2 Youth Culture and the Shaping of Japanese Mobile Media: Personalization and the *Keitai* Internet as Multimedia

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The social reception and transformation of *keitai* communication and the *keitai* Internet in Japan are closely linked to the use of these media by youth and to youth popular cultures. This chapter examines the history of *keitai* in terms of its social shaping as a medium and a consumer item.

A starting point for this analysis is theories of the social construction of technological systems (Bijker, Hughes, and Pinch 1993). As Bijker and Law (1992, 13) have suggested, ''Knowledge is a social construction rather than a (more or less flawed) mirror held up to nature,'' and further, ''Technologies and technological practices are built in a process of social construction and negotiation, a process often seen as driven by the social interests of participants.''

Claude Fischer (1992) has extended this approach more radically in examining the domain of telecommunications. In his study of the spread of the telephone and its establishment as a new media form in the United States, Fischer successfully mobilized a social constructivist approach but had the following critique: ''Most social constructivism has concentrated on the producers, marketers, or experts of a technological system.'' He describes how in his own work his intent was ''to go further, to emphasize the mass users of technology.'' In Bijker's study (1992) of the development of the fluorescent lamp, Bijker dismisses the influence of consumers, stating, ''The social group of customers does not have its own direct voice in this story.'' He writes, ''The result of market research and an analysis of the popular technical press may be considered to reflect the views of this social group'' (1992, 81). By contrast, Fischer (1992) stresses the role of consumption; he believes that in order to understand the social shaping of technology it is crucial to include consumers in the analysis.

My study of Japanese mobile media demonstrates that the role of the consumer is absolutely critical. Taking my cue from Fischer's approach, I build my argument by layering a wide range of materials regarding the particular technological context and the reception by users.

Materials

I draw on a wide range of user surveys and statistical data as well as on interview studies conducted on the streets by our research group. We have been conducting studies since 1995 on mobile media use in Japan (see chapters 6, 8, 9; Okada and Matsuda 2000; Matsuda et al. 1998; Tomita et al. 1997). In this work, we first arrived at an understanding of the users' perspective through interviews. The latter half of the 1990s saw the rapid adoption of mobile phones, and youth were identified as the leaders of this trend. It is extremely difficult to grasp the views of these users through the random abstractions presented in a standard survey form. At that point in time, adoption was still below the 50 percent mark, and survey return rates from the core *keitai* adoption population of young people were relatively low.

Because of these difficulties, our research group approached these new trends by conducting several interview studies on the streets of the two major Japanese cities, Tokyo and Osaka, targeting areas where young people gather in large numbers. In Tokyo these were areas such as Shibuya and Harajuku, and in Osaka, America Village in the Minami district. These areas are popular gathering places for young people in their teens and twenties; they emerged as youth culture centers during the blossoming of consumer culture in the 1980s. We conducted our spot interviews twice at each of the districts: in Shibuya in the summer of 1996 and 1998, and in Minami in the winter of 1997 and the summer of 1998. Our research has continued as an interactive process since then. We conducted a study among college students based on survey questionnaires in 1999 and again in 2001. When referring to interview data, I note the gender, age, location, and interview date for the research subjects.

Personalization

In the history of mobile media in Japan, the first service is generally considered to be the wireless telephone, introduced on merchant ships in 1953. The main purpose of this service was to connect the vessels in port to telephones on land. Three years later, an experimental service that connected trains to land line telephones was implemented on the Kintetsu Express running between Osaka and Nagoya. Many years after that, NTT developed the world's first car phone, in 1979 as the world's first cellular telephone service, and in 1985 as the ''Shoulder Phone,'' a car phone that could be carried outside the vehicle. Subsequently, in 1987, the world's first handheld cellular phone was marketed by NTT. By this time, the concept of *keitai* had become a telephone that could be used away from the location to which it was conventionally fixed, such as an office or an organization.

The *keitai* was originally developed for official uses and for organizational purposes, as manifested by its birth as a shared telephone. Before it became the norm for each

individual to have his or her own *keitai* device, a *keitai* was typically provided to one representative within a group of people, for example, to the manager at a construction site where there was no fixed telephone line. Today, unless there is a specific reason, we rarely answer another person's *keitai* when it rings in the owner's absence. However, early *keitai* were typically not owned by an individual but were leased to a group under the name of the representative, and therefore when that person could not answer the phone, it was picked up by somebody else instead.

The same can be said for the pager, which was a popular mobile medium before the *keitai*. Pagers were primarily used by companies and other organizations and were not provided to each individual. Rather, they were shared among a group, and a salesperson would take an available one outside the office as necessary.

The terminals of this period were the tone-only type, which only rang when receiving a call and did not display a callback number. Only co-workers at the individual's own office would call. Consequently, to the person carrying the pager, it was a ''binding medium'' that seemed to chain him or her to the company (Takahiro 1997a).

Throughout the 1990s, during the adoption of mobile media, uses of the pager were extended into individual and personal purposes. This trend can be described as personalization (Matsuda 1999a). The pager took a major step toward being a personal medium in April 1987, when NTT was struggling to compete against Tokyo Telemessage and other New Common Carriers (NCC) that had entered the market the year before. Before it spun off NTT DoCoMo, NTT introduced the display-type pager, which showed digits and letters on the terminal's liquid crystal display (figure 2.1).

Figure 2.1
NTT's Pocket Bell D-Type (1987), the first display-type pager. Reproduced with permission.

When calling this pager, the caller would input a callback number, and this number would be displayed on the monitor to identify the caller to the receiver. This function changed the pager from a medium limited to receiving calls from one specific individual or location to one that could respond to calls from various sources such as the office, home, and friends. With this change, the pager was extended into private and personal uses outside of the office setting.

As subscription charges dropped significantly, the ages of the users also dropped, and the pager came to be a personal communication tool for female college and high school students. It allowed girls to receive messages from various partners, and a new form of dialogue was constructed through the repeated exchange of pager messages.

In 1987, as business competition began in this area, subscription rates rose over 19 percent in comparison to the same period in the prior year. In the spring of 1992 they rose only 16 percent, and in the spring of 1993, 13 percent, indicating a slow but steady decline. In June 1993, however, the percentage increase started climbing. In September 1993 the cost of a new subscription dropped by a half, to ¥8,000, because of a drop in the rental security deposit. In response, December 1993 saw a growth rate of close to 19 percent (*White Paper on Communications in Japan 1994*). Based on reports aired in industry public hearings in that year, 70 percent of new subscribers were individuals (rather than business subscribers), mostly young users in their teens and twenties.

Isao Nakamura (1996c) writes that until 1990, business hours, particularly around 10 a.m. and between 2 p.m. and 3 p.m., were the peak hours of use for the Tokyo Telemessage service. By 1993, however, 10 p.m. had become the peak hour of use. Nakamura cites this shift as indicating a structural change in pager use between 1991 and 1992, where private uses came to dominate. He also states that in 1993, 80 percent of new subscribers to this service were in their teens and twenties.

In 1995 carriers further lowered costs and introduced a sales model for pager devices, doing away with the prior rental model. Tokyo Telemessage's June 1995 release of the Mola, a new pager that could receive text messages, dramatically expanded youth pager uptake; demand for this device was so strong that new subscriptions had to be suspended. These new pager text-messaging functions are described in more detail in the following section.

In June 1996 pagers subscriptions hit their peak of 10,777,000. Household adoption rates at that time were only 15 percent nationwide and 18.4 percent in urban areas. Among households with children between the ages of 15 and 19, however, adoption rates were the highest, at 35.2 percent. For 20–29-year-olds, this percentage was 25.0 percent. For other age ranges, users 40–49 years old had the highest adoption rates at 13.0 percent, with other age groups consistently under ten percent (*White Paper on Communications in Japan 1997*).

In the same year, a survey of middle and high school students in Tokyo Prefecture indicated that 48.8 percent of female high school students had a pager (Tokyo Metropolitan Government 1997). Further, a 1997 survey by the Ministry of Posts and Telecommunications indicated a rise in the number of pager users responding, ''I never use my pager for work.'' In the prior year, the percentage of responses was only 36.4 percent, but by 1997 it had reached 47.9 percent, indicating a growth in personal uses of the pager (Tokyo Metropolitan Government 1997).

In tandem with the rapid adoption of pagers by youth, *keitai* adoption also grew. Ministry of Posts and Telecommunications surveys show household adoption rates in 1995 and 1996 for cellular phones at 10.6 percent and 24.9 percent, and for personal handyphones (PHS) at 0.7 percent and 7.8 percent (see chapter 3). This growth was fueled by large reductions in subscription and use costs. In April 1994, NTT DoCoMo launched a sales (as opposed to rental) system for mobile handsets, drastically reducing the cost of a new subscription by over half, from ¥24,700 to ¥9,000–¥12,000. In December 1996 all cellular phone providers dropped the rental model. The launch of PHS services in July 1995 also provided users with a device that was cheaper than the cellular phone. PHS providers also pursued a strategy whereby they would provide retailers with free or nearly free handsets as a promotion for attracting new subscribers. Cellular phone providers responded by adopting this strategy as well, creating business competition for new subscribers that further spurred adoption (Matsuba 2002).

Despite these factors, *keitai* adoption rates among young people were still relatively low. In the aforementioned Tokyo study, cellular phone and PHS subscription rates of high school girls were only at 28.3 percent. High school boys were at 26.3 percent (Tokyo Metropolitan Government 1997). For teenagers, pagers were still the mobile devices of choice. Other indicators, however, show personal communications on the rise with *keitai* as well. As with the pager, survey results show an increase in cellular phone subscribers who answered, ''I never use my cellular phone for work,'' growing from 14.0 percent in 1995 to 25.8 percent in 1996 (*White Paper on Communications in Japan 1997*). In this way, mobile media such as the pager and *keitai* were steadily moving toward personal use through the latter half of the 1990s.

Both the pager and *keitai* were at first strongly linked to official places and organizations, but they were gradually transformed into media of direct connection between individual users. This move away from organizational and group use toward directly connecting individuals in the personalization of media had its parallels in the history of land line telephone use. Shunya Yoshimi, who co-authored the first comprehensive sociological research on the social adoption of the telephone in Japan, *Media to shite no Denwa* (*The Telephone as a Medium*), observed a change in the location of the fixed telephone in the household. He says that when the telephone first arrived in the average household, it was often placed near the front door of the house. It was later set up

in the living room. From the mid-1980s cordless and extension phones were commonly placed in bedrooms as the telephone found its way into the private rooms of each family member (Yoshimi, Wakabayashi, and Mizukoshi 1992). The front door, the physical gateway between the family and the outside world, and the telephone, the communications gateway with the outside world, could both be considered ''places'' for mediating and regulating social access. The telephone, or the gateway of communications, proceeded deeper into the inner recesses of the household. Yoshimi sees this as indicative of the telephone's turning into a medium of direct connection between the social world and the individual inside his or her private room. Uptake of mobile media carried by individuals moving around in unlimited space could be considered an intensification of this trend.

These dimensions of personalization are also related to the individualization of television, radio, and other forms of mass media since the 1970s. The adoption rate in Japan of the color TV reached 90.3 percent in 1975, and close to 100 percent in 1980. Beginning in 1990 corporations started discussing implementation of individualized measures for TV ratings. In March 1997, Video Research, the primary media ratings firm in Japan, began its ''people meter'' ratings for Tokyo, tracking individual rather than household viewing. Before the near-universal adoption of the television, radio was the family medium within a household. After it lost its central position to the television, late-night radio programs spearheaded the transformation of radio into a medium constructing a network of youths cloistered in their private rooms (Hirano and Nakano 1975). The popularity of the Walkman also illustrates this shift away from products used by the whole family to ones used by individuals. Takuji Okuno (2000) describes this sequence of events as the shift from household media to individual media.

Another critical factor behind the adoption of mobile media is the advancement of urbanization and consumer lifestyles, related to a decrease in time people spend at home and the increase in time spent outside, especially for youth (table 2.1). Born

Table 2.1
Time Awake Spent at Home, 1975–2000

	1975	1980	1985	1990	1995[a]	2000
16–19-year-old males	7 h 14 m	7 h 05 m	7 h 05 m	6 h 57 m	6 h 35 m	6 h 13 m
20–29-year-old males	5 h 15 m	4 h 55 m	4 h 55 m	4 h 37 m	4 h 53 m	5 h 06 m
16–19-year-old females	7 h 26 m	7 h 45 m	7 h 28 m	7 h 12 m	6 h 59 m	7 h 17 m
20–29-year-old females	9 h 54 m	9 h 09 m	8 h 33 m	7 h 30 m	7 h 17 m	7 h 15 m

Source: NHK Broadcasting Culture Research Institute (2001). *NHK Data Book 2000: National Time Use Survey*. Reproduced with permission.

a. From 1995 on, survey methods changed and results cannot be compared directly.

from the rapid expansion of consumer society between the last half of the 1980s and the early 1990s, the Japanese ''bubble economy'' is a crucial backdrop to these trends in media consumption. As part of these broader social and economic shifts, youth began to spend more time outside the home, and it became commonplace for leisure hours to be spent in city centers. Returning again to the 1997 Tokyo survey, only 5.1 percent of middle school students responded that they ''got home after 9 p.m. after having fun out'' ''more than once a week,'' but among high school students the percentage had risen to 18.8. Also, 21.1 percent of middle and high school students responded that they ''usually stop somewhere on their way home from school,'' and 30.3 percent of respondents indicated that ''on the street or in town'' was the number one ''place (other than school) for chatting with friends,'' followed by 21.4 percent for ''fast food restaurants.'' ''My home or a friend's home'' was favored by 20.5 percent; ''in front of a convenience store'' by 6.0 percent (Tokyo Metropolitan Government 1997). These results indicate some of the ways in which young people are seeing the city, broadly conceived, as a place to spend their free time. This is one of the many factors I have described as tied to the expansion of personal uses of mobile media.

Mobile Media as Multimedia

Another trend in the development of mobile media is their process of becoming multimedia. Best known among multimedia is the personal computer, with its relatively long history of multimedia capability. In addition, there is the expanding capability of the multimedia Internet, as well as digital TV broadcasting. The word *multimedia* is defined as the capability of a medium to interact fluently with various modes of communication such as text, sound, and images, both still and moving.

Kouichi Kobayashi (1995) summarized the concept of multimedia in the mid-1990s when interest in multimedia started to increase in Japan. He identifies five trends in the ''process of media development or innovation that indicate the transformation into becoming multimedia'': (1) having multimodes, (2) interactivity, (3) hypertext properties, (4) a tendency toward digital application, and (5) networking capabilities. *Keitai* with Internet access services like i-mode (NTT DoCoMo), ez-web (au, TU-KA), and J-sky (J-Phone, currently Vodafone's Vodafone Live!) essentially satisfy these conditions and can be considered multimedia. The first three of Kobayashi's factors do not concern the actual content of communication but rather point to the mode of communication. He indicates that transmission of information ''requires use of multiple modes, styles, and specifications'' and that ''they were attainable to a certain level with existing media.'' In short, Kobayashi suggests that multimedia communication had already been widely established.

The liquid crystal displays for pagers as well as in the implementation of caller ID, and text message functions such as the Short Message Service on *keitai*, are indicative

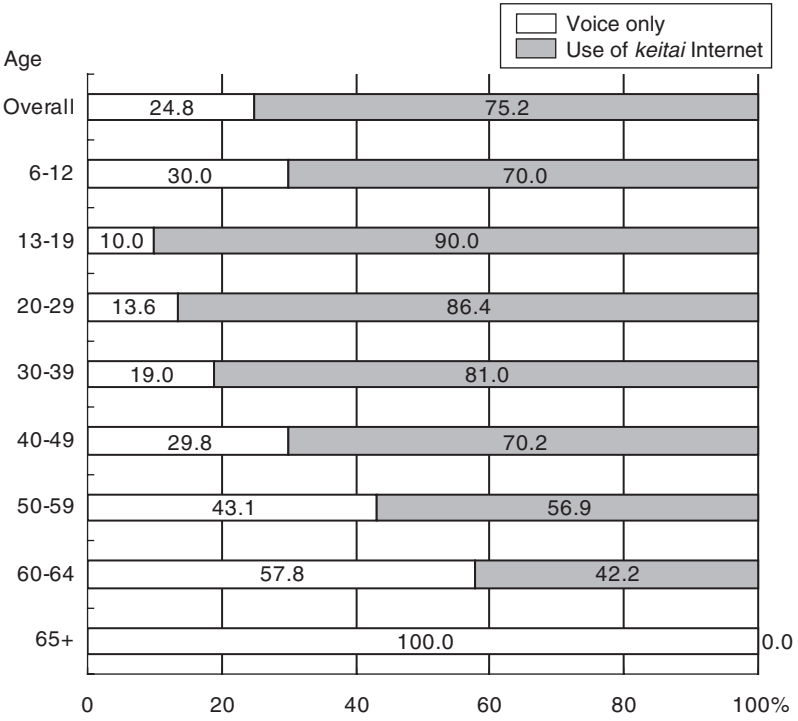

Figure 2.2

Keitai Internet use rate, by age. From Ministry of Public Management, Home Affairs, Posts, and Telecommunications, *Communications Use Trend Survey 2002*. Reproduced with permission.

of early multimedia capability. Now the digital camera has become a standard function of current *keitai*. Vodafone (previously J-Phone) has the largest share of the *keitai* digital camera market. Currently, over half of their subscribers have camera phones. This trend has been influenced by the innovations in technology as well as by use patterns.

The developer of i-mode, Takeshi Natsuno, among others, has noted how the i-mode value chain model helped drive the adoption of the *keitai* Internet in Japan. Natsuno and his colleague Mari Matsunaga have both noted, however, that existing trends and styles in youth communication were also key influences (Natsuno 2003a; 2003b; Matsunaga 2001). Indeed, adoption rates of the *keitai* Internet increase in the younger age ranges (figure 2.2). The most popular uses of the *keitai* Internet are youth-oriented areas such as e-mail and ring tone sites (figure 2.3).

In the following sections I describe the evolution of *keitai* features outside of voice telephony, focusing on the ways in which they were informed by youth cultures.

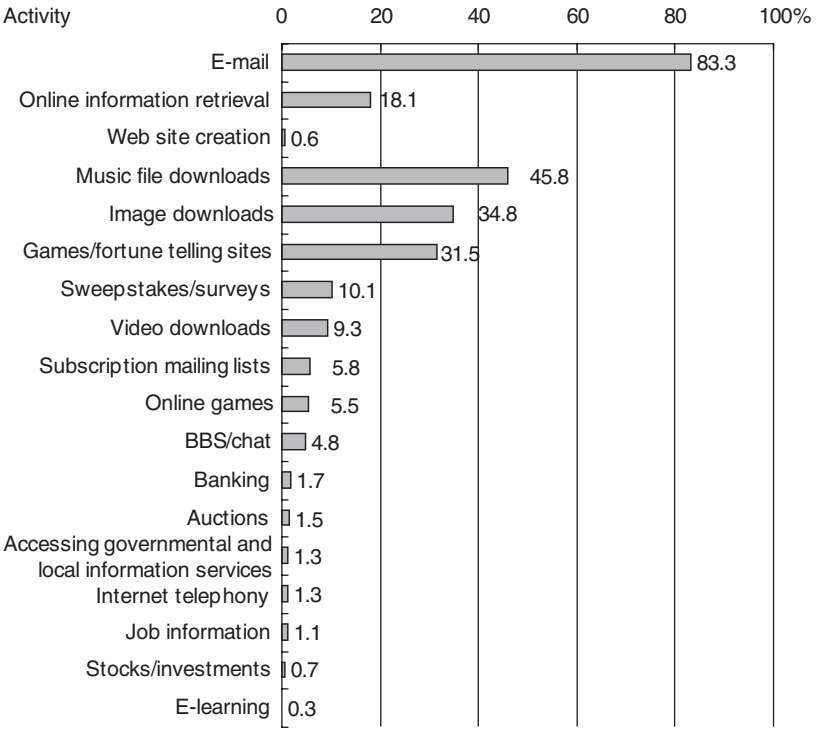

Figure 2.3
Activities performed in the past year using the *keitai* Internet. From Ministry of Public Management, Home Affairs, Posts, and Telecommunications, *Communications Use Trend Survey 2002*. Reproduced with permission.

Short Messages

Heavy reliance on mobile e-mail is one of the distinctive features of Japanese youths' *keitai* use. As researchers in other countries have noted, the heavy use of mobile messaging among youth is common in countries with widespread mobile phone adoption (Kasesniemi and Rautiainen 2002; Kasesniemi 2003; Agar 2003). However, the Japanese case is somewhat unique in that text messages far outpace voice calls for young people. Although our survey did not break messaging volume down by age, we consider the category of ''students'' as indicative of a teenage demographic, since most students in middle school through college range from the teens to early twenties. For the student category, at 27 percent, the most common response was ''two to six voice calls a week,'' and 23 percent responded ''one to two voice calls a day.'' For voice calls, the youth demographic did not differ significantly from the average across all age groups, which had 24 percent responding ''two to six voice calls a week'' and 27 percent

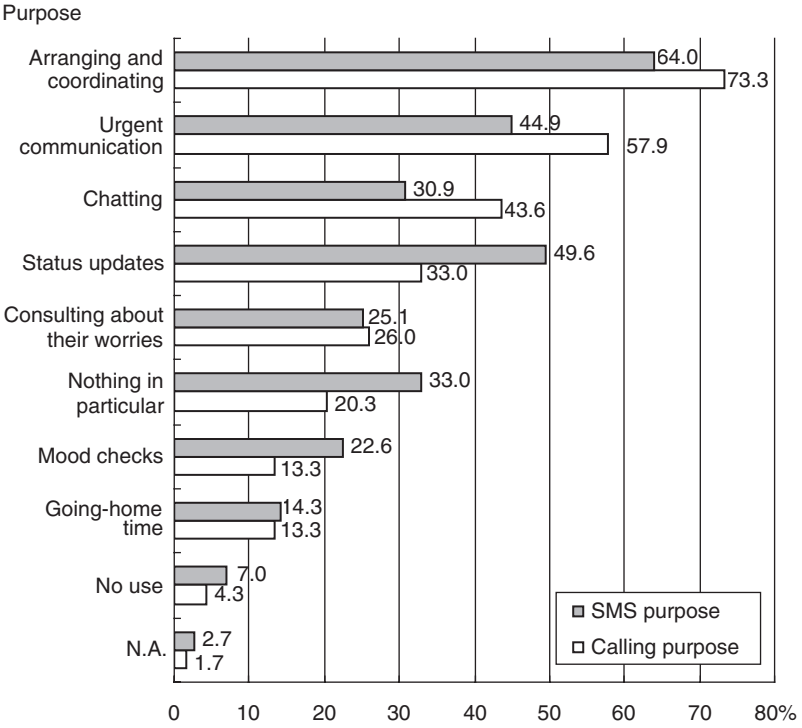

Figure 2.4
Short message users' purposes for making voice calls and sending short messages. From Mobile Communication Research Group (2002).

responding ''one to two calls per day.'' In contrast, the youth demographic deviates significantly from other age groups in *keitai* e-mail volume. The overall average of *keitai* e-mail per week was 28.2 sent and 24.2 received, whereas students report on average sending 66.3 *keitai* e-mail messages per week and receiving 71.8. In other words, students exchange approximately ten *keitai* e-mail messages a day.

What is the content of these communications? Among the general population, our surveys show the content of communication with a friend as follows (figure 2.4): for voice calls, the top categories were arranging and coordinating meetings (73.3%) followed by urgent communication (57.9%), chatting (43.6%), status updates (49.6%), and nothing in particular (33.0%). E-mail had higher proportions of status updates (49.6%), nothing in particular (33.0%), and mood checks (22.6%) but lower proportions of urgent communication (44.9%) and chatting (30.9%). We can conclude that e-mail between friends tends to be used for nonurgent communication (Mobile Communication Research Group 2002).

Pager texting practices were the source of many of these patterns in *keitai* e-mail usage. The technical forerunner of *keitai* text-messaging functions was the numeric display on the pager, a service introduced in 1987 by NTT (now NTT DoCoMo). As described, the concept was to have the caller input the telephone number he or she wanted the pager owner to call back. With the reduction of the subscription deposit in 1993 and the implementation of the terminal purchasing system in 1995, the subscription costs were drastically lowered, boosting the number of young users. These young users began using the pager to exchange short messages in which words were assigned to sequences of numbers and codes.

In light of such trends, Norihiko Takahiro (1997b) applied the three characteristics of new media identified by E. M. Rogers (1986), interactivity, demassification, and asynchronicity, to define pager communications as multimedia/new media. Though the pager can only receive signals, by combining its use with the conventional telephone, the communication process comprised a multimodal exchange of information.

The method of communication popular among high school girls during that period is called *poke-kotoba* (pager lingo), which translates a specific sequence of numbers into specific words, generally using the first syllable of the name of a number as the ''reading'' of the number. For example, 0840 is *ohayo* (good morning), and 724106 is *nanishiteru* (what are you doing?). The pager, which was designed as a medium to simply request a return call, evolved into a medium of interactive text communication via these girls' using the telephone keypad as a keyboard for sending out messages.

In response to these practices, pager manufacturers added a new function to the pager that converted numbers into phonetic symbols. For instance, 11 became the symbol for *a*, and 21 became the symbol for *ka*. Until then, in order to translate *poke-kotoba*, the users needed a common reference or understanding to decode the digit sequences. With this new function, they were able to send messages that were readable by anybody. This further expanded youth pager use, and in 1996 the number of subscribers topped 10 million. In interviews young people described what these technologies meant for them:

[19-year-old girl, Tokyo, Shibuya district, summer 1996]
When do you usually use your keitai *or pager?*
The pager? Well, it's when it is not something worth calling a *keitai* for, like just ''good night'' or ''good morning'' or ''how are you?''

[Two 16-year-old girls, Tokyo, Shibuya district, summer 1996]
When do you call [a pager]?
A: When meeting somebody.
B: Yeah, like when meeting somebody.
A: Or just killing time.
B: Yeah, killing time.
A: Or when you just want to say a little something.

So what kind of messages do you send?
B: Hm, well, whatever, anything.
A: Yeah, we send everything.
B: ''Good morning,'' ''good night,'' things like that.
A: Or, like, ''I'm tired'' or ''I'm hungry.''
B: That's about it. Probably it is stuff that is easy to send with text.

[19-year-old girl, Tokyo, Shibuya district, summer 1996]
When do you call or send a message?
When? I might send a message like, ''Are you free today?'' to a friend.

[20-year-old woman, Tokyo, Shibuya district, summer 1996]
When do you call or send a message?
On a Sunday or day off, ''good morning'' or a greeting like that. Even if you don't call, you can kind of keep a connection. If you send one pager message, you feel connected.

At the time, the cellular phone and the PHS were not very appealing to the youth who drove the pager boom. Basic monthly charges were expensive, and it was felt troublesome to answer the phone each time they received a call. The pager was an irreplaceable medium for sending messages that were not important or urgent enough to be relayed by the telephone.

[Osaka, America Village, Minami district, winter 1997]
Do you want a PHS or a cell phone?
Boy: Yes, if I had the money.
What would you do with your pager if you had a cell phone or a PHS?
Boy: I would keep it.
Girl: I would keep it.
Why?
Boy: I couldn't part with it.
Girl: Yeah, I'd miss it ringing.
The telephones also ring.
Boy: They're not the same. The pager has something special.
Girl: We couldn't just say *ohayo* (good morning) on the phone.
Boy: Yeah, yeah.

As this last example implies, at the time of our street interviews the pager was the preferred medium because it allowed users to communicate through text without bothering people near them (Okada and Habuchi 1999).

Meanwhile, cellular phone and PHS companies were not passively sitting on the sidelines as the pager gained popularity. They were planning their entry into the market by drawing attention to their interactive text transmission services.[1] First, in April 1996, the Cellular Text Service was introduced by the DDI Cellular Group, followed by similar services by IDO and NTT DoCoMo. DDI Pocket started a text-messaging service for the PHS. At the end of 1997, J-Phone (now Vodafone) started its SkyWalker ser-

Figure 2.5
Fujitsu's F501i (1999), the first NTT DoCoMo i-mode handset. Reproduced with permission.

vice using the GSM system, enabling transmission of Internet e-mail (Ohta 2001), and J-Phone temporarily stole some of DoCoMo's young users. Alarmed by the sudden loss of its youth market share, NTT DoCoMo hurried to develop its full-scale mobile Internet i-mode service (figure 2.5), finally introducing it in 1999 to discourage user defection.

The exchange of messages with display pagers, as analyzed by Takahiro (1997a), was merely multimedia-like communication. Consolidating the communication process into a single device, *keitai*, made mobile communication truly multimedia. In this period, youth transitioned from the pager to *keitai* as cell phone and PHS charges were reduced. By the end of the 1990s, those same youth pager messengers were using short messaging to convey peer communications.

[17-year-old boy, Tokyo, summer 1998]
Your keitai *can do voice and also send text, right? Do you use the text messaging?*
Yes, I do.
Which do you use more, voice or text?
I use text more.
Why is that?
I use text for simple things that are not worth a phone call.
How many messages do you send a day?
Well, only about five or six.

[21-year-old man, Tokyo, Harajuku district, summer 1998]
That one that is compatible with [the keitai *e-mail service], SkyWalker, can do text and also voice, right? Which do you use more?*
I think I must use SkyWalker more.
Why is that?
Well, the first thing is that it's cheap. That is a factor. My crowd tends to have it, and I have a lot of friends, and with new friends it is an easy way to communicate. And I also don't have to worry about the time of day when I send a message. Stuff like that. That it only costs ¥5 per message is probably the big factor.
Is the content of what you say different between text and voice?
Yes, I think it is definitely different, but also because only certain people have *keitai*. The people I am in touch with have to have a PHS or some kind of phone. This is a little different, but I have a friend who has a SkyWalker home page, and he has an e-mail mailing list with over one hundred people. Because of things like this, and wanting to get more information from places like this, I use SkyWalker a lot. For exchanging information and things like that, I use e-mail and only use voice when it is urgent, I need to talk right away, or I need advice, or something like that.

[17-year-old girl, Osaka, Minami district, summer 1998]
What kind of messages do you exchange with [the text message service] P-Mail?
Hm, like, ''what's up?'' or ''where are you now?'' When it's just casual, it's, like, ''what are you up to?'' or something.
Do you talk on the phone more or use P-Mail more?
I think it is must be P-Mail.

As of March 2003 the number of pager subscribers has decreased to approximately 1.13 million. One symbol of youth's shift from pagers to *keitai* is the pop star Ryoko Hirosue's changing roles from being ''the face'' of NTT DoCoMo's pager in both television and print media to being the poster girl rolling out the new i-mode service (Matsunaga 2001). This latter ad campaign happened after she graduated from high school and was about to start college, and she was represented as also having ''graduated'' from pagers and moved on to the *keitai* Internet.

Ring Tones

Ring tones (*chaku-mero*) are another key element of the multimedia capabilities of *keitai*. *Chaku-mero* is the term used widely for music that signals the receipt of a transmission to the *keitai*, but it is actually part of a trademark registered by the Astel group in 1997 for the PHS service, ''*Chaku-mero yobidashi* service.''

The current system requires payment of approximately ¥5 royalty per song downloaded to the Japanese Society for Rights of Authors, Composers and Publishers (JASRAC). In 2002 the revenue from these royalties was over ¥7 billion, more than double the prior year's revenues. Royalty revenues from CDs in the same year were just over

¥30 billion, so ring tone royalties were approximately 20 percent of this amount. Revenue from karaoke sounds downloaded through ISDN lines totaled approximately ¥5.5 billion; ring tones have surpassed this revenue stream (JASRAC 2003). Ring tone distribution has become a key area for Japan's contemporary music industry.

Melodies, however, have been used for ring tones from the days of the pager and the land line phone. Original ring tones became available for *keitai* in September 1996, when IDO (now au) released the D319, a handset that allowed input of original ring tones. Users could use the keypad to input a score note by note and thus register a song. *Chaku-mero* was recognized as a popular trend from approximately December 1997 with the publication of *Keitai Chaku Mero Doremi Book* (*Keitai Ring Tone Do Re Me Book*), considered the first *chaku-mero* composition manual (*Sankei* 1999). Since this first publication, ring tone composition books including hit songs have been popular sellers: *Keitai Chaku Mero Doremi Book* ranked number 9 in 1998's annual bestseller ranking of all books in Japan (reported by Tohan Co.).

In a household or an office the telephone rings in order to notify someone in the area to pick it up. However, since the *keitai* is almost always attached to an individual, it only has to notify the owner. No sound is necessary if the owner can catch the signal by the vibrations in ''manner mode'' (silent mode). By this logic, the *chaku-mero* function should eventually become obsolete. Instead, the *chaku-mero* function has steadily expanded: devices that could at first only play monophonic sounds can now play three-chord and four-chord melodies.

In August 1999, Astel Tokyo started the first three-chord *chaku-mero* service. Soon competitors entered the field. In September of that year the musical instrument company Yamaha began shipping a ring tone sound chip with up to four chords, including 128 tone types and the capacity for tone combination. The Yamaha chip enabled rich sound similar to that of a PC sound card, a far cry from simple beeping sounds of earlier *keitai*. In June 2000 a chip that could perform up to sixteen chords was released, enabling users to digitally sample and replay live music. This chip was quickly adopted for handsets for various makers, and a sixteen-chord *chaku-mero* service began. In 2001 this was expanded to forty chords, and from December 2002 au rolled out their *chaku-uta* (ring song) service whereby users could use music taken directly from a CD. The latest hit songs can also be downloaded from the Internet. Why has this function made such progress, deviating so far from the features of the conventional telephone?

The concept of ''playing one's preferred music outdoors'' is similar to audio devices such as headphone stereos and portable stereos. Gary Gumpert (1987) identifies this concept as the creation of an acoustic environment around oneself or the formation of one's ''turf'' with an ''acoustic wall.'' The music researcher Shuhei Hosokawa (1981) similarly describes these devices as media that ''turn urban space into a theater.'' In

other words, *chaku-mero* are media used by *keitai* owners to produce what the music researcher Murray Schafer (1977) calls a soundscape.

With various data compression technologies, operators have experimented with services that distribute music software to *keitai* handsets. In view of a possible fusion of *keitai* and the portable audio devices, *chaku-mero* are being positioned as a characteristic central to *keitai*'s multimedia properties.

Keitai Cameras

According to the *White Paper on Information and Communications in Japan 2003*, as of the end of March 2003 the number of camera phones with active subscriptions in Japan was 22.21 million. This means that 29.3 percent of subscribers had camera phones. (J-Phone/Vodafone has reported that approximately 65 percent of their subscribers use camera phones.) Among those in their teens and twenties, ownership is particularly high, and the percentages drop together with the rise in age of the users. Frequency of *keitai* camera use is also higher among those in their teens and twenties (figure 2.6).

The first *keitai* with a built-in digital camera was the PHS VP-210 (the ''Visual Phone''), marketed by Kyocera in July 1999. It was designed as a video phone, capitalizing on the relatively fast transmission speed of the PHS. The press release at the time of the product's introduction featured a scenario of distant grandparents talking to their grandson while viewing his face. However, the terminal weighed 165 grams and was slightly larger than the average handset, attributes not well received by users.

The adoption of the *keitai* digital camera accelerated when J-Phone introduced its first camera handset (figure 2.7) along with a service it called *sha-mail* (photo mail). The Sharp-manufactured handset weighed 74 grams and was the smallest of its kind among the prevailing products. The camera was 110 thousand-pixels, not very high in graphic quality, and it could only capture still images. Developers described the rationale behind the new device: ''There is a practice for people to exchange photos, and if there is a camera in your *keitai*, you can make custom wallpaper as well as exchange photos'' (Sharp Corporation's Takeo Uematsu, quoted in Fukutomi 2003).

The development of this handset was influenced by the popularity of *Print Club* (*Puri-kura*), a photo booth for making personalized stickers, introduced in July 1995. They were set up in arcades and other entertainment and shopping sites and became a craze among youth. By the end of 1996 over 10,000 units were deployed, and the number increased to 45,000 units by October 1997. The average daily use reached 1,500,000 sheets. In one 1997 survey, 61.3 percent of middle and high school students (81.2 percent of middle school girls and 89.5 percent of high school girls) reported that they had engaged in *puri-kura* collection and exchange (Tokyo Metropolitan Government 1997).

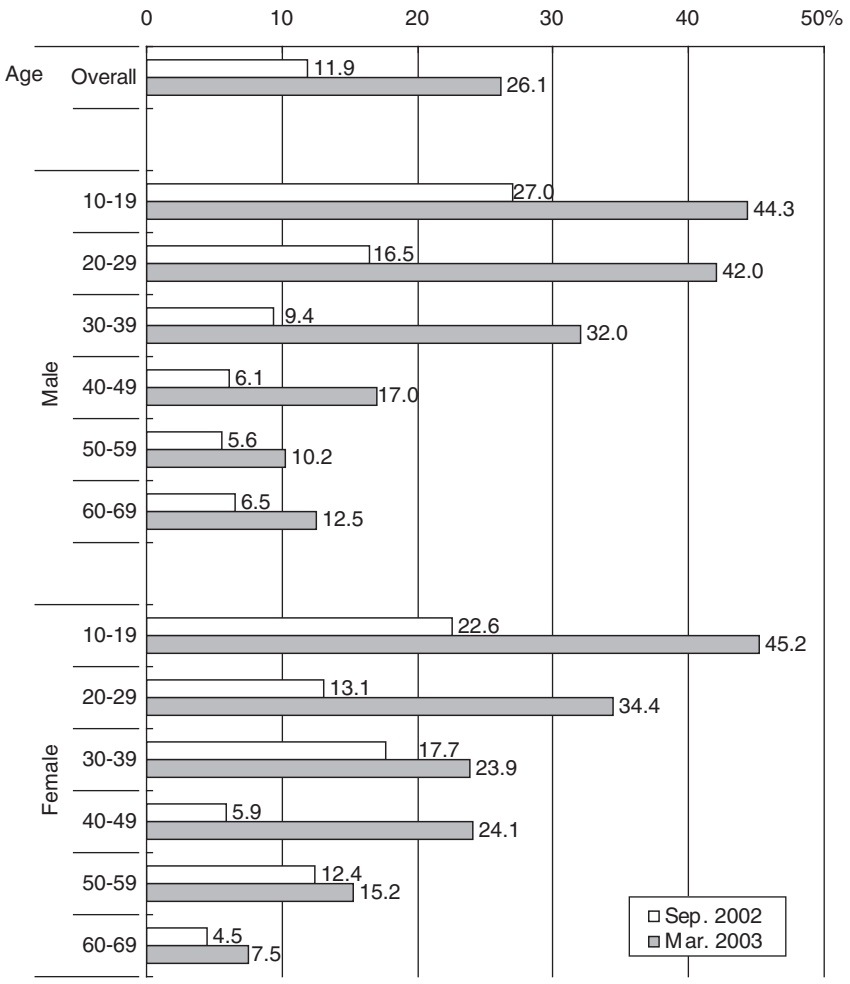

Figure 2.6

Ownership rates of camera-installed *keitai*, 2002 and 2003. From Nomura Research Institute (2003). Reproduced with permission.

Figure 2.7
Sharp's SH-04 for J-Phone (2000), the first camera cell phone. Reproduced with permission.

The *puri-kura* concept originated in Fuji Film's one-time-use camera *Utsurun-desu* (Quick Snap), which popularized the practice among teenage girls of taking snapshots of friends to keep as mementos. These young women made original photo albums of the snapshots and carried them around as precious lifestyle and friendship records. With the introduction of *puri-kura*, they turned a section of their personal planners into a *puri-kura* album or created an exclusive mini-album for *puri-kura* stickers, which they always carried with them. It also became a very common practice to put a *puri-kura* sticker of a special friend or a boyfriend on their pager or *keitai*.

Nobuyoshi Kurita's 1999 paper is probably the only existing report of a sociological survey of this phenomenon. His research, conducted in 1997, involved collecting *puri-kura* stickers traded by college girls and analyzing them according to the people appearing in the photos, the locations where they were taken and exchanged, and the number of stickers in the collections. According to Kurita, the social function of *puri-kura* photography and exchange can be categorized into four ideal types: (1) everyday confirmation of relationships and fraternity with friends, lovers, family members, and colleagues, (2) confirmation of daily events by memorializing a place visited with a friend, (3) collection of idolized icons in the form of a photo taken with an exceptionally good-looking friend or a celebrity, and (4) collection of rare frames such as special-edition frames keyed to the seasons or tourist sites such as Kyoto or Karuizawa. He sees

Figure 2.8
Pager with *puri-kura* stickers, September 1996, Harajuku District, Tokyo. Screen capture by author.

mobile media as a key factor that together with age (adolescence) and gender, correlates with high volume in *puri-kura* collections. Subjects with pagers, or pagers and *keitai*, have exceptionally large numbers of *puri-kura* in their collections, and subjects with only *keitai* have relatively few. At the time of his research in 1997, *keitai* text messaging was rare, and pagers were the primary means for exchanging text messages. In other words, people who were avid users of mobile communications were also avid *puri-kura* collectors. From this, we can deduce a strong affinity between *puri-kura* and mobile media (Kurita 1999).

Through *keitai* adoption, youth tried to express their individuality by putting *puri-kura* stickers on their handsets (figure 2.8) or adorning them with unique accessories and straps. The color display promoted the practice of using favorite illustrations or photographs as *keitai* wallpaper. With the built-in camera, all these functions were incorporated in a single *keitai* terminal. In other words, the *keitai* camera has come to encompass the production of customized wallpaper and some of the functions of *puri-kura* stickers.

Conclusion

I have discussed how the adoption and transformation of mobile media in Japan was influenced by factors such as the uptake by users as well as prevailing communications policy and market conditions. It is in this sense that I see mobile media as shaped by what Fischer has termed social construction.

On the other hand, this case also suggests an application of the concept of domestication, as described by David Morley (1986) and Roger Silverstone and Eric Hirsch (1992), to the process of mobile media reception in modern Japanese society. Domestication involves the integration of media technology into the family and its processes of socialization. As mentioned in chapter 11, this formula helps explicate *keitai* adoption from the viewpoint of the family. However, *keitai* advances have also been driven by young people's distancing themselves from the family order. This reality implies that Japanese *keitai* innovations cannot be explained merely in terms of family and society.

The Japanese *keitai* has taken a unique developmental trajectory by incorporating features and elements widely circulated in youth popular culture. Today such trends are evident not only in Japan but also in other countries. Our next challenge is to analyze adoption and development in these different settings and to develop a new model of media transformation. Further, we must analyze how these changing media forms both grow out of and shape trends in communications. What will third- and fourth-generation mobile systems and *keitai* broadband bring? Will elements of youth culture continue to play a key role in *keitai* adoption and development? We need an even clearer model for the relationship between media, popular cultures, and communication trends.

Note

1. Young women were the core user group for text message exchange with pagers and *keitai*. Setting their sights on the submerged demand among women to "want to do e-mail but not use a PC," NTT DoCoMo developed the Pocket Board based on a concept of "cheap, easy, compact" and released the product in December 1997. This device, about the size of a personal digital assistant (PDA), enabled users to connect their *keitai* device with a cable and send and receive messages. Within two years of its release, over 700,000 Pocket Boards were sold. The user survey research for this product (September 1998) indicated that 80 percent of the users were women, of whom 70 percent were in their twenties. Sixty percent of the users reported that they "had no prior experience with data communication for personal or business use." The Pocket Board, as a media type, could be considered a link between pagers and short messages (NTT DoCoMo 1999).