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7

Digital Divides of the Internet and Mobile Phone: Structural Determinants of the Social Context of Communication Technologies

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Overcoming the digital divide—the gap between those who have and do not have information and communication technologies (ICTs)—is a fundamental component of most industrialized countries' telecommunications policy; certainly equity and universal service has been a hallmark historically of U.S. telecommunication policy (Hadden and Rhodes, 1995). This axiomatic commitment may be seen in the U.S.'s universal service tradition (Katz, 1988). Moreover, there appear to be noticeable economic and social benefits to having access to information and communication technologies (ICTs) (Katz and Rice, 2002). But research on the digital divide is almost entirely devoted to the Internet. Clearly this is an important topic, but this emphasis needs to be complemented by consideration of other ICTs such as the mobile phone. This is because the social and economic importance of the mobile phone is quite substantial, even as worldwide ownership rates are rivaling that of TV set ownership (Katz and Aakhus, 2002).

Evidence about an Internet Digital Divide

Cultural, rather than strict economic, education, and racial differences are receiving increased attention from both government and commercial studies as the source of differential access and usage patterns (Katz and Rice 2002; Cultural Access Group 2001). Haddon (2001) argues that "social exclusion" is context-dependent (neither necessarily economically based nor equivalent across all domains of a person's life), involves not only political and civic involvement but also people's ability to occupy social roles, and may also involve rejection of or lack of interest in, new technologies and pressing issues such as day care. (See also his chapter, this volume.)

There are other aspects of access than just equal distribution across demographic and national boundaries. People who have hearing, sight, movement, and other disabilities may also be disadvantaged by limitations on their ability to access information, contacts, and opportunities for expression on the Internet. The disabled have half the access rate of those who are not disabled (McConnaughey 2001). And even those who do overcome all these obstacles do not necessarily benefit in ways proposed by those concerned with the digital divide. For example, low-skill information- or knowledge-worker jobs are rising as fast as higher-skill jobs, information-based jobs are frequently rationalized and fragmented, and initiatives to help overcome employment opportunity divides often end up simply subsidizing training for organizations with low-paying computer-based jobs (Tufekcioglu 2001).

Recent studies (Jupiter Communications 2000; Katz, Rice, and Aspden 2001), have been finding that at least racial and gender differences in Internet use disappear after other variables are taken into account statistically. A Pew Internet and American Life study (Yahoo!News 2001) found that by the end of 2000, 58 percent of men and 54 percent of women were Internet users; figures for Hispanics were 47 percent and for blacks 43 percent. According to the AOL survey (2000), more women (53 percent) starting Internet use in 2000 than did men; overall, 49 percent of Internet users were women. By June of 2001, a Nielsen/NetRatings study (Net users..., 2001) reported that Internet users mirror the national distribution of women and men, with 53.33 million women using the Internet and 49.83 million men. Men do use the Internet a bit more, about 10.5 hours per week compared to nine hours per week, and view about 31 percent more pages than do women (Net users 2001). Looking at the gender divide from an historical viewpoint, the longer a user cohort had been online, the higher was its proportion of men (AOL, 2000); Katz et al. (2001) found similar trends.

A representative postal mail survey of 80,000 U.S. households conducted by Forrester research in January 2000 (Walsh, Gazala, and Ham, 2001) found that Asian Americans have the highest Internet penetration rate, and Hispanic Americans have a higher adoption rate than Caucasians. Connection to the Internet grew for all ethnic groups who bought personal computers. There are still differences in Internet access, based primarily on income, but also age, education, and technology optimism; but once these are statistically controlled, there are no remaining differences on the basis of race. Indeed, the survey showed that consumers of all ethnicities use the Internet for the same general reasons: communicating with others, accessing information, having fun, and shopping.

Social Structural Issues for Access to ICTs

Although there are points of disagreement concerning research on the digital divide, the bulk of evidence indicates that the digital divide is decreasing or even disappearing with respect to gender and race. Differences in income and education are still great, and in some studies, increasing. The general lag in access and use may inflict enduring social damage that lingers or appears even after later adopters achieve full access. There are many obstacles to more equitable access, some of which may be deeply embedded in cultural contexts. Of particular interest to the present study is that there may be multiple kinds of communication technology digital divide, and we do not yet know much about any mobile phone digital divide, or about how Internet and mobile phone use are related. The present study, then, focuses on:

1. What other usage differences exist beyond the traditional divide of users and nonusers?
2. To what extent are Internet usage and mobile phone usage similar or different?
3. What are some national policy implications of the various potential digital divides?

The Syntopia Project and the Social Context of Personal Communication Technology

This study is part of a larger project, which we now call the Syntopia Project. Our joint aim has been to create through a series of national random telephone surveys, as well as case studies, in-depth observations, focus groups, and website analysis, a multi-year program charting social aspects of Americans' mediated communication behavior.

We chose the name "Syntopia" for five reasons given. First, an important aspect of the Syntopia concept is that the Internet is part of a much larger synthesis of communication and social interaction. People's physical and social situation and history influence their actions online, and what they learn and do online spills over to their real world experiences. The term Syntopia underscores this synergy across media and between mediated and unmediated activities. Second, the term Syntopia draws together the words "syn" and "utopia." Derived from ancient Greek, the word means literally "together place," which is how we see the Internet and associated mobile communication and its interaction with unmediated interpersonal and community relations. Third, the term Syntopia invokes both utopian and dystopian visions of what new media such as the Internet and mobile telephony does and could mean. At the same time, the term also alludes to the dark side of new media in the homophone "sin." Fourth, while mediated communication may be critiqued as "impersonal" or "synthetic," we would argue that the research to date shows that mediated communication can provide wider, more diverse, and possibly more real—even hyperpersonal—communication than traditional face-to-face communication. Fifth, "synthesis" also implies being able to put things together in a new way. People of every ethnic group, gender, political and sexual orientation, and

economic resource level have shown incredible creativity cobbling together various ICTs at hand to perpetuate and expand their communication networks (Katz 1999; Katz and Rice 2002).

In this application of Syntopia, we seek to understand the digital divide by contrasting two communication media, and contrasting users and non-users in terms of their social drivers. As to the first, the Internet, it has been deeply studied since at least 1995 (Katz and Aspden 1997), except for the dropout phenomena discovered in 1995 (Katz and Aspden 1998) and which has only recently captured attention (Mante and Thomas 2002). As to the second, the mobile phone, its potential digital divide has is only been infrequently analyzed (e.g., Katz 1999).

Data for a Perspective on Digital Divides

Our analysis is based upon a national probability telephone survey conducted in March 2000, designed by us but administered by a commercial survey firm. The survey data collection procedure followed rigorous sampling protocols, and used random-digit dialing, to produce a statistically representative sample of the adult U.S. population.

We measured usage for the Internet and mobile phone by whether the respondent was a current user, a former user, or never a user (for mobile phone, also whether one's spouse/best friend was a current, former, or never user); the year each medium was first adopted (dichotomized at the median of 1997, creating "veteran" and "recent" users. Reasons for stopping using the Internet or mobile phone included cost, complexity, usefulness, interesting, and access. (Details of the study are presented in Rice and Katz, 2002.)

Table 7.1
Summary details on overall sample sizes, and numbers of Internet and Mobile phone nonusers, users, and former users.

User Category	Internet	Mobile Phone
Current users	59.7%	54.4%
Former users		
• percent of respondents	10.5%	14.9%
• percent of current and former users	9.0%	14.2%
Never used	29.7%	36.5%
N	1305	1329
Adopted before or during 1997	53.8%	53.8%
Adopted after 1997	46.2%	46.2%
N	1000	725

Demographic variables include gender, age (dichotomized at forty years), income (at $35,000), education (at college degree), race (due to sample sizes, only African-American and white non-Hispanic), marital status (other, or married), children (at none, or any), work (at full time, or other).

Media use measures include number of letters sent weekly (dichotomized at none, or any), phone calls made weekly (up to nine, ten, or more), and email messages sent weekly (at none, or any). General social involvement was measured by number of religious organizations, leisure organizations, and community organizations (each dichotomized at none, or any).

Apparent Similarity of Internet and Mobile Phone Usage

We asked users the year they started using the Internet (referred to in the surveys as "the Internet, also known as the Information or Electronic Superhighway") or owning mobile phones. Respondents were grouped into those starting in 1997 or before ("veteran users"), and those starting in 1998 or after ("recent users") (based on a median split). We also grouped respondents in two ways according to their usage: whether they were a current or former user, and whether they were a current user or not (including never and former user). Of the over 1,300 respondents, 59.7 percent were current Internet and 54.4 percent current mobile phone users; 10.5 percent had stopped using the Internet, and 9.0 percent had stopped using mobile phones (relative to the total current and former users, the percentages were 14.9 percent and 14.2 percent); 29.7 percent had never used the Internet, and 36.5 percent had never had a mobile phone. For both media, 53.8 percent of those who indicated the year they first adopted the medium did so before or during 1997, and 46.2 percent from 1998 on. On the surface, these aggregate statistics indicate that adoption, former, and non-use of these two media were about the same in 2000. This might imply that Internet and mobile phone usage is indicative of similar demographic, personal and media use characteristics; that is, that their users are quite similar, and that the two media are quite similar in general communication function. It also implies that the only basic difference for both media is between adopters and non-adopters, the traditional criterion for identifying the "digital divide."

Different Usage Categories and Their Relation to Demographic Differences

As table 7.2 portrays, relationships among categories of Internet and Mobile phone users, while significantly positively associated, are not exact. Considering all three categories of current, former, and never, 17 percent of respondents do not occupy similar categories across the two media. Grouping former users with never users, the divergence rises to 38.3 percent. Time of adoption (grouped as through 1997 or after 1997) shows a similar divergence: of the 616 who reported their year of first adoption, 42.5 percent adopted each medium in different time periods. So while these two media appear quite similar in terms of

Table 7.2
Relationship of Internet and Mobile Phone Usage Categories

	Mobile Phone Use		
Internet Use	**Never**	**Former**	**Current**
Never	146 / 60.6%	27 / 11.2%	68 /28.2%
Former	41 / 27.3%	22 / 14.7%	87 / 58.0%
Current	259 / 30.5%	62 / 7.3%	529 / 62.2%
Chi-square = 100.0 ***			

	Mobile Phone Use	
Internet Use	**Non (Never & Former)**	**Current**
Non (Never & Former)	236 / 60.4%	155 / 39.6%
Current	321 / 37.8%	529 / 62.2%
Chi-square = 55.3 ***		

	Mobile Phone Use	
When Started Using Internet	**Veteran: 1997 or Before**	**Recent: 1998 or After**
Veteran: 1997 or Before	211 / 62.6%	126 / 37.4%
Recent: 1998 or After	136 / 48.7%	143 / 51.3%
Chi-square = 11.9 ***		

*** p<.001

aggregate usage and adoption, there are still substantial percentages of respondents who represent different categories of users or adopters for the two media.

The following three sections attempt to identify whether there are noticeable differences in respondents' demographic and media characteristics across these usage categories. We seek to succinctly describe some rather detailed statistical analysis.

Internet Non-Users Compared to Users. Non-users were more likely to be female, older, have less income, have less education, be slightly disproportionately African-American, have no children, not work full time, be more satisfied, (obviously) send no emails, and belong to fewer community organizations.

Internet Veteran Users Compared to Recent Users. Compared to veteran users, recent users are more likely to be female, have lower income, have less education, have more children, make fewer phone calls, and send fewer e-mails.

Internet Dropouts Compared to Current Users. Internet dropouts, compared to current users, were more likely to be younger, have lower income, have less education, have never been married or have a partner, have more general satisfaction with life and communication, feel less overloaded/rushed, (obviously) send fewer emails, and belong to fewer community organizations.

The surveys offered responding dropouts several reasons for their decision. Considering respondents choosing a reason as "extremely important" or "important," too hard/complex was the most frequently named reason (65.4 percent), followed by cost (54.5 percent), lost access (48.2 percent) and not interesting (46.4 percent). A recent U.S. Department of Commerce report (2000), surveying some 48,000 households, also reported on those who discontinued Internet usage. Extrapolating to the entire nation, it estimated there were about 4 million drop-outs in both 1998 and 2000. The three primary reasons given in 2000 for discontinuing where "no longer owns a computer" (17 percent), "can use it elsewhere" (13 percent), and "cost, too expensive" (12 percent). Other reasons were "don't want it" (10.3 percent), "not enough time" (10 percent), "computer requires repair" (9.7 percent), "moved" (6.1 percent), "not useful" (4.2 percent), "problems with ISP" (2.9 percent), "concern with children" (2.3 percent), "not user friendly" (1.5 percent) and "computer capacity issues" (1.2 percent). For those with incomes less than $25,000, cost was the first or second most important reason for non-access at home. For those with higher incomes, "no longer owns computers" or "can use elsewhere" were the most important reasons. The report notes that these reasons differ from the primary reason given by non-users for never connecting at all with the Internet, which is "don't want it."

Mobile Phone Non-Users Compared to Current Users. Compared to current mobile phone users, non-users had lower income, less education, were more likely to be never married or not have a partner, not have children, not work full time, feel more overloaded/rushed, and belong to fewer community organizations. Reasons for stopping owning a mobile phone that were rated as "important" or "extremely important," in decreasing order, were "too complicated" (78.4 percent), "lost access" (74.7 percent), "too distracting" (58.3 percent), "not useful" (52.7 percent) and "too expensive" (44.0 percent).

Veteran Mobile Phone Users Compared to Recent Users. Compared to veteran mobile phone users, recent users are more likely to be younger, have lower income, have less education, be African-American, not be married/have a partner, not work full time, not belong to religious organizations, and not belong to community organizations.

Mobile Phone Dropouts Compared to Current Users. Mobile phone dropouts, compared to current users, were more likely to have lower income, make fewer phone calls, and send fewer emails.

Multivariate Influences on Internet and Mobile Phone Usage Categories. Because the various demographic and other variables tend to be intercorrelated,

it is useful to combine all those variables that were statistically significant across dropouts and users, into a logistic regression equation, which then controls for shared variance across the predictors. A final logistic equation was run with only significant predictors retained.

Table 7.3 provides the results for Internet usage. Internet users, compared to non-users (never and former), were older and had greater income (explaining 15 percent of the variance). Recent, compared to veteran, users, older, had less

Table 7.3
Logistic Regressions Predicting Internet User Categories

NonUsers (0) / Users (1)			Veteran (0) / Recent (1)			Dropouts (0) / Users (1)		
Predictor	B	Exp (B)	Predictor	B	Exp (B)	Predictor	B	Exp (B)
Age	-.66 ***	.52	Age	.35 *	1.4	Education	1.2 ***	3.4
Income	1.4 ***	4.1	Education	-.68 ***	.7			
			Income	-.36 *	.7			
			Gender	.34 *	1.4			
			Children	.37 **	1.4			
			Phone	-.33 *	.7			
			Religious organizations	.26 +	1.3			
Chi-square	124.5 ***			53.3 ***		37.1 ***		
Nagelkerke R-Sq	.15			.08		.06		
Correctly predicted	71.4%			60.9%		85.0%		
N	1061			828		1000		

+ $p<.1$; * $p<.05$; ** $p<.01$; *** $p<.001$

education, lower income, were more likely to be female, more children, used the phone less, and had a slight, nonsignificant tendency to belong to more religious organizations (8 percent of the variance). This means that early Internet adopters (before 1998) were younger, had higher education and income, were more likely male with fewer children, and used the phone more and belonged to fewer religious organizations. Finally, users, compared to dropouts, were more likely to have more education (6 percent of the variance). Note that more factors distinguished earlier from recent users than distinguished users from nonusers, though age and income explained nearly twice as much variance in the distinction between current users and others. Also, dropouts are distinguished from users by different factors than are nonusers (dropouts as well as those who have never used).

Table 7.4 provides the same analyses for mobile phone data. Mobile phone users, compared to non-users, were more likely to have full-time jobs, have higher income, and be currently married (explaining 12 percent of the variance). Recent, compared to veteran mobile phone users, are more likely to not work full time, be younger, not be married or have a partner, and have a slight

Table 7.4
Logistic Regressions Predicting Mobile Phone User Categories

NonUsers (0) / Users (1)			Veteran (0) / Recent (1)			Dropouts (0) / Users (1)		
Predictor	B	Exp (B)	Predictor	B	Exp (B)	Predictor	B	Exp (B)
Work	-.58 ***	.56	Work	.73 ***		Income	.99 ***	2.7
Income	.99 ***	2.7	Age	-.64 ***		Weekly phone calls	.47 +	1.6
Marital	.27 *	1.3	Marital	-.69 ***				
			Religious organizations	-.3 +				
Chi-square	102.1			71.8 ***			16.2 ***	
Nagelkerke R-Sq	.12			.13			.05	
Correctly predicted	64.3%			64.4%			87.5%	
N	1100			710			590	

+ $p<.1$; * $p<.05$; ** $p<.01$; *** $p<.001$

tendency to belong to fewer religious organizations (13 percent of the variance). Users, compared to mobile phone dropouts, were more likely to have higher income and make more weekly phone calls on a regular phone (5 percent of the variance). Again, different factors distinguish among these three usage measures. Current usage is influenced by characteristics of work, income, and marital status. Later adoption is influenced by work, age, and marital status. Mobile phone dropouts are characterized by income and regular phone usage.

The recent/veteran divide is characterized by the most influences (six for Internet and three for mobile phone), the familiar user/nonuser divide involves two influences for the Internet and three for mobile phone, and the user/dropout divide is characterized by only one significant (though different) influence for each medium. Thus, there is moderate diversity in the factors that influence each of the three kinds of Internet and mobile phone divides. On these grounds, we can conclude that Internet and mobile phone users (and thus nonusers, and therefore digital divides) are not completely the same.

Contrasting Groups of Internet and Mobile Phone Users

The above analyses showed a variety of influences within each of the three kinds of divides, and across the two media. But those analyses did not assess the extent to which usage categories across the two media overlap, a more stringent test of the basic question as to whether Internet and mobile phone users are essentially the same, or, alternatively, whether the Internet and mobile phones are fulfilling substantially the same needs for the same kinds of users. Here, we consider current Internet and mobile phone users versus Internet and

mobile phone non-users, resulting in four categories: current use neither, use Internet only, use mobile phone only, and currently use both Internet and mobile phone. The user/nonuser distinction is the most familiar of the digital divides, and here also takes into account the most respondents.

The first approach is to conduct simple one-way analyses of variance, across the four user/nonuser categories as the factor, and the demographic variables that were significant influences across the media categories in tables 7.3 and 7.4: that is, work, age, education, income, gender, weekly phone calls, and marital status. Table 7.5 shows that all of these varied significantly across the four interdependent categories of Internet and mobile phone users. Income showed the greatest difference, with users of both media having the highest

Table 7.5
Demographic Differences of Internet/Mobile Phone Usage Categories

Variable	No Use	Internet Use	Mobile phone Use	Both Use	F-ratio
Work					
0 full time	.58	.45 a	.39 ab	.33 b	
1 other	236	321	155	529	15.7 ***
Age					
0 <40	.64	.41 a	.48 a	.47 a	
1 >40	226	309	153	518	9.9 ***
Education					
0 < college	.17 a	.41 b	.21 a	.46 b	
1 >= college	236	321	155	529	27.2 ***
Income					
0 < $35K	.40	.65 a	.59 a	.84	
1 >=$35K	188	263	131	446	48.2 ***
Gender					
0 male	.61 b	.49 a	.58 ab	.51 a	
1 female	236	321	155	529	3.5 **
Phone Calls					
0 < 10	.49 a	.59 a	.72 b	.61 ab	
1 >=10	63	321	87	529	3.0 *
Marital					
0 other	.45 ab	.37 a	.47 b	.56	
1 married	236	321	155	529	9.5 ***

* p<.05; ** p<.01; *** p<.001
Values in cells are mean percent of cases with the "1" value of each demographic variables, and the cell sample size. Letters indicate which means are not significantly different across the user categories, by Duncan's pairwise comparisons.

income, Internet only users and mobile phone users constituting a homogenous group but still in the high-income category, and users of neither media in the low-income category. Education was the next most significant influence, with non-users and mobile phone users constituting one group (more education), and Internet users and users of both media constituting another group (less education). Work status followed in significance, with nonusers least likely to be working full time, Internet only users and mobile phone users constituting one group more likely to be working full time, and mobile phone users and users of both media as a homogenous group with the greatest likelihood of working full time. Non-users were likely to be over forty, while all the other three kinds of users were equally likely to be under forty. Concerning marital status, nonusers and Internet users were similarly most likely to not be married, nonusers and mobile phone users to be less likely to be not married, and users of both media most likely to be married. Nonusers and mobile phone users were likely to be female, while Internet users, mobile phone users and users of both media were similarly about equally distributed between males and females. Making more phone calls characterized mobile phone users and users of both media, while nonusers, Internet users and users of both media were not distinguishable with respect to a lower level of phone usage.

Those who currently do not use either the Internet or mobile phones were significantly distinct for three of the demographic variables, while those who used both media were distinct for two of the demographic variables. So non-users seem the most "different" or "unique" of the four usage groups.

There may indeed be some grouping within the four categories, and it most likely distinguishes non-users from other kinds of users, but it is not likely to be highly distinguishable on the basis of these demographic influences.

Digital Divides Come in Two Flavors

Distinguishing Among Types of Media Digital Divides

Veteran versus Recent Users. Clearly, another terminology for these two categories of uses is "early adopters" and "later adopters." These data show quite a distinction between these two categories of adopters, as diffusion theory would expect. For both media, age is a significant multivariate predictor, but in opposite ways: veteran Internet users were younger, but veteran mobile phone users were older. Amazingly, there is no other common influence. Early adopters of the Internet fit the traditional digital divide model (younger, more education, higher education, male) as well as having some other characteristics (more children, more regular phone use). But early adopters of the mobile phone were more likely to work full time, and be married.

Dropouts. The divide between users and former users, or dropouts, for the Internet is primarily associated with being less educated, but for the mobile phone it is lower income and less frequent telephone calling. The two primary reasons

for Internet dropout are complexity and cost (with access the third), while for mobile phone dropout they are complexity and access, with cost the least important reason. Note, then, that the first and common reason for dropping out of Internet or mobile phone adoption is complexity. Thus understanding and being able to use the technical features is the single most important named reason for dropping out (though only as rated by around 100 respondents in the survey).

Dropping out of, or disadopting, a new medium, unlike decisions to adopt it in the first place, have hardly been studied. The topic would seem to be of considerable relevance to both the policy community and service providers, including educators. At the same time, the issue of dropouts may be only transient; that is, nearly all dropouts may once again become—and remain—users. While the ultimate future of the Internet and mobile phone communication cannot be known, there seems at present to be millions of former users of both media. Given the substantial economic and social equity stakes, the causes and consequences of this phenomenon require further investigation.

Distinguishing Among Combinations of Internet and Mobile Phone Users and Non-Users

While the distinction among the categories of Internet and mobile phone users and nonusers is not completely explicit or predictable, we do have evidence that there is a difference between Internet users and mobile phone users. The distinction comes primarily between those who use only the Internet and those who use only mobile phones. People who use both are somewhat more like those who use only mobile phones, and people who use neither are somewhat more like those who use only the Internet. The primary influence on this distinction is income, followed by education. Intriguingly, this particular digital divide occurs in opposite directions: higher income and lower education are associated with the mobile phone distinction, while lower income and higher education are associated with the Internet distinction. In this sense, there are two opposing digital divides involving the Internet and the mobile phone. Those who use both tend to those with the highest income and somewhat higher education.

Conclusion

While summaries of national survey data from 2000 suggest that Internet and mobile phone adoption patterns were quite similar, in fact there is considerable divergence in usage patterns and demographic and media influences on those usage patterns. Significantly from a policy and conceptual viewpoint, rather than there being "just" an Internet digital divide, there is also a mobile phone digital divide. Moreover, instead of the Internet or mobile phone digital divides being limited to the first and most common distinction (that is between

users and nonusers) there also seems to be a noticeable digital divide between ongoing users and dropouts, and possibly more distinctively between earlier and later adopters.

Further, Internet and mobile phone users (or non-users) are not necessarily the same set of people (or, conversely, the two media do not fulfill similar needs or utilities for the same demographic groups). The simplest distinction seems to be between a group of people who are not currently using either medium or are currently using only the Internet, and a group of people who are using only the mobile phone or are currently using both media. These two groups are distinguished primarily on the basis of income, and secondarily by education, and in opposite directions.

As research and the federal studies of Internet use have argued, people on the short end of the various digital divides (non-users, dropouts, and in some sense the most recent adopters) could benefit from the social, economic and personal resources that new communication technologies can provide. This is clearly recognized in the case of the Internet. Indeed, up until mid-February of 2002, the U.S. government had been pumping billions of dollars annually into social programs to subsidize the Internet's deployment and support social programs to advance training and access to the technology, especially at schools and hospitals. The administration of President George W. Bush has signaled that it is turning away from such programs, arguing that there is no longer a consequential Internet digital divide, at least not one worth spending federal resources on. By contrast, the mobile phone appears to be the stepchild of social programs, and no "universal service," "lifeline," or training and subsidy programs exist. (All of which makes the success of the mobile phone among so many income and education sectors of United States society all the more significant.) It is difficult to explain this disproportionate attention to the two technologies on the part of social policy advocates. Even more mysterious to us is why the federal government seems to be ignoring so much socially beneficial potential of mobile phones. Clearly, the "voice" side, namely mobile phone technology, has not received the attention it deserves, neither in absolute terms nor in terms relative to the "graphical" side, namely the Internet. (It would seem SMS text messaging would be of enormous consequence both in the U.S. and elsewhere. Yet even in Europe, where so much text messaging takes place, the governments there have shown practically no interest in harnessing the power of SMS for social service.)

Our analysis, then, seeks to increase highlight the structural determinants of communication technology adoption and use, especially the relationship between mobile phone and Internet technology. By being more aware of the variety of usage digital divides within and across the Internet and mobile phones, policymakers and researchers might have improved justifications, choices and strategies available for narrowing the several digital divides. Moreover, in line with our interest in Syntopia, it allows a more complete understanding of hu-

man communication behavior than would be the case were we to focus exclusively on a prominent technology (e.g., the Internet) ignoring other new communication technology (e.g., the mobile phone) whose user base may soon surpass it.

References

An earlier version of this paper appeared in B. Wellman and C. Haythornthwaite (eds.) 2002. The Internet in Everyday Life. London: Blackwells.

AOL 2000. *American Online/Roper Starch Cyberstudy 2000.* Roper #CNT375.

Cultural Access Group 2001. *Ethnicity in the Electronic Age: Looking at the Internet through Multicultural Lens.* Los Angeles: Access Worldwide Communications, Inc.

Hadden, S. and Lodis Rhodes (eds.). 1995, November. Evolution of Universal Service Policy. Lyndon B. Johnson School of Public Affairs, University of Texas, Austin.

Haddon, L. 2001. Social Exclusion and Information and Communication Technologies. *New Media & Society, 2*(4), 387-406.

Jupiter Communications. 2000. Assessing the Digital Divide. New York: Jupiter Communications press release, June 15. http://www.jup.com/company/pressrelease.jsp?doc=pr000615.

Katz, J. E., Rice, Ronald E. and Aspden, Philip. 2001. The Internet, 1995-2000: Access, Civic Involvement, and Social Interaction. *American Behavioral Scientist, 45*(3), 404-419.

Katz, James E. and Philip Aspden. 1998. Internet Dropouts: The Invisible Group. *Telecommunications Policy, 22*, (4/5, June), 327-339.

Katz, James E. 1988. Telecommunications Privacy Policy in the U.S.A.: Socio-Political Responses to Technological Advances." *Telecommunications Policy, 12* (4): 353-68.

Mante, Enid and Frank Thomas. 2002 Internet Have and Have Nots in Europe. Unpublished paper. EURESCOM/COST.

McConnaughey, J. 2001. Taking the Measure of the Digital Divide: Net Effects of Research and Policy (summarizing results of the U.S. Department of Commerce, 2000). Presented to Web Workshop at University of Maryland Dept. of Sociology, June.

Media Metrix. 1997. *Online press release.* http://www.mediametric.com/pcmpr33.htm

Net Users Mirror Nation's Gender Breakdown. 2001. USA Today, June 15. http://www.usatoday.com/life/cyber/nb/nb5.htm

Rice, Ronald E., McCreadie, M. and Chang, S-J. 2001. *Accessing and Browsing Information and Communication: A Multidisciplinary Approach.* Cambridge, MA: The MIT Press.

Rice, Ronald E. and Katz, James E. 2002. Comparing Internet and Mobile Phone Usage. Unpublished report from the Syntopia project, Department of Communication, Rutgers University (mimeo). Available from the authors.

Tufekcioglu, Zeynep. 2001. Rethinking the Theory Behind the Digital Divide Initiatives: It's Not All Good All the Time in the Age of Deskilled, Low-Paying "Hi-Tech" Jobs. Austin: University of Texas Department of Communication. Paper presented to the International Communication Association Conference, Washington, DC, May.

U. S. Department of Commerce. 2000. *Falling through the Net: Toward Digital Inclusion.* Washington, DC: Government Printing Office.

Walsh, E., Gazala, M. and Ham, C. 2001. The Truth about the Digital Divide. In B. Compaine (ed.), *The Digital Divide: Facing a Crisis or Creating a Myth?* (pp. 279-284.) Cambridge, MA: The MIT Press.

Yahoo!News. February 19, 2001. Hispanics, Blacks and Women Surfing the Internet in Greater Numbers. http://dailynews.hayoo.com/h/ll/20010219/co/hispanics_blacks_and_women_surfing_the_internet_ingreater_numbers.