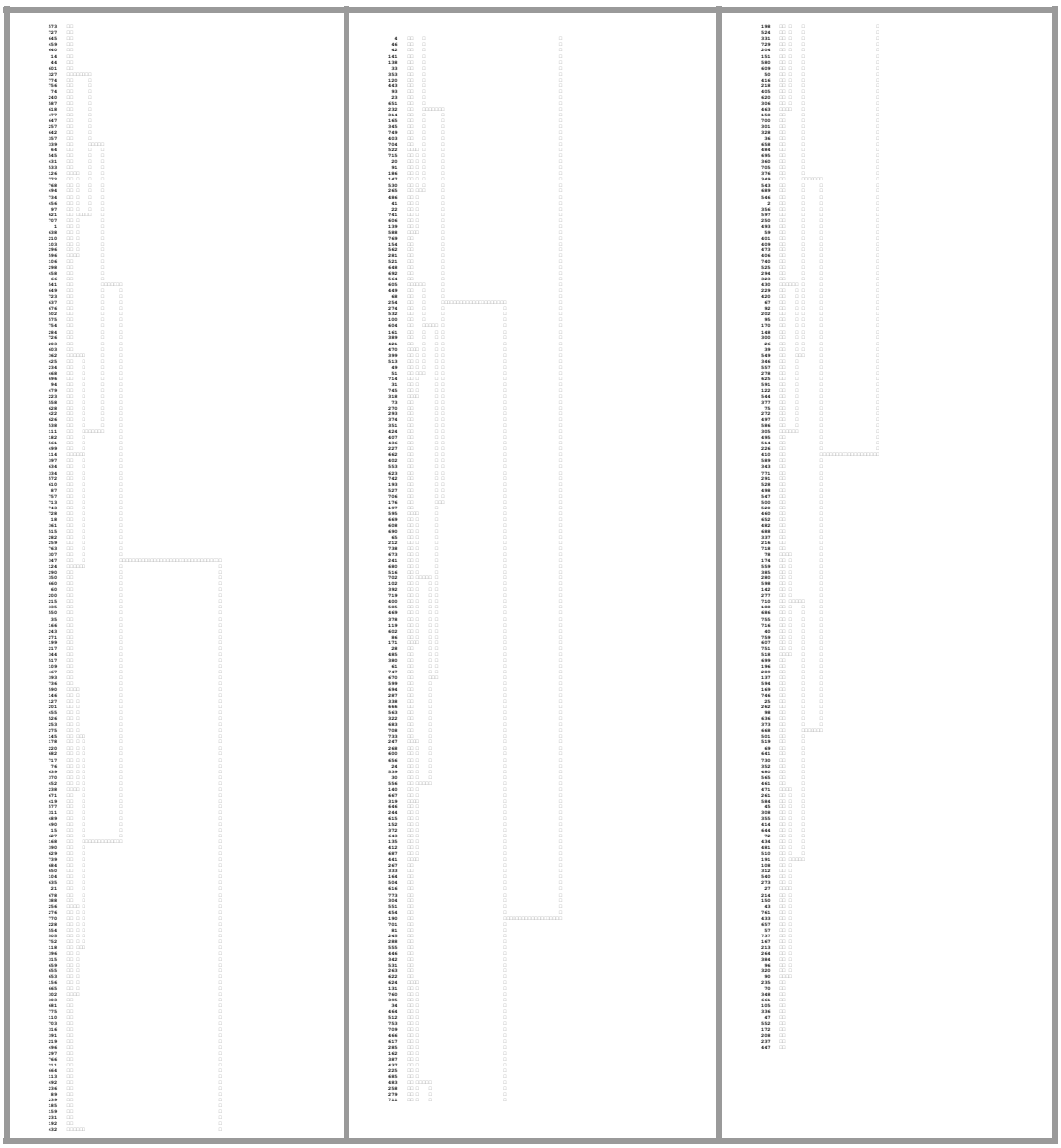
Table C.4: Crosstabulation of grandparent(s)' ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N= 167)**	**Group 2 (N =328)**	**Group 3 (N=237)**
Grandparent owns a cell phone	Count (Expected count) % within group	167 (43.6) 100%	0 (85.6) 0%	24 (61.8) 10.1%
Grandparent does not own a cell phone	Count (Expected count) % within group	0 (123.4) 0%	328 (242.4) 100%	213 (175.2) 89.9%
Pearson Chi-square sig. ($p < 0.001$)				

Table C.5: Crosstabulation of other family member(s)' ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N= 167)**	**Group 2 (N =328)**	**Group 3 (N=237)**
Other family member owns a cell phone	Count (Expected count) % within group	116 (94.0) 69.5%	170 (184.6) 51.8%	126 (133.4) 53.2%
Other family member does not own a cell phone	Count (Expected count) % within group	51 (73.0) 30.5%	158 (143.4) 48.2%	111 (103.6) 46.8%
Pearson Chi-square sig. ($p < 0.001$)				

Table C.6: Crosstabulation of significant-other's ownership according to 3 cluster groups Source: based on questionnaire data				
N = 732		**Group 1 (N = 167)**	**Group 2 (N = 328)**	**Group 3 (N= 237)**
Sig.-other owns a cell phone	Count (Expected count) % within group	80 (76.2) 47.9%	161 (149.7) 49.1%	93 (108.1) 39.2%
Sig.-other does not own a cell phone	Count (Expected count) % within group	87 (90.8) 52.1%	167 (178.3) 50.9%	144 (128.9) 60.8%
Pearson Chi-square sig. ($p = 0.054$)				

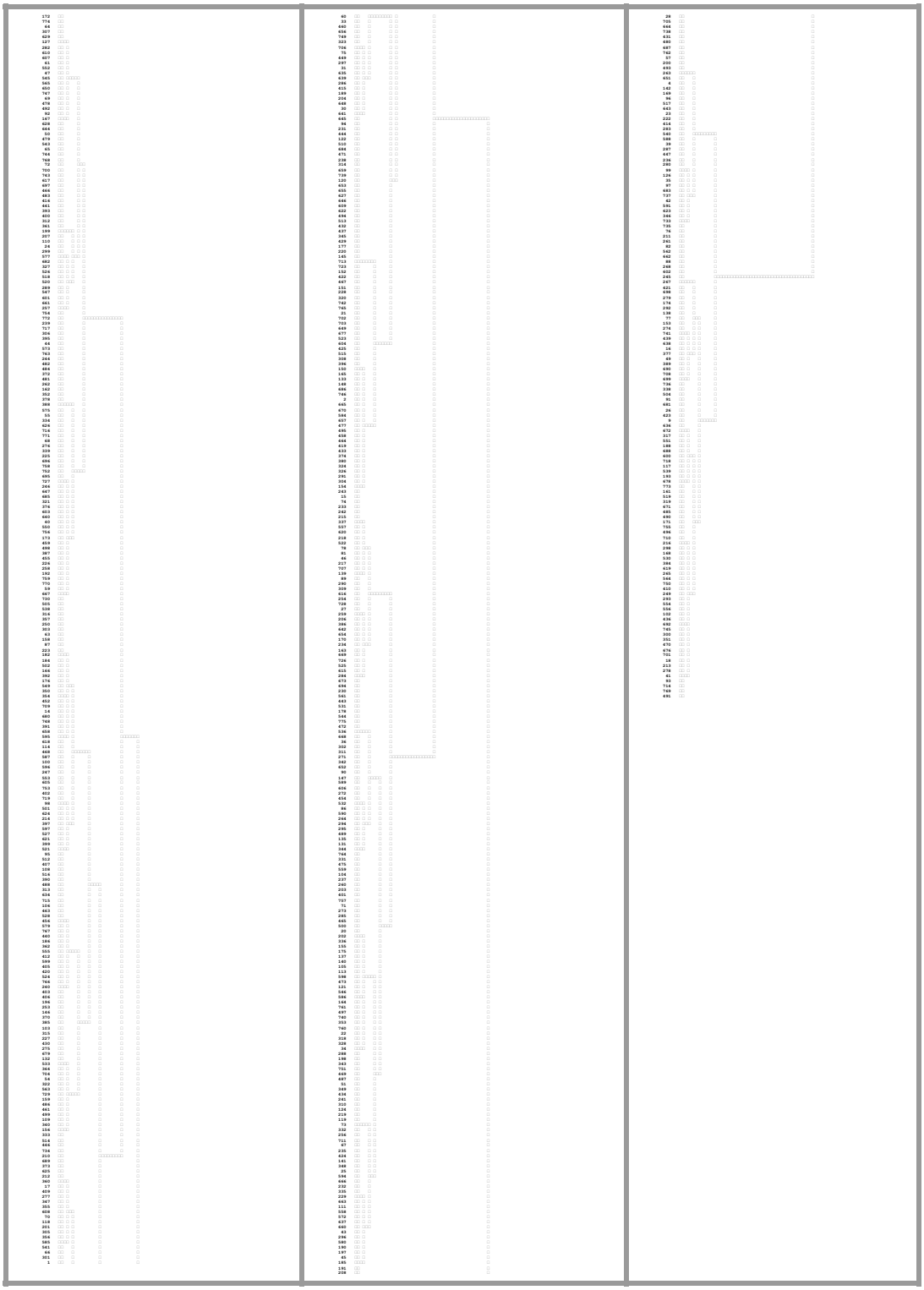
Appendix D: Dendrogram for Hierarchical Cluster Analysis (Ward's Method)—reason for ownership

Note:Dendrogram is read down and to the right

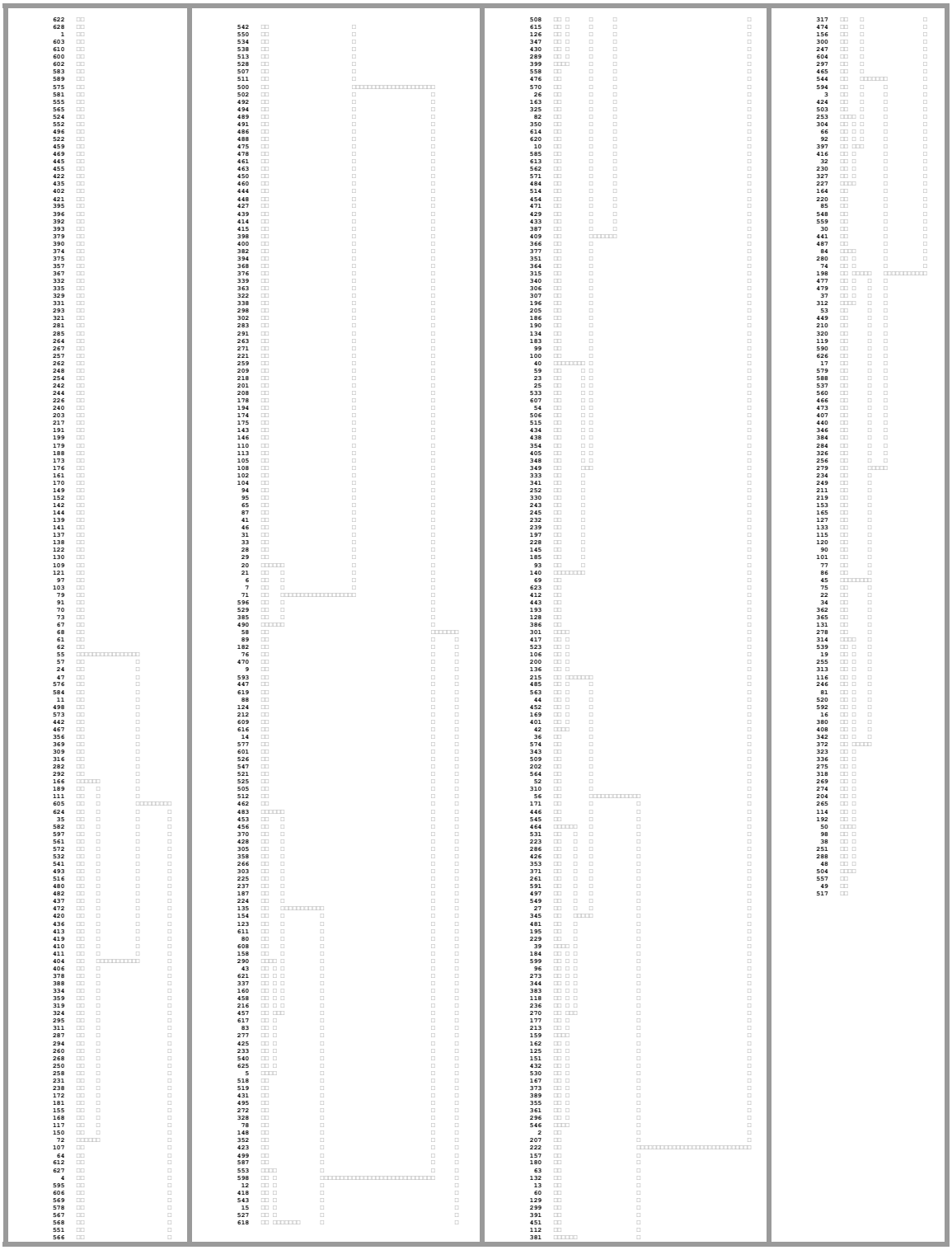


Appendix E: Dendrogram for Hierarchical Cluster Analysis (Ward's Method)—features used

Note: Dendrogram is read down and to the right



Appendix F: Dendrogram for Hierarchical Cluster Analysis (Ward's Method)—perceptions of cell phones by cell-phone owners



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