

## **INTERNET ACCESS, COST AND THE INFORMATION GAP**

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### **Summary**

Technological devices such as the telegraph, telephone, radio and television did not expand the democratic frontier, but rather reinforced pre-existing, unequal, social structures and provoked only marginal displacements within them. The Internet, a network of networks, often depicted as a revolution, has expanded dramatically and infiltrated numerous aspects of human activity -- research, education, commerce, music and film distribution, marketing, medicine, health, criminal justice, leisure, nutrition, surveillance, government -- especially in "digital countries" such as the Nordic countries -- Iceland, Finland, Sweden, Norway, Denmark -- the United States of America (USA), Australia, Canada and, to a certain extent, Western Europe.

Conversely, in most non-industrialized countries, as well as in pockets of digital countries, the Internet is situated in the margins. For a long time to come, large groups of people will be poorly connected, or will not be connected at all to the Internet.

A large majority of the world's six billion people may not benefit from the advantages a connection can provide: fast, easy and relatively inexpensive access to information, knowledge, ideas, goods, services and people. Consequently, they will continue to be unequal or third class partners in the process of globalization.

This section problematizes the inequitable condition of Internet access within and between selected countries of the world, explores the costs involved in being and staying connected, and also examines the structural factors, both local and global, which mitigate against a reversal in the current conditions of access. By comparing the advantages and disadvantages of being connected, it assesses the implications of current imbalances for the nature, quality and quantity of shared information and democracy.

## **1. Introduction**

The Internet which in its current structure emerged in the last decade of the twentieth century is likely to make enormous progress in unsuspected directions. It is gradually becoming the dominant medium for information exchange and communication within and between many countries. As computer prices fall, a growing number of people, irrespective of age and economic status, may be able to afford a computer and an Internet connection. However, the field is not leveled. Various types of Internet connection produce different results. The fastest connections speed up transactions and handle large volumes of information transmitted in multiple formats -- graphics and individual sound files, animations, video, simulations, virtual reality, films, etc. Others provide limited and slow access to all the services the Internet offers: e-mail, file transfer protocol (FTP), telnet, newsgroups, message boards, mailing lists, chat rooms, instant messaging, portals, etc.

In "digital countries", despite the wide use of the Internet, the "digital divide" between the rich, the poor and other intermediary classes has not disappeared. This divide often corresponds to and reinforces pre-existing ethnic, racial and class inequalities. Being connected may not be very difficult; however, staying connected over time, with all the additional costs -- maintenance, basic devices, availability of additional peripherals, upgrading, training -- is rather challenging and uncertain for the common person and the poor.

In most non-industrialized countries, computer access is even more complicated, as hardware, software, and parts cost more -- sometimes twice as much as in industrialized countries -- for people whose annual incomes could be a hundred times lower than those living in industrialized countries. Furthermore, in addition to the lack of technical expertise, people in those countries have to grapple with the nature of Internet content -- e.g. relevance of website topics -- and complex issues of language and literacy. As American English has become the de facto language of the Internet, taking full advantage of cyberspace may require literacy in American English. The Internet is also primarily male, especially for programming and e-business. (See *The Internet as a Mass Communications Medium*.) Computer ownership does not represent the only factor of the "digital divide". The ability to maintain and upgrade one's hardware and software, in an industry that evolves at an exponential rate in multiple directions, constitutes another important factor. Furthermore, the quality, quantity and relevance of received information are also important aspects of the divide.

All those factors are crucial in understanding who produces what information, how it is organized, how it is displayed, to whom it is destined, whose interests it serves, and why it is distributed. Such questions help us comprehend the full implications of the Internet,

its role in the process of globalization, and why the question of the digital divide has become a major preoccupation, especially for rich industrialized nations. At the G8 meeting in July 2000, rich countries placed a high priority on the issue and proposed financial solutions to help non-industrialized nations. Many governmental, non-profit and for-profit institutions have initiated various programs and projects at international and national levels to provide access to the largest number of people. However, this effort is unfolding at a slower pace than technological innovation itself. This section also surveys such initiatives, examines their rationales, and assesses their impact in closing the divide. While their efforts are commendable, they hardly touch upon the fundamental causes of the persisting "information gap".

## **2. Hardware and Software: Primary Factors of the "Divide"**

Hardware and software are often used to gauge access, and are the cardinal causes of lack of access. In the case of hardware availability, the range and cost difference between minimum and satisfactory/optimum technical requirements -- modem speed, Random Access Memory (RAM), storage capacity, processing ability and speed -- could create a ravine in terms of technical quality of access. Low-end computers that can provide Internet access are no longer a luxury in industrialized nations, except for the poor. Besides, devices used only for the Internet are now available at low prices. However, to be fully connected at a reasonable speed, and to be able to load images, streaming videos or audio files, one needs a good medium- or high-range computer, which, with additional peripherals, turns out to be money-intensive. On the other hand, it is worth noting that the Internet can be accessed through public libraries, telecenters, community centers or cybercafés. Despite declining prices, funding, and acquisition initiatives aimed at providing computers to the poor, the "digital divide" has increased over the last ten years in the USA, along ethnic and racial lines. However, the most significant gaps exist along socio-economic lines.

Iceland, the USA, Finland, Switzerland, the Netherlands, Sweden, Norway, Finland and Denmark are some of the most wired countries in the world, with more than 35 percent of the population owning a computer in each country. On the contrary, less than 0.7 percent of the people own computers in countries such as Ghana, Madagascar, India, Guatemala, Laos PDR, El Salvador and Jamaica. In the Republic of Benin, for example, the price of a computer bought locally amounts to at least 20 times the average annual salary. In November 2000, approximately 407.1 million people were online worldwide, 3.11 and 16.45 million of whom were respectively in Africa and Latin America.

Wireless communication, the next wave of the Internet, is the current trend in the Nordic countries, which are actually at the vanguard of m-computing and m-commerce (mobile electronic commerce). In those countries, the use of cellular phones to pay for car washes and drinks, or to book and pay for plane and train tickets, is more and more common. In many other industrialized countries such as Switzerland, Austria and the United Kingdom, Internet penetration is not as widespread as in Nordic countries, but is growing quickly. For instance, computer sales in France doubled from June 1999 to June 2000. Yet, only about 15.4 percent of French households had Internet access, whereas in Great Britain and Germany the figures were respectively 26.9 and 22.1 percent. In the Netherlands, in 1999, about 52 percent of the households owned

computers, while in Spain the figure was 18 percent.

In India, out of a population of more than 1 billion people, the penetration rate is at about 1.1 percent. The Indian case is paradoxical in that it produces a large number of software developers and computer engineers who easily find employment in Europe or the United States. However, India boasts only one percent of the global software market and a very low computer ownership ratio of 2.1 for 1,000 people. Recognizing global needs and local expertise, the Indian government has decided to double the number of computer scientists who graduate every year, to improve the quality of their training, and to expand the use of computers to rural areas. (See *The Internet and Sustainable Development*.)

In China, which joined the World Trade Organization in June 2000, the number of Internet users is increasing, especially through cybercafés. Computer ownership triples every year, and its potential market of 1.3 billion people is the target of big corporations. Hong Kong, which is now part of China, has a higher rate of computer ownership and Internet hosts. Since 1980, Chinese and Indian software engineers, initially trained in their home countries, have been responsible for creating one-third of Silicon Valley start-ups and one-fourth of all computer businesses in the United States. Japan, according to Infocom, a Japanese research company specializing in Internet and Telecommunications data, is likely to become the largest user of the Internet in 2001; mobile computing is developing at inconceivably accelerated rates and changing the way people collect information, do business, learn and entertain themselves.

In Africa, where there are only about 14 million phone lines, fewer than in Manhattan, New York, the number of connections is also rapidly increasing. However, it remains limited to the urban elite, wealthy individuals, and a few private, international or non-governmental organizations. Governments are generally slow at connecting to the Net, let alone investing in research and development. South Africa alone has more than 90 percent of the Internet connections in Africa, most of which are in the White families and organizations which have benefited economically from decades of apartheid. Latin America and the Caribbean countries together have fewer Internet hosts than Finland.

Countries	Telephone Main lines Per 1,000 people (1997)	Mobile Telephones Per 1,000 people (1997)	Personal Computers Per 1,000 people (1997)	Internet Hosts Per 10,000 people (1999)
Singapore	543	273	399.5	210.02
United States	644	206	406.7	1,131.52
Switzerland	661	147	394.9	315.52
Australia	505	264	362.2	420.57
Norway	621	381	360.8	717.53
Denmark	633	273	360.2	526.77
Sweden	679	358	350.3	487.13
Finland	556	417	310.7	1058.13

Netherlands	564	110	280.3	358.51
Canada	609	139	270.6	364.25
New Zealand	486	149	263.9	36.44
Germany	550	99	255.5	160.23
United Kingdom	540	151	242.4	240.99
Ireland	411	146	241.3	148.7
Japan	479	304	202.4	133.53

Table 1. Communication and Internet Data of Selected Digital Countries

Source: World Bank, World Development Report, 1999/2000.

Countries	Telephone Main lines Per 1,000 people (1997)	Mobile Telephones Per 1,000 people (1997)	Personal Computers Per 1,000 people (1997)	Internet Hosts Per 10,000 people (1999)
Algeria	48	1	4.2	0.01
China (w/o HK)	56	10	6	0.14
Peru	68	18	12.3	1.91
Ghana	6	1	1.6	0.10
Guatemala	41	6	3.0	0.83
Haiti	8	0	..	0.00
India	19	1	2.1	0.13
Jamaica	140	22	4.6	1.24
Jordan	70	2	8.7	0.8
Laos PDR	5	1	1.1	0.00
Madagascar	3	0	1.3	0.04
Nigeria	4	0	5.1	0.03
Pakistan	19	1	4.5	0.23
Vietnam	21	2	4.6	0.00
Yemen, Rep.	13	1	1.2	0.01

**Note:** Figures in bold are in years other than the ones indicated.

Table 2: Communication Data of Selected Low-Income Countries

Source: World Bank, World Development Report, 1999/2000

(Tables 1 and 2 are comparisons of communication data among and between selected non-industrialized countries and industrialized countries around the world.)

Source: World Bank Group (2000). *Entering the 21<sup>st</sup> century: World Development Report*. Communication, Information, and Science and Technology Report.

As can be seen, the field is quite unequal in terms of computer ownership and Internet access. Other factors contribute to worsening the situation: inability to maintain computers and the quality of connection (broadband, TI connection, or modem connections). Non-industrialized countries are handicapped by other impediments that make full connection more of a dream than a reality. Antiquated machines, the lack of technical know-how and support to sustain such environments, the cost of new or old imported equipment, the complex questions of compatibility exacerbated by the fast evolution of the computer industry, and inadequate infrastructure are serious obstacles which necessitate immense organizational and financial efforts, and time to surmount.

Enormous gaps also exist within countries. In the United States, for example, the common computer user is likely to be a college-educated, white male. About 47 percent of white households use computers, compared with 23 percent and 26 percent respectively of African American and Latino households. African Americans and Latinos have less access to the Internet from any location (home, library, workplace or school) than Whites do from their homes. Outside their homes, African Americans are more likely to use a public library to log onto the Net. The situation is worse for Native Americans on the reservations. Among the Navajos, only 22 percent have phone lines and many lack basic electricity. Such gaps correspond to the larger social and economic inequalities already existing within the society. In other words, Internet usage is directly correlated to class as suggested by this statistic: 80 percent of African American, Latino, and White households earning over \$75,000 own at least one computer.

Therefore, the lack of access is primarily a poverty factor. As computer prices are slashed, the gap in hardware ownership is likely to narrow. For instance, in the US in the year 2000, there has been a 68 percent increase in computer ownership in Latino households from 1998. However, because of persisting differences in types of connection, the ability to remain connected, and the relevance and use of information, the information and communication gap is likely to increase. Besides, a "fluency gap" will appear between those who can effectively learn with their machines and those who will spend their time playing games and shopping. In conclusion, the economic factor is the single most important factor in exacerbating or reducing the gap, and it is primarily a structural phenomenon resulting from deep social inequalities.

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### **Biographical Sketch**

**Dr. Simon Adetona Akindes** is an Assistant Professor of Instructional Technology in the Teacher Education Department at the University of Wisconsin-Parkside. He previously taught Instructional Technology in the Department of Curriculum and Instruction at Cleveland State University, and Comparative Cultures and Education at Ohio University where he earned his Ph.D. in Education (Instructional Technology).

With a background in Language, Literature, Political Science and International Affairs, he is primarily interested in the cultural studies of science and technology, in the impact of technology on education, and in popular culture as an educational site. Part of his philosophy of education is that classroom culture and dynamics, as well as the curriculum, are closely connected to the power structures that regulate society. Therefore, the act of educating is more of a social, civic and political act than a classroom act.

Dr. Akindes has also taught English, French and Spanish in Benin and Côte d'Ivoire, West Africa. He has published three educational books, as well as numerous articles on computers in education and society, politics and culture.