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Technology and Social Inclusion

Rethinking the Digital Divide

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Notes

Introduction

1. Information on this project comes from a paper by Sugata Mitra (1999); personal communication, July 2001, Chetan Sharma; and my own visit to the site and interviews with users and community residents in July 2001.
2. Personal communication, July 2001, S. Regunathan, Principal Secretary for Information Technology, Government of New Delhi.
3. Information on this competition and its results comes from <<http://www.eircom.ie>>; the Web sites of the four winning towns, <<http://www.ennis.ie>>, <<http://www.castlebar.ie>>, <<http://www.kilkenny.ie>>, and <<http://www.killarney.ie/>>; and personal communication, May 2001, John Mooney, University College Dublin.
4. Personal communication, May 2001, John Mooney.
5. Personal communication, January 2000.
6. For general overviews, see Askonas and Stewart (2000), Byrne (1999), and Littlewood, et al. (1999). For particular discussion of relationship to technology see European Commission (2001b).
7. Digital Divide discussion list, <<http://www.digitaldividenetwork.org/>>; Global Knowledge for Development discussion list, <<http://www.globalknowledge.org/discussion.html>>; Association for Internet Researchers discussion list, <<http://www.aoir.org/mailman/listinfo/air-l>>; and Red Rocker Eater News, <<http://dlis.gseis.ucla.edu/people/pagr/tre.html>>.

Chapter 1

1. According to the *New York Times* (Labaton 2001), Michael K. Powell, the chairman of the Federal Communications Commission, “said he thought ‘digital divide’ was a dangerous phrase because it could be used to justify governmental entitlement programs that guaranteed poor people cheaper access to new technology. ‘I think there is a Mercedes divide,’ he said. ‘I’d like to have one; I can’t afford one.’”

2. The European Union, in particular, has embraced the notion of technology for social inclusion; see, for example, European Commission (2001b). The federal government of Brazil has launched a national digital inclusion project; see Governo Electronico (2001). In the United States, the federal government's National Telecommunications and Information Administration (NTIA 2000), which first popularized the term *digital divide*, has also shifted to the terminology of digital inclusion.
3. I am greatly indebted to the groundbreaking work of Manuel Castells (1993; 1997; 2000a; 2000b; 2001) on the informational economy and the network society, and I draw extensively from his research and sources.
4. Revenue rankings from <<http://www.fortune.com>> (December 12, 2001). For examples of reports on Dell's business model, see Magretta (1998), Wysocki (1999), and DiCarlo (1997). For the company founder's view, see Dell and Fredman (1999).
5. For details on the index, see Theil (1967).
6. Income figures based on Purchasing Power Parity (PPP), a measure that examines how much can actually be purchased with local currency. In actual U.S. dollars, the income figures would be much lower.
7. These programmers were known as hackers, originally meaning someone who had the skill and patience to code enormous programs (Spyd3r 1998).
8. Electronic communication of research findings is especially prominent in physics, mathematics, and computer science. The "e-print arXiv" (<<http://arXiv.org/>>), funded by the U.S. National Science Foundation and consisting of papers posted by researchers in these fields, currently includes 170,000 papers and is adding about 35,000 new papers per year (Ginsparg 2001). In some other fields, attempts to set up electronic archives of research have met resistance. For an in-depth discussion of a highly contested effort to set up an electronic archive of biomedical research, see Kling, Fortuna, and King (2001).
9. S. Amadeu da Silva (2001, 30). I have provided the translation; italics in the original.

Chapter 2

1. I use the term "Hispanic" throughout the book when citing or discussing studies that use that term. Otherwise, I use the term "Latino."
2. The approach to literacy that emphasizes its social context is known by many names, including new literacy studies, social literacies, sociocultural approaches to literacy, ideological approach to literacy, and critical literacy; see discussion of these terms in Gee (1996), Lankshear (1994), and Street (1993).
3. Exceptions abound, of course, especially when one takes a broad view of literacy that considers the ability to make use of texts to understand and take action

in the real world. See, for example, Mastin Prinsloo and Mignonne Breire's (1996) edited collection about literacy practices in South Africa.

4. Data are for 1999 and are taken from the United Nations Development Programme (UNDP 2001).

Chapter 3

1. Author's calculations for this and following statistics are based on data from Population Reference Bureau (2001).

2. Information on growth in access rates among the disabled is not available because the disabled were included as a separate category in the NTIA research for the first time in 2000.

3. The classic S-shaped curve of innovation diffusion is marked by a process in which a small number of *innovators* and *early adopters* first take up an innovation (the bottom curve of the S), followed by the large bulk of *early majority* and *late majority* (as the S curve shoots up), leaving the *laggards* to get on board over time (the top curve of the S); see Rogers 1962. For example, with Internet access, the innovators and early adopters came online from 1970 to 1995, the early and late majorities will have likely come by 2005, and the so-called laggards may take several more decades after that.

4. In several of these countries the Purchasing Power Parity (PPP) GNP is actually much higher than the US\$ GDP, reflecting the fact that some goods (such as food and rent) are actually much cheaper than world market prices when purchased locally. For example, China's PPP GNP is \$3,291, as compared with that country's US\$ GDP of \$450. However, the world price of computers does not vary much (and, in fact, tends to be higher in developing countries because of import expenses and tariffs), so it is actually the international currency capita that matters in this case, not the PPP GNP.

5. Information on the people's computer comes from the laboratory team's Web site, <<http://www.luar.dcc.ufmg.br>>, and from personal interviews with laboratory team member Wagner Meira, Jr., in August 2001.

6. Information on the Simputer reported in this section is from <<http://www.simputer.org>> and from personal interviews with Swami Manohar of the Simputer Trust in Bangalore, India, July 2001.

7. Posted on May 2, 2001; downloaded May 20, 2001, from <<http://slashdot.org/articles/01/05/02/1822219.shtml>>.

8. Posted on May 2, 2001; downloaded May 20, 2001, from <<http://slashdot.org/articles/01/05/02/1822219.shtml>>.

9. This would represent a deregulation of the "last mile," but the remainder of the telecommunications system would still be regulated.

10. Personal communication, July 2001, A. Jhunjunwala.

Chapter 4

1. See, for example, “Web Surpasses One Billion Documents” (2000).
2. Data taken from the Internet Software Consortium, <<http://www.isc.org/ds/host-count-history.html>>.
3. See <<http://www.healthnet.org>>.
4. For further information, see <<http://www.contentbank.org>>.
5. See the Web Accessibility Initiative Web site, <http://www.w3.org/wai/>. Among other things, the site includes a useful overview of how disabled people use the Web (World Wide Web Consortium 2001b), a prioritized checklist for Web designers (World Wide Web Consortium 2001a), and a technical overview of user guidelines (World Wide Web Consortium 2001c). Also see Nielsen (1999).
6. Information taken from the Camfield Estates Web site, <<http://www.camfieldestates.net/>>, and from an interview in June 2001 with project organizers Randall Pinkett and Jeffrey Robinson.
7. Information taken from the HarlemLive Web site, <<http://www.harlemlive.org/>>, and from interviews with Rahsaan Harris in June and August 2001.
8. See <<http://www.olelo.hawaii.edu/OP/resources/leoki.html>>.

Chapter 5

1. A project organizer in India expressed this sentiment to me in a particularly poetic way. In emphasizing the importance of developing users’ skills and knowledge, he said, “A computer is like a knife; a surgeon can wield a knife to help cure people of disease, while a lot of others can just use a knife to cut up mango.” (Interview with Naveen Prakash, Gyandoot Project Manager, Dhar, India, July 2001).
2. The earliest American newspaper, magazine, or journal reference that I found via a search on the Lexis Nexis database was a 1981 article in the *Washington Post* (Milloy 1981).
3. In this context, I am referring to critical literacy in its most general form, i.e., the ability to read critically. The term *critical literacy* is also used in a more neo-Marxian framework, implying literacy that recognizes unequal power distribution. See discussion in Lankshear (1994).
4. Information on CDI is from <<http://www.cdi.org.br/>>, from internal documents provided by CDI, from visits to CDI schools, and from interviews with CDI representatives in Brazil in August 2001.
5. Information on Playing2Win is from the organization’s Web site, from presentations by Playing2Win Director Rahsaan Harris at the national CTCNet conference in San Diego, California, June 15–17, 2001, and from a personal interview with Harris conducted in San Diego in June 2001.

6. Information on this project and school comes from <<http://equity4.clmer.csulb.edu/netshare/cti/%20for%20psrtec%20website/Amada%20and%20Michelle/>>, from an interview with teachers Michelle Singer and Amada Irma H. Perez (May 2001), and from an interview with Kevin Rocap of the Center for Language Minority Education and Research in Long Beach, California (May 2001).
7. Information on Foshay is from <<http://www.foshay.k12.ca.us/>>, personal observations at the school (May 2001), and interviews with school administrators and teachers (May 2001).
8. Information on educational technology in Egypt is taken from my own three-year ethnographic research there from 1998 to 2001, which included visits to more than twenty schools, meetings with hundreds of educators, access to documents from governmentaled and nongovernmental agencies, participation in technology training sessions of Egyptian educators, and involvement in electronic discussion groups related to educational technology in Egypt.
9. For critiques of the Egyptian educational system, see Birdsall and Londoño (1997); Fergany, Farmaz, and Wissa (1996); Fergany (1998); Jarrar and Massialas (1992); Tawila et al. (2000); and Sarhaddi Nelson (2001).
10. Information about educational technology in China is based on my research trips to Hong Kong (1999 and 2001), Suzhou (1999), Nanjing (2001), and Beijing (2001); my discussions with faculty members from Beijing Normal University, Capital Normal University, and Beijing University in April and August 2001; and documents provided by project coordinators at Beijing Normal University.

Chapter 6

1. Personal communication, June 2001, Randall Pinkett.
2. Personal communication, June 2001, Ricardo Gutierrez.
3. Whether use of the Internet causes social isolation is a point that has been hotly debated by sociologists. Another large-scale study found that heavy users of the Internet suffered depression, presumably because Internet use took time and energy away from face-to-face interactions with friends and kin (Kraut, Patterson et al. 1998). However, a follow-up study led by the same researcher, using more up-to-date data, reversed the original view (Kraut et al. 2002). For further discussion of this issue, see the November 2001 (vol. 45, no. 3) issue of the *American Behavioral Scientist*, a special issue of ten papers devoted to the theme of the Internet in everyday life.
4. Sociologists have a range of views as to the different levels of social capital. My own three-level (micro-, macro, meso-) approach draws on a number of perspectives, including those of Woolcock (1998), Krishna (2000), Turner (2000), and Wellman et al. (2001).
5. Interview with S. Regunathan, Principal Secretary for Information Technology, Government of New Delhi, July 2001.

6. Information on the Community Digital Initiative comes from interviews with project director Richard Chabran in April and June 2001, a visit to the center in June 2001, and the Web sites of the project (<http://cdi.ucr.edu/>) and its umbrella group, Computers in Our Future (<http://www.ciof.org/>).

7. Personal communication, July 2001, K. G. Rajamohan.

8. Information on the Bresee Community Center and Cyberhood comes from a visit to the center and interviews with Bresee staff in April 2001 and from the Bresee Foundation's Web site <http://www.bresee.org/>.

9. See <http://www.bridges.com/>. There is also an online version called eChoices, <http://www.echoices.com/>.

10. Interview with Jeff Carr, Director of Bresee Community Center, April 2001.

11. Information on M. S. Swaminathan Research Foundation projects comes from a visit to their headquarters and rural projects in July 2001 and interviews with members of their staff. Further information is available from <http://www.mssrf.org/>.

12. Information on ISIS is from <http://www2.gribus.at/> and from European Commission (2001a).

13. The European Computer Driving License is a Europe-wide qualification that enables people to demonstrate their competence in computer skills; see <http://www.ecdl.com/>.

14. Information on the Kothmale project is from <http://www.kothmale.net/> and from a report by A. Gumucio Dagron (2001, 127–132).

15. My information about land record systems in India, and about the computerized land record system of Karnataka, comes from the following sources: personal interview in July 2001 with Rajeev Chawla, Additional Secretary of the Revenue Department of the Government of Karnataka; Karnataka government documents on the system provided by Mr. Chawla in July 2001; a visit to a land record office in Bangalore, India, and interviews with the staff and clients in July 2001; interviews with small farmers and development workers in Pondicherry, Tamil Nadu, and Madhya Pradesh in July 2001; and an interview with Bhawti Soleki, Assistant Vice President for Social Development of the Infrastructure Development Finance Company in New Delhi, India, in July 2001.

16. The first experience with online voting in the United States was in the 2000 Arizona Democratic Primary election. An analysis of the voting patterns showed that the nonwhite, the unemployed, and the elderly were all significantly less likely to participate in Internet voting than the public at large and that this limited their proportion of the vote compared to prior elections (Alvarez and Nagler 2001). The authors of the study conclude that “if Internet voting were widely used in American politics, it would change the character of political representation, with some specific groups behind the digital divide (minorities, the unemployed, and the elderly) losing further political power” (1148). Stephen Pershing (2001), an attorney in the U.S. Department of Justice, Civil Rights Division, has similarly concluded that “Internet voting without protections for equal access

may violate section 2 of the Voting Rights Act” (1209), which prohibits denial or abridgement of voting rights due to race.

17. Information about Dhar and the Gyandoot project comes from the following sources: interviews with Naveen Prakesh, Gyandoot Project Manager, in July 2001 (and subsequent e-mail correspondence in August–September 2001); an interview with Rajesh Rajora, then Dhar District Magistrate, in July 2001; a recent book by Rajora (2002); visits to five Gyandoot project information kiosks and interviews with managers and users in July 2001; and electronic and paper documents provided by the Gyandoot project in July 2001.

18. There were 26,560 groups listed on October 6, 2001; see <http://dir.groups.yahoo.com/dir/Health_Wellness/>.

19. For example, 208 such groups were listed in Yahoo! Groups on December 11, 2001; see <http://dir.groups.yahoo.com/dir/Health_Wellness/Reproductive/Infertility/>.

20. See <<http://indymedia.org/>>.

21. See note 16 above.

Chapter 7

1. See, for example, Ellen Seiter’s (1993; 2000) work on the social context of television and Claude Fischer’s (1992) work on the telephone and the automobile in the United States.

2. Though the point Levinson makes is an important one, it was perhaps unwise of him to use the word *determinist* for both concepts, since the term is usually associated with the “hard” variant.

3. The initial founders of this research project still direct two of the leading research institutes on technology and society today. Kenneth Kraemer and James Danziger head up the Center for Research on Information Technology and Organizations (CRITO—<<http://www.crito.uci.edu>>) at University of California, Irvine. Rob Kling directs the Center for Social Informatics at Indiana University (<<http://www.slis.indiana.edu/CSI/>>). Kling also edits the journal *The Information Society*, which has been a flagship of this research tradition since its founding in 1981.

