The Electronic Journal of Communication/
La Revue Electronic de Communication
One of the World's First Peer Reviewed Electronically Distributed Scholarly Journals

Volume 12 Numbers 1 & 2, 2002

A FRAMEWORK FOR DIGITAL DIVIDE RESEARCH

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The Pitfalls of a Metaphor

Clearly, the metaphor of a digital divide that became very popular in the last years of the 1990s in the United States, with comparable designations in other languages and other countries, is a simplification of the phenomenon of inequality of access to digital technologies. Yet, it appeared to be very successful in putting the issue on the agenda of social, political and scholarly discussion. Apparently, such a simplification is required to bring such a complex issue to our attention. However, it does so at the risk of several misunderstandings.

First, the metaphor suggests a simple divide between two clearly divided groups with a yawning gap between them. However, in contemporary modern society we may observe an increasingly complex social, economic and cultural differentiation. The expression of a stretching of the whole spectrum of positions across populations might be more appropriate. If any demarcation would be required a tripartite distribution might be a better distinction than a two-tiered society. On the one side we would find an 'information elite' and at the other the digitally illiterates or excluded, but in between the majority of the population in contemporary high-tech societies having access in one way or another and using digital technology to a certain extent (see van Dijk, 1999).

The second wrong connotation of the term digital divide is that it is unbridgeable. This does not seem to be the case at this early stage of diffusion of digital technology. There appears to be a scope for policymaking by governments, corporations and civil societies. That is policymaking with the intention to prevent inequalities becoming unbridgeable structural divides.

A third misunderstanding might be the impression that the divide is about absolute inequalities, that is between those included and those excluded. In reality most inequalities in the access to digital technology are more of a relative kind. This means that some are earlier than others, that some people possess more hardware, software and skills than others or that one group uses the technology more than another. It should be granted that this does not make these relative inequalities of a lesser importance, particularly not in an information or network society (van Dijk, 1999).

A final wrong connotation is the suggestion that the divide is a static condition. In fact the authors in this issue are stressing that all kinds of access are continually moving. In doing this some inequalities are growing while others diminish (van Dijk & Hacker, *in press*).

Two other remarks should be added to put the discussion about the digital divide into perspective. The first observation is that those emphasizing the digital divide as a big social problem are most often driven by a kind of technological determinism. Some suppose that people not using digital technology are missing many opportunities and will be totally excluded from future society. Others blame digital technologies like the computer and the Internet for inequalities that are in fact much older than these technologies. In fact, it still has to be demonstrated that people cannot live as normal citizens in current modern society without using digital technology. Numerous old technologies and media are available to do the same things. Many jobs, studies, domestic lives and leisure activities are to be managed without the use of computers, the Internet or digital telephony. And is has to be proven that digital technologies really are improving these activities.

A second observation is that those emphasizing the importance of the digital divide are insufficiently distinguishing this supposed kind of new inequality from old inequalities. Actually, they first of all find the old inequalities of differential income, education, employment status, age, gender and ethnicity as the background variables of all kinds of digital divides examined. New inequalities would be differential digital skills like the information and strategic skills defined below or a disparity in access to positional goods, information goods and network positions in an information and network society (see van Dijk, 1999). However, the analysis and empirical investigation of these kinds of potential new inequalities are very scarce. The result is that the causes and effects of differential access to the new digital technologies are not sufficiently articulated and clarified. Are the digital divides observed simply a by-product of old social inequalities? Is digital technology intensifying these inequalities in some way or another? Or are new inequalities appearing in the context of a new (information) society, like those referred to above? The answer to these questions will decide the policy lines to be adopted in case one would like to confront digital divides. Is it just a matter of policies on the fields of income, education, gender, age and ethnicity or should special policies be invented to confront problems of computer anxiety, lack of digital skills and unequal usage opportunities?

Notwithstanding all these qualifications, it can be shown that digital divides do exist and that at least some of them are not disappearing at this moment in history. This has been done in all

contributions to this issue and in many older investigations, like the series of NTIA-investigations (1995, 1998, 1999, 2000, 2002).

The multifaced concept of access

The first obstacle in all research and discussion on information and communication inequality is the multifaceted concept of access. It is used freely in everyday discussions without notification that there are many divergent meanings in play. Possessing a computer and a network connection is the most common meaning in the context of digital technology. However, according to my analysis this only refers to the second of four successive kinds of access (van Dijk, 1999). I have distinguished four kinds of access:

1) Lack of elementary digital experience caused by lack of interest, computer anxiety and unattractiveness of the new technology (‘mental access’);

2) No possession of computers and network connections (‘material access’);

3) Lack of digital skills caused by insufficient user-friendliness and inadequate education or social support (‘skills access’);

4) Lack of significant usage opportunities or unequal distribution of them (‘usage access’).

Clearly, public opinion and public policy are strongly pre-occupied with the second kind of access. Many people think the problem of information inequality regarding digital technology is solved as soon as everyone has a computer and a connection to the Internet. The first kind of access problem, the mental barrier, is neglected or viewed as a temporary phenomenon only touching old people, some categories of housewives, illiterates, and unemployed. The problem of inadequate digital skills is reduced to the skills of operation, that is managing hardware and software. Sometimes this is also viewed as a temporary phenomenon to be solved shortly after the purchase of a computer and a network connection. Differential usage of computers and network connections is a neglected phenomenon as well. Usually it is not seen as being of any importance to social and educational policies as differential usage is presumed to be the free choice of citizens and consumers in a differentiating post-modern society.

I have argued before that access problems of digital technology gradually shift from the first two kinds of access to the last two kinds (van Dijk, 1999). When the problems of mental and material access have been solved, wholly or partly, the problems of structurally different skills and uses come to the fore. I propose to define digital skills not only as the skill *to operate* computers and network connections, but also as the skill *to search, select, process and apply information* from a superabundance of sources and the ability *to strategically use this information to improve ones position in society*. They are called instrumental, informational and strategic skills respectively. In earlier publications I have hypothesised the appearance of a *usage gap*. This means that some parts of the population are systematically using and benefiting from advanced digital technology and the more difficult applications for work and education, while other parts are only using basic digital technologies for simple applications with a relatively large part of entertainment (van Dijk, 1999, 2000). Arguing for this hypothesis I had to stress that computers are more multifunctional than any medium in history before, enabling them to be used in extremely divergent ways.

A Phase Model of Access

Figure 1 contains a model of these four successive kinds of new media access.

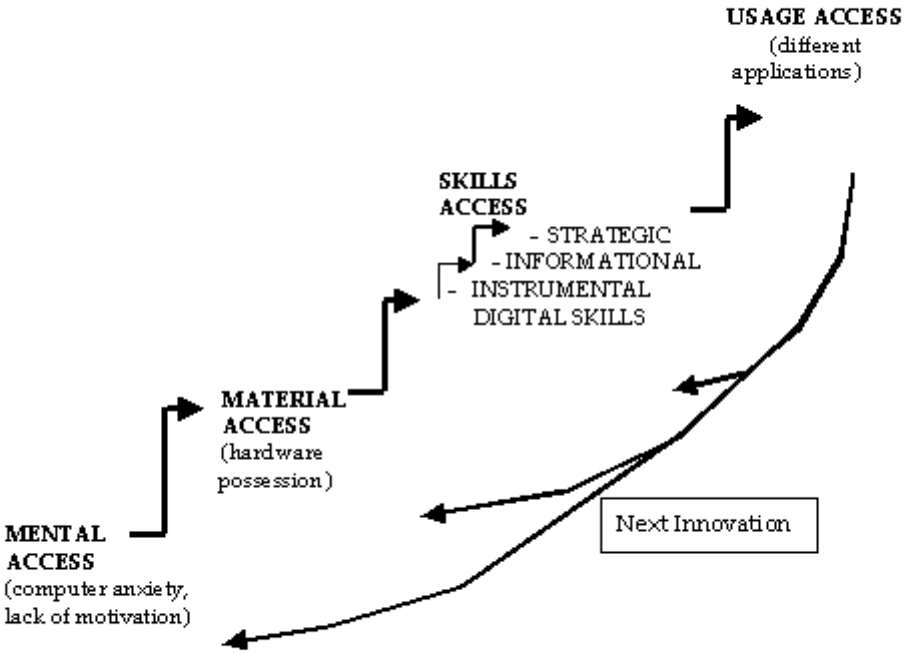

Figure 1: Four successive types of access

Figure 1: A Cumulative and Recursive Model of Types of Access to the New Media

The background assumptions of this model are to be explained as follows:

1) The stages are *successive*; the priority of the kinds of access for the adoption of a particular new media innovation shifts from the first to the last during the whole diffusion process of that innovation.

2) The stages are *cumulative*; the first is a condition of the latter. In this case new media adoption starts with sufficient attractiveness of the innovation and the motivation for adoption. As soon as it is purchased, skills to use it have to be mastered starting with

operational skills and to be followed by skills of using it; finally, it is differently used in all kinds of practices.

3) The stages are *recursive*; with every new innovation, the problem is to separate an innovation from the next one or another one, the process starts anew with one of the previous stages, not necessarily the first one. For example, presently we can observe the diffusion of broadband digital connections undergoing the same processes of differential adoption as the innovation of narrowband Internet and the PC before. People with a higher income and education are coming first (NTIA, 2000).

4) The stages are assumed to be *general* for both old and new media access. However, every new medium or innovation requires the stages to be filled in differently, like the skills in this model of new media access.

All contributions in this issue can be located in this model. In their contribution *The Digital Divide in the Netherlands* Jos de Haan and Suzanne Rijken distinguish between the possession, skills and use of ICTs. They carefully analyse the respective weight of a number of background variables for these types of access. Han Woo Park has tried to test this model in *The Digital Divide in South Korea: Closing and Widening Divides in the 1990s.* Steven Rockwell and Loy Singleton limit themselves to the first kind of access, mental access, investigating *The Effects of Computer Anxiety and Communication Apprehension on the Adoption and Utilization of the Internet.* Finally, Jacqueline Nunn, Robert Kadel and Allison Eaton-Kawecki stress the importance of material access, the possession of computers and Internet connections, for the skills of teachers and for the use of these technologies by both students and teachers in *A Digital Divide in Maryland Public Schools.*

De Haan and Rijken have taken the most advanced steps in terms of multivariate analyses of the background variables of these types of access. They have constructed a number of scales for so-called material, social and cognitive resources in the attempt to explain the differences of access found with the usual personal background variables like income, education, age and gender. In this way they have analysed potential causes of the differences observed at the types of access distinguished.

A Causal Model of Access

This brings us to another issue. In the preface to this issue it was claimed that the deeper causes of differential access to ICT, beyond the usual demographics, are not sufficiently brought forward in digital divide research. Even more striking is the observation that the *effects* of differential access usually are taken for granted and that they are not becoming a part of the research design. However, does digital exclusion necessarily lead to social exclusion? This presupposes, among other things, that the old media are no longer adequate means to participate in contemporary society as a citizen, worker, student, consumer, client, patient or producer of a particular culture. Or the presumption has to be made that this is likely to change in the near future. Here the next part of the digital divide research agenda is

appearing. What are the effects of differential access to the new media in terms of social inclusion and exclusion? This question has to be made operational for research on the fields of the labour market, education, social relationships, place of living related to mobility and culture. For which jobs access to ICT is necessary or appropriate? What educational opportunities and certificates is someone missing without it? What are the consequences of a lack of access for social networking? Does it lead to a spatial exclusion of living in poor neighbourhoods with lesser mobile people? What kinds of cultural participation are missing or decreasing among people not having a computer or Internet connection? Is not having them also leading to forms of institutional exclusion, now or in the near future? Examples of institutional exclusion would be less or none political participation (voting), not getting access to all kinds of insurance, medical waiting lists and housing or to the membership of particular organizations.

These potential effects of differential access are located in the right-hand part of the causal model supplied in Figure 2 below. In this issue they are only partly addressed by Nunn, Kadel and Eaton-Kawecki investigating the consequences for education of a digital divide in Maryland public schools. All other contributors to this issue are dealing with the left-hand and middle parts of this model trying to explain the differences observed in the four kinds of access. In the years to come the model as a whole will be tested in a large longitudinal research project in the Netherlands, in part being a follow-up to the investigation reported in the next contribution to this issue.

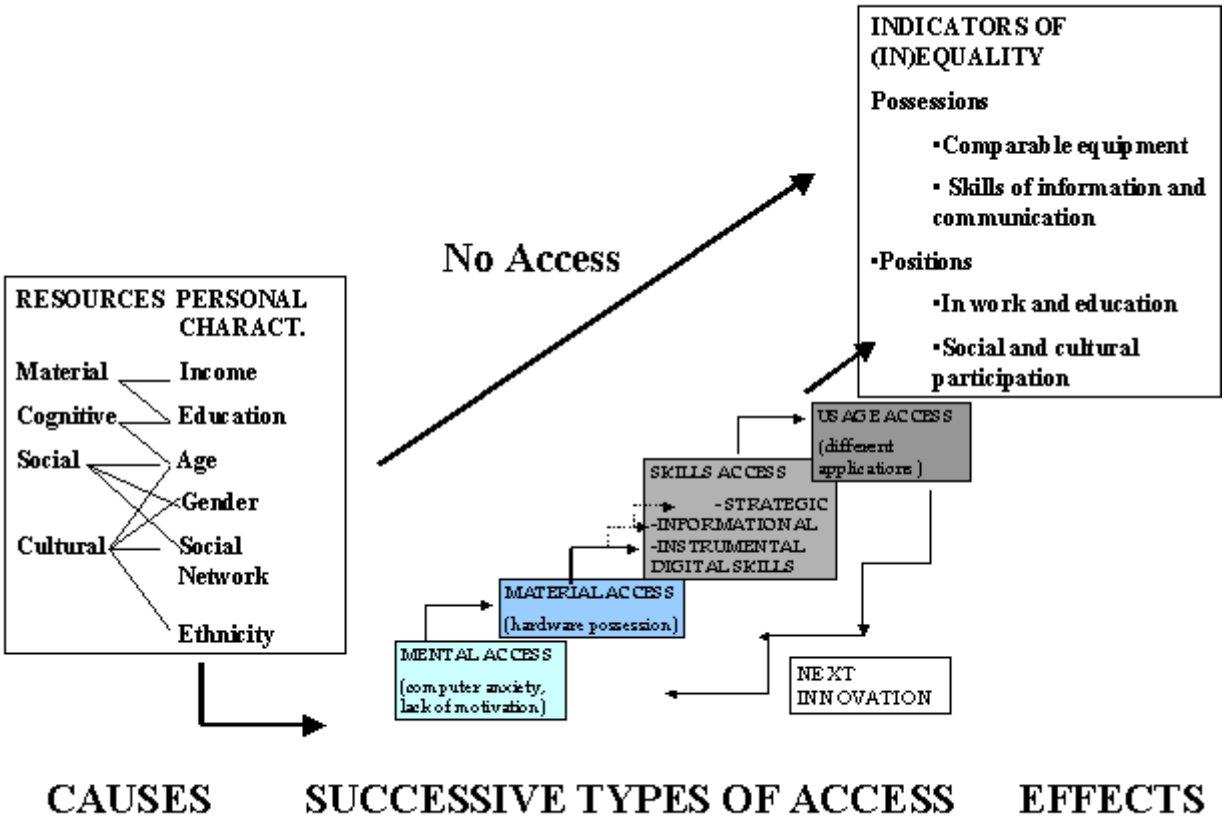

Figure 2. A Causal Model of Social Causes and Effects of Differential Access to ICT

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