

Introduction

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Not long ago I was looking through some of my grandfather's papers when I came across a newspaper clipping from the front page of the *Denver Post* dated August 20, 1946. The main upper fold headline, in all caps, was "RADIO-PHONE HOOKUP BEGUN IN COLORADO." The article described an experimental project carried out by Mountain Bell, then the local telephone company in Colorado. It dealt with the provision of radio-based telephony to residents of Cheyenne Wells, a small town on the high plains of eastern Colorado, near the Kansas border (Figure 1.1). The article started by stating: "For the first time anywhere in the worldwide Bell system, that grand old institution, the party line 'went radio' at Cheyenne Wells, Colo., Tuesday noon." While there had been radio-based communication using Marconi's wireless radio for some time prior to this, here was radio-based telephony being applied to the needs of common individuals. The technology was not being used to send messages from ships or to broadcast baseball games, as in the case of commercialized radio stations. Rather it was being applied to the mediation of interaction between private individuals. Indeed this was one of the ancestors of modern radio-based mobile telephony.¹

My grandfather was an engineer in Mountain Bell and an early radio enthusiast. While at college at the University of Colorado in 1919, he built what was probably one of the first radio devices in Boulder, stringing an antenna between the old engineering building and the smokestack of the power station. He participated in the Cheyenne Wells project as the chief radio engineer; and thus the archiving of the article among his papers.²

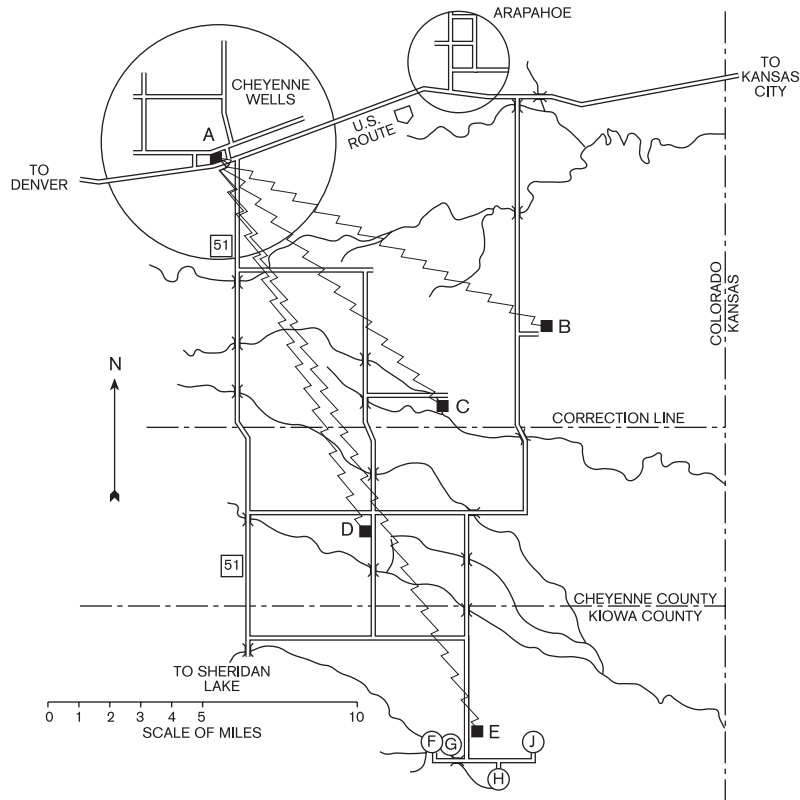


FIGURE 1.1 Map of the region served by the radio telephone system in Cheyenne Wells, Colorado, August 1946. Source: Originally published in Moore, Seyler, and Wright, 1947.

If I know my grandfather, he was far more excited by the details of the technology than by its impact on the lives of the farmers living in Cheyenne Wells. His papers from that period are full of technical drawings of circuits, switch interfaces, etc. Radio technology was, after all, a way to quickly establish a telephone service without having to go through the laborious process of building the physical telephone lines.

Nonetheless, local access to telephony was nothing if not revolutionary for these people living on the high plains. Claude Fischer provides an account of how early telephony had perhaps a more profound impact on rural communities than on more urban locations. He tells how the landline telephone — sometimes even

using barbed wire fences in lieu of traditional wiring — were used when “calling for help in emergencies, obtaining weather forecasts and crop prices, ordering goods, recruiting temporary labor, and so on” (Fischer 1992, p. 98).

If we move our locus from the plains of eastern Colorado to the Chittagong region of Bangladesh and shift in time from 1946 to 2003, we find a similar type of development under way. Using radio senders along the local train tracks, Grameen telephone in Bangladesh has used its system of no-collateral microloans in order to distribute mobile telephones with solar-based battery rechargers to women living in rural villages. While not ignoring the fact that Bangladesh has one of the lowest adoption rates in the world — less than one telephone subscription per 100 persons — like the project in Colorado, access to telephony has the potential to revolutionize the lives of the local villagers. It provides them with direct access to agricultural commodity pricing and thus provides improved bargaining power vis-à-vis commodity wholesalers. In addition, it allows the management of payment and transfer of funds, access to medical services, contact with distributed family members in the case of family emergencies and medical situations and on various social occasions, aids in the arrangement of diverse official papers, etc. (TDG 2002; Singhal 2002).

If we move the scene once again, this time to my location in Oslo, Norway, as I write these words, we find other consequences of mobile telephony. As opposed to the relatively functional use of the device as seen in the previous situations, we find a thriving culture of mobile telephony in which the mobile telephone is used to coordinate peoples’ everyday comings and goings. It is being used to chat. It is being used by teens to send text — and even picture — messages. It is being used to call sick aunts and by parents to organize children’s birthday parties. It is being used by lovers to exchange endearments. It is being used by businesspeople to buy and sell. It is being used by tradespeople to keep track of their assignments and to assist them in their work. It is being used to surf the Internet and to send multimedia messages. It is being used to give people last-minute directions and to make last-minute arrangements. It is being used to delay or rearrange meetings. And, sometimes simultaneously, it is bothering others, who happen to be within earshot, almost to tears.

From Japan to the Philippines, Europe, North America, and beyond, the mobile phone has announced its presence. We see — and hear — it in unexpected locations at unexpected times for unexpected reasons. In Scandinavia, Italy, Israel, Korea, and Japan, it is common to see people chatting on their mobile phones as they walk

down the street. In the United States, people are using up their nationwide-when-ever-wherever-anytime minutes to keep in touch across time zones. Teens — who are the archetypal mobile superusers — “text” to each other quite literally throughout the day and night. Plumbers, carpenters, and other blue-collar workers whose place of work shifts from day to day have found that mobile telephones allow them to work more efficiently and to blend their work and private lives. Business- and tradespeople use the device to make their days more effective. People use it, perhaps unwisely, while driving their cars, and others make calls while on public transport — to the eternal annoyance of their fellow passengers. In short, it is being used to spin the web we call the social network. The scene in the street immediately below me is also being played out in other “mobile” cities and countries. Teens in Rome, Manila, and Seoul, mothers in Jerusalem and Den Haag, and businesspeople in Tokyo and Helsinki are all using the mobile phone in the course of their everyday lives.

In the early 1950s Harold S. Osborne — the recently retired Chief Engineer for AT&T — predicted that mobile telephony would eventually allow us ubiquitous access via small portable devices. He foresaw that anytime we wished to talk to another, we would simply use a small device to punch the appropriate number. He thought that these devices would allow us to hear the voice of our friends and to see them in three dimensions (Conly 1954).

We are beginning to see the fulfillment of his prognosis in a technical sense. But obviously, all of this has not happened without controversy. The mobile telephone’s invasion of restaurants, buses, parks, and even public toilets has given new meaning to the concept of eavesdropping. Smith noted in a *Readers Digest* article from 1937 that “there is no room in the house so private that he cannot crash it by telephone” (Smith cited in Fischer 1992, p. 225). The mobile telephone extends this lament to the far reaches of civilization, and, as many suggest, beyond.

Although people complain of the mobile phone’s intrusion into polite society, there are many other aspects to this phenomenon. We rely on the mobile telephone. It helps us coordinate our lives while on the run; it provides us with a sense of safety and gives us accessibility to others. We personalize the device, and in doing so we make a statement as to who we are and how we want to be seen. It is also worth noting that this transition has come quite quickly. A decade ago the mobile telephone was the symbol of yuppies, not teens. Now it has nudged and pushed its way into our everyday lives in new ways. The rise of mobile, push to talk, multimedia messages and various handheld computing devices will add a new twist to all this.

This book looks into the social consequences of mobile telephony. The particular focus is on the private sphere.³ It examines how the mobile phone is used to provide a sense of safety, to coordinate activities, and to provide accessibility, and it studies how this device disrupts the public sphere. The mobile phone's appearance in society has resulted in turbulence. In this process it has exposed the "taken for granted" assumptions regarding how society and social institutions function. It provides insight into how adolescents manage or — to use the concept developed by Glaser and Strauss (1967) — how they shape their emancipation. It is used in the integration of the teen peer group, it allows for "real-time" microcoordination of social interaction; it "softens" appointments and questions our assumptions about the sanctity of formalized meeting times; it engenders new notions of safety and security; it enables us to colonize portions of the public sphere for personal interaction; and it even exposes the elasticity of language, as seen in the rise of Short Message Service (SMS) and texting. At a slightly more abstract level, we can see that the mobile telephone lowers the threshold for social interaction within groups and, at least within the groups, contributes to the maintenance of social capital.

Thus, the mobile phone is more than simply a technical innovation or a social fad. The examination of its adoption and use, and of the attitudes associated with the device, provides insight into some of the broader machinations of society. In this process, the sociologist is provided with a rare opportunity to see the social adoption of a new technology and its various consequences (Silverstone and Hirsch 1992; Silverstone and Haddon 1996; Palen *et al.* 2001).

My window on this development has been that of an expatriate American in Norway, where I live and work. Along with the other Nordic countries, Norway has been quick to adopt and use the technology. While there are special issues and adaptations associated with the Nordic scene, the quickness with which mobile telephony was adopted and the ongoing love/hate relationship with the mobile phone perhaps provide insight into the broader social dynamics of the device. Thus, in Norway I can observe a relatively mature mobile culture. Norway was one of the countries supporting the development of the Nordic Mobile Telephone (NMT) standard that allowed for international roaming. In addition, it participated in the specification of the Global System for Mobile Communications (GSM) standard. It is also a country that has taken mobile telephony into everyday life and is indeed among the countries with the highest rates of ownership. Thus, it gives insight into the benefits and problems of mobile communication.

Beyond the Scandinavian experience of mobile telephony, this book considers the cross-cultural dimensions of the phenomena. Cultural differences, differential

access to equipment, alternative-pricing systems, and different needs are all elements that can play out in various ways. Within Europe there are definite east/west, age, and gender-based differences in ownership and use (Mante-Meijer *et al.* 2001; Ling *et al.* 2002). Beyond Europe, the experience of I-mode in Japan, the rise of texting in the Philippines, and the intense use of the mobile telephone in Korea provide us with an alternative perspective. The somewhat more cautious use in the United States acts as a type of counterpoint. A completely different picture regarding the diffusion of mobile telephony arises when we look at the experience of, for example, Grameen Phone in Bangladesh.

This book will look into these social consequences of mobile telephony. It will consider the impact of the device on our everyday lives. It will examine how we are domesticating the device and how it is changing the way we consider issues such as accessibility, coordination, safety, and teen use of mobile telephony. It will consider why texting and SMS has grown to be a dominant service and study the role of the mobile telephone in the public sphere.

History of Mobile Telephony

Contemporary mobile telephony is an offshoot of the more general development of radio communication that started in the late 1800s. Following on the work of Maxwell, Hertz, Hughes, and others, Marconi became central in the development of radio-based communications (Farley 2003). Through the 1890s, he sent radio signals over progressively longer distances, ranging from a several hundred meters to several kilometers and eventually to transoceanic communications. By 1899, Marconi was able to equip two ships with radio transmitters in order to report the progress of the America's Cup. Two years later, he successfully sent a radio message from Cornwall, England, to Newfoundland, Canada.

This new form of communication grew and developed during the first years of the 20th century. The growth of radio communication was aided by De Forest's development in 1906 of a vacuum tube, which allowed for the amplification of radio signals.

Marine communications was one of the first areas of truly mobile radio-based communication (Grimstveit and Myhre 1995; Haddon 1997). During this period, passenger ships, fishing fleets, and freighters were regularly outfitted with radio equipment. The Titanic disaster in 1912 led to the requirement that passenger ships maintain 24-hour radio watches.

Radio telephony, that is, the integration of radio transmission with the traditional switched telephone network, was somewhat superficially examined in this period (Brooks 1976). However, the new medium was generally channeled into other areas. In addition to marine communications, the period saw the development of commercial broadcast radio. In Detroit in the early 1920s, radio communication was used to coordinate the activities of police, taxis, etc. (Manning 1996; Farley 2003; Dobsen 2003).

The development of the transistor after the Second World War led to the next significant development in mobile telephony, namely, the regular use of radio telephony for switched communications. From the late 1800s, landline telephony had offered person-to-person communication via switched circuits. A dedicated circuit, or a “line,” was set up between two persons calling each other. The early “switches” were simply manual devices where the operator (usually a woman) determined who the calling party wished to reach and then connected the two with the use of a cable and a jack. These switches were progressively automated until switching systems are now largely electronic devices that can handle many thousands or even millions of simultaneous conversations.

By contrast, radio-based communications, such as those carried out by police, firefighters, taxi companies, and the like, often involved — and indeed in many cases still involve — the use of a central dispatcher who directed communications to the appropriate person and who also maintained an overview over the activities of all the actors in the group (Manning 1996). The messages are broadcast, and there is no dedicated circuit available for personal communication (Figure 1.2).

As evidenced by the work in which my grandfather participated, the wide-scale integration of radio-based telephone devices with traditional switched telephony systems started in the late 1940s. AT&T extended this to mobile telephone systems. By today’s standards, these mobile devices seem like Rube Goldberg machines. The person placing the mobile call had to manually search for an unused channel on the radio telephone. The individual then used that channel to contact an operator, who in turn actually dialed the number provided by the caller. When the person called came on the line, the connection was half duplex, meaning that only one person could speak at a time (Forley 2003). A “push to speak” switch on the handset opened and closed the channel for the caller. This controlled the pace of the conversation. In order to hear the response of the person called, you would have to release the switch. Presumably, the conversation would include conventions such as “copy,” “over,” and “roger,” in order to facilitate taking turns.⁴ Interestingly, the development of “push-to-talk” systems are reviving this one-way form of interaction.



FIGURE 1.2 An early example of mobile, voice-based radio communication. Copyright © 2000 Lucent Technologies. <http://www.bell-labs.com/history/75/gallery.html>

By the mid-1960s an improved system was developed. In this case, there were automatic channel assignment, direct dialing, and full duplex operation. The system in a specific geographic area allowed for only about a dozen simultaneous users. In 1976, the system in New York City, for example, had almost 550 users sharing 12 lines. There were 3700 customers on a waiting list (Encyclopedia Britannica 2002). The mobile terminals themselves were ponderous things requiring batteries heavier than a car battery. Thus, mobile telephony at this point often meant automobile-based telephony.

The 1980s saw increasing interest in the development of various mobile telephony standards. In the United States, these included the mutually incompatible Advanced Mobile Phone System (AMPS), Narrowband Advanced Mobile Phone System (NAMPS), Time-Division Multiple Access (TDMA), and the Code-Division Multiple Access (CDMA). These systems progressively allowed increasing capacity as mobile telephony became more popular.

In Europe, the Nordic Mobile Telephone (NMT) was the first generally successful cellular system that automated the calling process and allowed for international roaming. The system was established in the early 1980s in Sweden, Denmark, Norway, and Finland. Since it was a standardized system, one could use

the same mobile telephone across the whole region. Nonetheless it was still a parochial system. It was incompatible with the Total Access Communication System (TACS) in the United Kingdom, the Radio Telephone Mobile System in Italy, RadioCom in France, and a number of systems used in other countries. Because of this incompatibility, in the late 1980s the European public telephone network operators, in conjunction with the European Community and the European Telecommunications Standards Institute (ETSI), started the development of the GSM. This digitally based standard has come to dominate the world's mobile telephone market. GSM allows for international roaming, is backward compatible with other systems, allows for various national tariff systems, and includes the ability to send and receive various data-based services, such as the much-maligned Wireless Application Protocol (WAP) and the much-adulated Short Message System (SMS). In addition, it includes items such as caller ID, call waiting, and voice mail.

GSM was an immediate success in many European countries. In the early and mid-1990s there was nearly a "Klondike"-like feeling around the marketing of GSM, with adoption rates continually exceeding the budgeted expectations. For example, TeleDanmark hoped for 15,000 new customers in 1993 but got more than 65,000. Sonofon planned its GSM system for 25,000 customers in 1995 but achieved 100,000 (Haddon 1997). While original expectations were often framed around business markets, mobile telephony has very quickly moved into the private sphere. This development was aided by the marketing of subsidized handsets, where one can purchase a handset and a subscription for a very low price. The development of prepaid or "pay-as-you-go" subscriptions also encouraged the adoption of mobile telephony. Indeed, its widespread adoption by certain groups, such as teens, has been greeted as a mixed blessing in many quarters. Thus, according to the International Telecommunications Union (ITU), as of 2003 almost 69% of all mobile telephone subscribers in the world were using the GSM system. The various others standards make up less than one-third of all subscribers.

At about the same time that the GSM standard was being commercialized, handset manufactures were radically reducing the size and weight of mobile telephone terminals. Rather than being the large "lunchbox" affairs that were best mounted in your car, they begin to be devices that could conveniently be placed in your pocket. Functionality developed to include things such as WAP, SMS, call logs, overview of appointments, and contacts. The terminals included color screens, gaming functions, and the capabilities to download ringing sounds

and logos and to shift the covers. Battery capacity increased and still other functions have appeared, such as cordless microphones/earphones and integrated cameras.

WAP emerged in 1997. It was an effort to allow Internet-like services within the GSM system and to avoid a situation where different commercial actors would develop separate standards. This was based on the cooperation of Phone.com, Nokia, Ericsson, and Motorola to produce a license-free protocol. WAP was commercialized in 1999 amid a great deal of hype. It has not managed to live up to hopes because of its limited usefulness, the limited performance of the networks, and the lack of terminals at the point of commercialization. WAP also suffered in comparison to the proprietary I-mode system. With the introduction of higher-speed General Packet Radio Service (GPRS), broader access to WAP-capable terminals, and more sober expectations, WAP has found a somewhat limited role in the mobile telephone firmament (Lindmark 2002).

The final system of note here is the DoCoMo I-mode system in Japan. I-mode provides access to a variety of services and allows one to send and receive short messages as well as e-mail.

Another unique element in the I-mode system is that it allows access to a broad variety of premium information services. The I-mode standard specifies a “lite” version of HTML, the coding used on the Internet. This facilitates the development of Web-like sites. The other unique aspect of I-mode is that the parent company, DoCoMo, oversees and administers the available sites. Thus, we cannot really speak of an open Internet, but rather of a type of extended intranet where one has access to a large but cosseted set of services. DoCoMo provides developers with a type of style book that guarantees a similar layout for the different sites.

The user has access to a variety of both free and subscription services in addition to the traditional voice and text communication functions of other mobile telephony systems. DoCoMo handles the billing and charges a 9% fee for all revenue generated by the various sites. In addition, DoCoMo receives the standard payment for transmission of data through its network. Thus, I-mode is not so much a technology as a system of infrastructure and marketing.

Mobile communication is moving in the direction of broader types of access and new forms of communication. Wireless local area networks, handsets that include Internet browsers, and increased speed in the network are being commercialized. In addition, new forms of messaging that include the exchange of photographs and sound are moving into the market. In spite of this, the fundamental

services of person-to-person communication, based primarily on simultaneous voice communication but also on asynchronous text messages, are central to the popular use of mobile telephony.

Finally, mobile telephony allows for the development of location transmission services that, in turn, open the way for geographical positioning, the ability to find the location of various services, etc. Imagine being able to call up a map showing the physical location of your friends (hopefully only those friends who have given permission) (Ling 2002).

Thus, mobile telephony has grown from being a rather ponderous and awkward system to being an easily transported part of everyday life. Its functionality has grown beyond simple communication to a system that allows for the communication of text, access to the Internet, the capturing and sending of images, and the distribution of location-sensitive information.

Growth of the Mobile Market

Along with technical developments, the number of subscribers to various mobile telephone services has seen a dramatic growth since the early 1980s. As of 2003, there were approximately 1.162 billion mobile telephone subscriptions (ITU 2003). On a worldwide basis, there is, roughly speaking, one mobile telephone subscription for every fifth or sixth person. To put this into some perspective, there are slightly more mobile telephone subscriptions than traditional landline subscriptions. In terms of distribution (see Figure 1.3), roughly one-third of all mobile telephones are in Europe, almost 40% are in Asia, and slightly less than one-quarter are in the Americas. About 3% of all mobile telephones are found in Africa and 1% in Oceania.

In order to place mobile telephony into a global context, we can look at the adoption rates for various regions and countries. Before embarking on this analysis, however, there are several caveats. First, the per capita number of subscriptions is simply the total number of subscriptions compared to the total population. It ignores the fact that in some cases subscriptions are associated with functions as opposed to individuals (e.g., ambulances or other mobile emergency vehicles). Further, per capita adoption rates ignore the fact that some individuals have more than one subscription. For example, in 2000, about 13% of all teens in Norway had two or more mobile telephony subscriptions.⁵ Finally, there are often many “dead” subscriptions and discarded handsets. This is particularly the case with prepaid or “pay-as-you go”

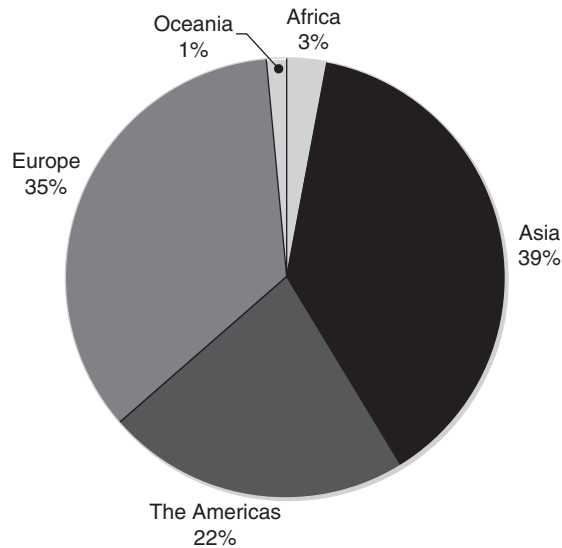


FIGURE 1.3 Worldwide distribution of mobile telephones, 2002. Source: ITU.

subscriptions, where the subscriber has paid for use beforehand. If the subscriber does not actively use the telephone, that is, if no calls are placed for six months or a year, the network operator wishes to get the subscription off its books. Thus, the subscription eventually becomes invalid. The point at which these are considered inactive is not clear, which often slightly inflates the statistics in those countries where there is an extensive number of prepaid subscriptions.

Thus, while the ITU reported 82 mobile telephones per 100 persons in Norway in 2001, a survey I carried out during the same period showed that 75% of those asked said they had a mobile telephone, while another 8% said that they could borrow one on a more or less regular basis. If we assume that two persons shared the “common” mobile phones, that comes up to coverage of only about 79%. Thus, the remaining 3% reported by the ITU comprise either the “function”-related telephones, those who had several subscriptions, or the dead and dying subscriptions that were counted as living.

Given these caveats, the ITU material shows that there were about 18.8 mobile telephones per 100 persons in the world as of 2002. About 22 countries, largely in Europe, have adoption rates of over 75% (Figure 1.4). The material also shows that there are approximately 29 countries with less than one mobile telephone per 100 persons. These were clustered in Africa and in parts of Asia.

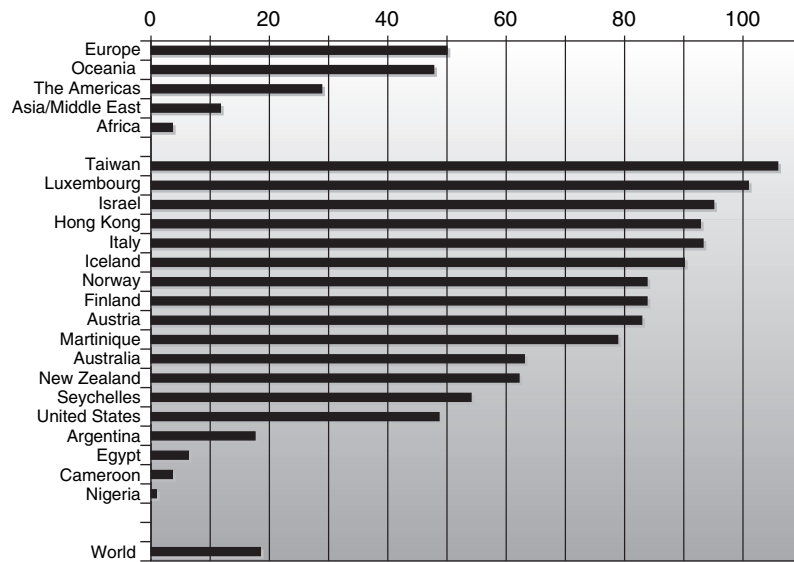


FIGURE 1.4 Mobile phones per 100 persons for various regions and countries, 2002.
Source: ITU.

Europe is the region with the highest adoption rate in the world. The material from the ITU shows that in Europe there were slightly less than 50 subscriptions per 100 persons. There are 14 countries with a subscription rate of 90% or higher. These were Iceland (90.28), Italy (92.65), and Luxembourg (101.34). There were also 13 other countries with an adoption rate of more than 75%. Interestingly, the data shows that Finland (84.5), which has the image of being the most advanced mobile country in the world, was slightly behind the top tier of countries. While there are many countries with high adoption rates in Europe, these were counterbalanced by many Central and Eastern Europe countries, such as Bosnia (9.17), Russia (12.05), and Ukraine (4.42), where a much lower adoption rate is found.

The region with the second highest adoption rate — albeit spread across a relatively small population — was Oceania (48.53). In this region, Australia (63.97) and New Zealand (61.84) are clearly the most advanced mobile countries and are the major population centers.

In the Americas, the material from the ITU showed that there were about 30 mobile phone subscriptions per 100 persons. Interestingly, Martinique (78.99) and Guadeloupe (69.72) headed the list of the most mobilized countries in the region. The United States was third, with 48.81% coverage.

There were 12.19 mobile telephone subscriptions per 100 persons in Asia/Middle East. The heavyweights in this region were Hong Kong (92.98), Israel (95.45), and the country with the highest adoption rate in world, Taiwan (106.45). Taiwan edged out Luxembourg by about 5 percentage points here, but when one considers that there are more than 22 million Taiwanese, compared to only 450,000 Luxembourgers, you can perhaps appreciate the magnitude of mobile telephony in the former. It is worth noting that the rates for Japan (62.11) and South Korea (67.95) place them somewhat back in the pack.

As with Europe, there are also many countries with relatively low rates of adoption. China (16.09), India (1.22), Indonesia (5.52), and Bangladesh (0.81) are examples of large population groups where there are few mobile telephone subscriptions. The sheer size of China means that it is the single largest mobile market in the world, with about 200 million subscriptions, 130 million of which are GSM. Nonetheless, there are only about 16 subscriptions per 100 persons there.

For Africa as a whole, the ITU material shows that there was 4.19% coverage in 2002. The thing of note here is that there were often nearly as many mobile as landline subscriptions. This statistic describes both the relatively quick adoption of mobile telephony and the impoverishment of the African landline telephony system. In Cameroon, for example, there were slightly more than 4.4 landline telephones per 100 persons. When it comes to mobile telephony, Cameroon had just over 3.5 mobile telephone subscriptions per 100. By way of comparison, in the United Kingdom there were something like 144 landline telephones per 100 persons vs. 84.49 mobile telephones. The landline-to-mobile ratio in the United States was 114 landline phones to 48.81 mobile phones, and in Luxembourg, which along with Taiwan seems to be some sort of telephonic Mecca, there were a whopping 178 landline telephones vs. 101.34 mobile phones per 100 persons. Thus, while there are literally orders of magnitude between the situation in, for example, Cameroon and than in Luxembourg or Taiwan, it seems that mobile telephony is making inroads into those countries where there has been little telephony before. In addition, it is allowing for alternative types of access where one was telephonically isolated before, as seen in the case of Bangladesh.

In countries with high adoption rates, an increasing number of persons have only a mobile subscription. In 2001 about 8–10% of those persons in Italy, Norway, and the United Kingdom reported that they had only a mobile telephone. These persons were generally younger than those who had both a landline phone and a

mobile telephone. Those who had only a landline telephone were significantly older than the other two groups.

There are several other elements that have favored the adoption of mobile telephony in countries and perhaps hindered it in others. These include pricing, system interoperability, and the coverage of mobile telephony (Robbins and Turner 2002). In terms of pricing, the system of “calling party pays” is not observed in the United States. Instead, the cost of a call is shared between the caller and the party called. This means that a cost is imposed on the person you call, as opposed to the system observed in other parts of the world, where the caller assumes the cost of calling.⁶ Thus, in addition to taking up your time, receiving a call has economic consequences for the party called. From the perspective of the caller, this system might be seen as a psychological deterrence to mobile telephone use, since a caller might hesitate to impose himself or herself on another person both temporally and economically.⁷

In addition, system incompatibility can limit the usefulness of mobile communication. This means that if you, for example, have a GSM telephone in an area where there is only CDMA coverage, you will be unable to make calls. Finally, there is the issue of coverage. There are, for example, vast stretches of territory in the United States that are outside the range of coverage from any system.⁸ In this respect, the denser population coverage of Europe and parts of Asia facilitate the development of mobile communications systems.

Beyond the raw adoption per capita, we can see that the mobile telephone is adopted unevenly across various groups in a particular country. If we compare ownership in the United States and in Norway (Figure 1.5), we see that as of 2002 the penetration rate was higher in Norway than in the United States. There were also several other interesting differences. In Norway, young adults had higher adoption rates than other age groups. By contrast, in the United States, the highest adoption rates are among mature adult groups. Another difference is that in Norway, mature men generally have greater access than the same-aged women. Many of these differences are likely due to employers subsidizing mobile telephone use. The same does not seem to be true in the United States, where both genders have roughly the same rates of access.

When considering social class and the adoption and use of mobile telephony, it seems as though there are not the same types of “digital divide” issues that we find associated with the PC and the Internet.

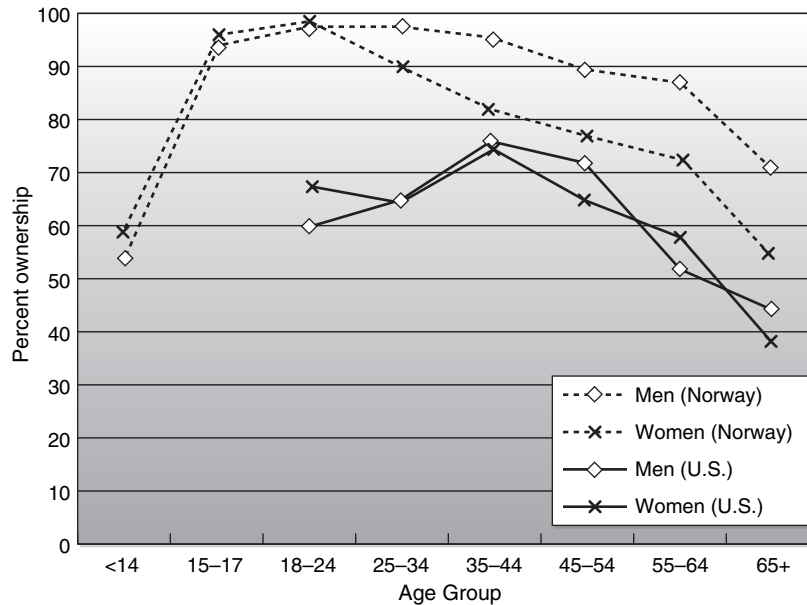


FIGURE 1.5 Reported mobile telephone ownership in the Norway and the US, 2002. Sources: Telenor, Pew Internet and American Life Project, Oct 2002 Tracking Survey.

This said, there are clearly international differences in adoption rates, as we have seen. Further, within the context of various countries, analysis shows that there are some educational and income-based differences in access to and use of the mobile telephone. In a European-wide analysis carried out by Eurescom in 2000, the results show that there were significant income-based differences in ownership of the mobile telephone.⁹ There were also differences based on educational attainment. In their analysis of the scene in the United States, Katz and Rice find somewhat similar findings (2002, pp. 253–254).

Nonetheless, mobile telephony is, in itself, more accessible than the PC/Internet. One does not need to deal with assembling various components and software. At the level of the user interface, the mobile telephone operates in much the same way as the traditional telephone: that is, you dial a number and the call is put through. While there are more advanced functions available — such as multimedia messages and Internet chat — you can use the mobile telephone without having to learn about or deal with these functions. In addition, the technology is

relatively inexpensive and widely available. In some countries, you can buy a mobile telephone handset that includes a prepaid subscription at a gas station or in the grocery store for less than \$40. Thus, you avoid the need to purchase expensive components that may or may not function flawlessly together.

Outline of the Book

In the remaining chapters, I will cover several areas, including (1) the role of the mobile telephone in fostering a sense of safety and security, (2) its use in the micro-coordination of everyday life, (3) the role of the mobile telephone in the lives of teens, (4) the mobile telephone as a disturbing influence, and (5) the rise of SMS as a form of communication.

Chapter 2 examines the broader questions associated with the adoption and use of mobile communication. It examines the ideas of technical determinism (the notion that technology forms society), social determinism (the opposite idea: that society forms technology), and the two middle positions of the affordances approach and the domestication approach. In addition, the chapter discusses the methods and data that lay behind the analyses presented here. This discussion will be of interest to the theory and method wonks among us.

Chapters 3 through 5 follow a slightly Maslowian development, in that the discussion moves from a discussion of safety and security (Chapter 3) via a discussion of the functional use of the mobile telephone for coordination (Chapter 4) to a discussion of identity building and something approaching self-realization among teens (Chapter 5). A chapter follows (Chapter 6) that describes how the mobile telephone is a disturbance in the public sphere and that analyzes texting.

Safety and security (Chapter 3) is a common theme in the purchase and ownership of a mobile telephone. Indeed this is one of the basic functions of the device. Studies in Norway, Europe, and other countries all point to this conclusion (Mante-Meijer *et al.* 2001). This is often couched in terms of emergencies, but we find a range of situations here. The mobile phone, for example, gained a certain prominence in the tragic events of September 11, 2001. At a more limited level, middle-aged users spoke about being able to provide help in the case of car accidents, retirees with potentially dramatic health conditions talked about feeling free to use relatively remote mountain cabins because they can call for assistance in case of problems, and teens talked about being able to call home when they missed

the last return bus. While the device allows us to summon help in certain situations, it can also be the cause of insecure situations, as seen in the studies of phoning while driving. Although the issues are quite broad, analysis shows that safety and security are possibly the best-recognized aspects of the mobile telephone.

The ability to coordinate activities “on the fly” is, perhaps, one of the most central advantages of the mobile telephone. It has led to new ways of organizing everyday life. It provides flexibility in the way we plan our days and in the way we use the transportation system. In its broadest sense, it can well be that the mobile telephone will lead to changes in the organization of urban life. The way one plans travel, the way meeting times are arranged, and the way we coordinate the various daily activities within the family at work are all part of this issue. The concept of “microcoordination” can be used to describe the nuanced use of the mobile phone for planning activities. I will examine this in Chapter 4.

Beyond the functional use of the mobile telephone, the device has led to a different understanding of interaction and networking among teens (Chapter 5). Teens in Scandinavia, Italy, Japan, Korea, and many other countries have adopted the mobile telephone, often to facilitate their social interaction. While many of the interests and activities are the same, the way in which they are organized is different. The device allows for a type of anytime-anywhere-for-whatever-reason type of access to other members of the peer group. This means that the social network is more tightly bound together and dynamic in its organization and location. Thus, it is clear that the mobile telephone has redefined the institution of adolescence as well as the emancipation process.

The discussion surrounding the disturbing use of the mobile telephone in public places is, conceivably, the classic gloss of the device in the popular imagination. This will be discussed in Chapter 6. The ringing of a mobile phone in a bus or a restaurant is the butt of many bitter comments. Indeed, the ringing of a mobile phone at a funeral has become a type of urban legend. It is a theme that almost without fail arises in focus groups, interviews, and even casual conversation. What is it about the public use of the mobile telephone that grates on the common imagination? What does this say about the technology, about the people who use it in public spaces, and about the role of public space in our social lives?

Upon the ringing of a mobile telephone, you must, in one way or another, excuse yourself from the face-to-face world and give yourself over to a telephonic sociability. This leaves the “precall” social situation “on hold” while you complete the call, which itself can require greater or lesser levels of privacy. Upon completion of the call, you must reintegrate yourself into the preexisting face-to-face

social interaction and perhaps repair the damage caused by the interjection of the call.

Texting is the focus of Chapter 7. Since the late 1990s the use of short messaging or texting, has seen phenomenal growth. It is estimated that approximately 280,000 such messages are sent every hour in Norway, a country with only 4 million inhabitants. Among teens, this is the preferred form of interaction. Texting has several characteristics that make it useful not only for teens but increasingly for other groups. It is asynchronous (that is, it does not require the immediate attention of the receiver), it is relatively unobtrusive, and it is generally cheaper than voice telephony. Obviously, it suffers from the facts that it is somewhat difficult to enter the messages and that message length is limited to 160 characters. Nonetheless, experience shows that this has not been a major hindrance. Beyond texting, mobile telephones are also turning into multimedia terminals that allow us to send and receive music, pictures, drawings, and the like. These issues will be considered here.

Finally, in Chapter 8 the various threads associated with the use of mobile telephony in society are tied together. This chapter considers the current situation of mobile telephony and discusses prognoses about continued development, both in terms of technology and in terms of the realms in which the device will be used. The chapter summarizes the degree to which the device has become domesticated and, indeed, the degree to which this approach is applicable. In addition, it summarizes the broader social consequences of the mobile telephone, that is, security, coordination, accessibility, and its ability to annoy.

A central focus of Chapter 8 is the broader issue of the mobile telephone's effect on social cohesion (Putnam 2000). Will the mobile telephone contribute to or weaken the social capital? Clearly, the jury is still out. There is good evidence for both arguments. On the one hand, the mobile telephone can lead to "balkanization," in that we can escape our immediate situation and interact with only like-minded persons (Portes 1998). In the process, we do not just drop out, but we also colonize a part of the public sphere and reduce it slightly by our unwillingness to participate. Hardin's (1968) concept of the "tragedy of the commons" is seen here, in that the device provides an advantage to the individual while slightly diminishing the public sphere.

At the same time, the device allows for the development of stronger in-group ties. It leads to the sharing of experiences and emotions more immediately than almost any other mediated form of contact, save face-to-face interaction.

