

Jan van Dijk

Afterword: The State of Digital Divide Theory

Introduction

This book has shown how multi-faced or multidimensional the theory of the digital divide is. At first, the digital divide seemed to be a simple technological and economical problem of digital media access, but in the meantime it has become a wide-ranging societal problem touching all domains and aspects of contemporary society. The authors of this book have considered the problem following an interdisciplinary approach with only a particular focus on sociological, psychological, economic, cultural or political aspects.

In this afterword I want to first give an estimation of the nature of contemporary digital divide theorizing. Subsequently, a classification of digital theories will be offered, some of them contained in this book. In a third section I will link digital divide theorizing as demonstrated in this book to the phases of research so far, called the 'first, second and third level of the digital divide'. Finally I will briefly give a way forward in digital divide theoretical development.

The nature of digital divide theory

Digital divide theory is still in an initial phase of theory development. In a balance of digital divide research made more than ten years ago I concluded that digital divide research suffered from a lack of theory. In the preceding ten years it remained at a descriptive level (van Dijk, 2006). Unfortunately, I have to state that, ten years after the situation is not much better. Not for nothing this book is called 'Theorizing the digital divide' and not 'Theory of the digital divide'.

Currently, I observe four kinds of theorizing the digital divide:

The first are attempts of *conceptualization and argument* showing directions to find a theory of the digital divide. This is the nature of this book, and many journal articles and papers about the digital divide.

The second are articles and papers *offering variable models*, mostly with correlations and regressions at a descriptive level. Most of them are simple demographics and socio-economic variables. This is at best a start of a theory of the digital divide. They often not even suggest to link their models to a particular theory. They derive the variables from literature research in many domains, sometimes in an eclectic way.

The third attempt to develop a theory of the digital divide is to construct and possibly test *causal models with the aid of structural-equation modelling (SEM)*. Mostly a particular theoretical core is the start of such a model and in subsequently causal factors from other backgrounds are added. It might also happen that an eclectic model of an assembly of all kinds of causal factors is constructed. These causal models often are extensions of descriptive correlation models and not deductions of existing theories.

The fourth attempt of building a theory are *specifications of existing theories* that can easily linked to the problematic of the digital divide. They could be deductions, but most of the

time those theories are only a source of inspiration for particular concepts or factors. In the issues and problem of the digital divide some theories have a clear affinity. Those are technology adoption theories such as Diffusion of Innovation Theory, the Technology Acceptance Model, the Unified Theory of Acceptance and Use of Technology, Uses and Gratifications Theory and Domestication Theory. Additionally, is Structuration Theory of Giddens and the Capital theory of Bourdieu and Coleman are often used.

The causal models with SEM and these specifications come closer to a mature theory of the digital divide than the other kinds. However, in these attempts the systematic and axiomatic character also is often missing. For a fully developed theory the following parts are needed: 1. explicit basic principles (the so-called hard core), 2. fully defined and operational basic concepts and most important 3. empirical statements which can be validly and reliably tested with 4. a typical heuristic or approach of research. Most of digital divide research has a long way to go to create these parts of a scientific theory.

A classification of digital divide theories

Next to looking for the nature of digital divide theory in general the substantial origin of specific digital divide theories can be classified. Here again I propose a fourfold classification.

The first category is a *specification of classical social theories* that comprised the first part of this book. Most of them are inspired by the classical sociologists (see Witte and Mannon, 2010). But in this book also the psychologist Freud was a source of inspiration (Hirata). Marx is the first to be mentioned. His heritage stimulated the concepts of types of capital (Bourdieu) and resources (Giddens) so often appearing in digital divide research. In the chapter of Ragnedda and Ruiu these concepts are fully developed and comprised in a big model of all kinds of capitals. In the tradition of Marx it is obvious to investigate digital capital at the background of general social and economic capital.

Max Weber has a second exemplary function. His interpretive approach using ideal-types for concept development (Neves and Mead in this volume) showed digital divide researchers to look for cultural capital and the life-styles and life chances of people (Regnedda, 2017). The Weberian tradition explains why particular cultures (middle and upper-class versus working class and Asian versus Hispanic American cultures, or general cultures of the young versus the elderly) earlier 'go digital'. Neves and Mead have shown that after constructing ideal-types in reality the divide between use and non-use, earlier typified as the 'have nots' as compared to the 'want nots' is shown to be not clear-cut. There is a continuum between very frequent use and no use at all.

The third source of inspiration is Simmel (Mushert and Gunderson in this volume). This source might be the most important one to be developed in the context of the nascent network society. It shows the way to look for association, relations and social networking. This means to observe how (non)users of digital media are related to each-others: the included and the excluded, the core and the periphery in the world, males and females, managers and executives. The vast majority of digital divide researchers takes an individual perspective of equality (a methodology of looking for individual characteristics) and not a relational perspective (focusing on relations and structures). Charles Tilly

(1999) have proposed this perspective for social inequality research in general not mentioning the word digital at all. It inspired my own book *The Deepening Divide* (2005).

A final example of a classical inspiration comes from a power perspective. This is the perspective of the sociologists of Mannheim and Mann and the philosopher Foucault. Reading the chapter Hjelholt and Schou about citizen classifications of people not using and being able to use digital media branded as 'digital outcasts', forced to use digital media and otherwise deprived from civil rights, I just had to think about the analysis in Foucault's *Discipline and Punish* (1975).

The second category in this classification are a number of *paradigms* covering many attempts of substantial digital divide theories. I already mentioned the relational perspective. In this volume we have read the chapters about the Social Construction of Technology, Critical Theory and Feminist Theory. Kretchmer is using social construction and social mutual shaping theories to explain that access and use of digital media are completely intertwined with social contexts and with the design of this technology. She shows that the characteristics of digital technologies resemble the design, image and interests of their creators and reshaped by their users. She argues that computers and the Internet do not remove race and ethnicity, the location of users and their potential disability from human interaction, but that "all divides in the real world are replicated in digital technology".

The paradigm of Critical Theory is developed in the last section of this book. This paradigm states that the digital divide 'only' "reproduces, replicates, and reinforce social inequalities while also rooted in these inequalities" (Mayo in his chapter). This covers existing inequalities such as colonialism and core-periphery domination in the supply of digital technology, for example demonstrated in the dominance of English as the 'lingua franca' of the Internet. See the chapters of Mayo, Williams, Gupta and Wallace and Özsoy. Klinkisch and Suphan add the typical characteristic of critical theory that access and use of technology is a *struggle* for recognition of the self, and the access and usage of digital media. Finally, Jane adds the Feminist perspective to digital divide theory because gender distinctions are entrenched in all aspects of access, use and outcomes of digital media. This even goes so far that we have to observe and explain the frequent abuse and harassment of women online.

The third category is a multifarious series of digital divide theories in *domains and interest groups* related to the digital divide. This phenomenon is so multi-faced and so much entrenched in every social distinction of society that many aspects of the digital divide have to partly be explained by other distinctions than simple inclusion or exclusion of digital technology. In this book two chapters are dealing with disability in access or use (Goggin and Dalvit). Another domain is illiteracy. The perspective of complete and functional illiterates and the new phenomenon of digital illiterates requires a special vision and explanation about digital media use for these groups. This means that the characteristics and access or use problems of these groups have at least partly be explained by other theories than digital divide theories. The social, economic and cultural context of the digital divide is crucial here. Examples are theories about youth culture, non-Western culture, colonialism, core and periphery relations of countries in development and gender relations, all covered in this book.

The last category focuses most on the topic of the digital divide itself. Those are a series of *theories of technology acceptance or adoption*. Well-known examples are Diffusion of Innovations Theory, Technology Acceptance Model, Theory of Planned Behavior, Unified Theory of Access and Use of Technology, Domestication Theory and Uses and Gratifications Theory. For these theories the digital divide occurs in a process of appropriating technology by users. Common phases in this process are: initial causes, behavioral intention, adoption, initial use and sustained use. The focus of the theories mentioned is on one or two of these phases (van Dijk, *forthc.*). The problem of these theories in this context is that they are general (all technologies) not on the specifics of digital media and their characteristics.

Contemporary digital divide theory at third levels of access

In this book a distinction is made between the so-called First, Second and Third Level of the digital divide. Almost every contribution of this book focuses on the Second Level divide: skills and use. They are beyond the First Level (physical access) previously dominating digital divide research and theory. The Third Level (benefits of using digital media) is announced (Ragnedda and Ruiu chapter) or pronounced when the contexts and effects of digital media (non)use are discussed (many chapters).

To discuss the digital divide theories I need to offer a framework with the most factors of the digital divide as a process also figuring in the three levels. If you do not mind this overconfident move, I offer my own very broad causal and sequential model of access of digital media developed more than ten years ago (van Dijk, 2005) and afterwards tested in a series of empirical investigations. In a number of recent articles my colleagues and I have shown that this model fits to the data in several surveys according to structural-equation modeling (van Deursen & van Dijk, 2013, van Deursen & van Dijk, 2015, van Deursen et al., 2017). The background of this model is my *Resources and Appropriation Theory* of the digital divide inspired by structuration theory (Giddens), the capital theory of Bourdieu, the relational perspective of Tilly and several theories of technology acceptance. See Figure 1.

First level divide

In the first phase of digital divide research (1995-2005) the focus was also on the two first phases of appropriation of digital technology: motivation and physical access. Primarily of course, having a computer and Internet connection. In that time motivation of getting access was growing fast. In the developed countries the gap of physical access among people with high and low income and education, between the young and the old, and less between males and females was growing. After this time these gaps were getting closer, while in the developing countries they are still starting to grow. Currently, about more than 50% of the world population has access.

Motivation is a permanent driver of all following phases: physical access, digital skills and usage. Here mental personal categories (personality, intelligence, abilities, needs

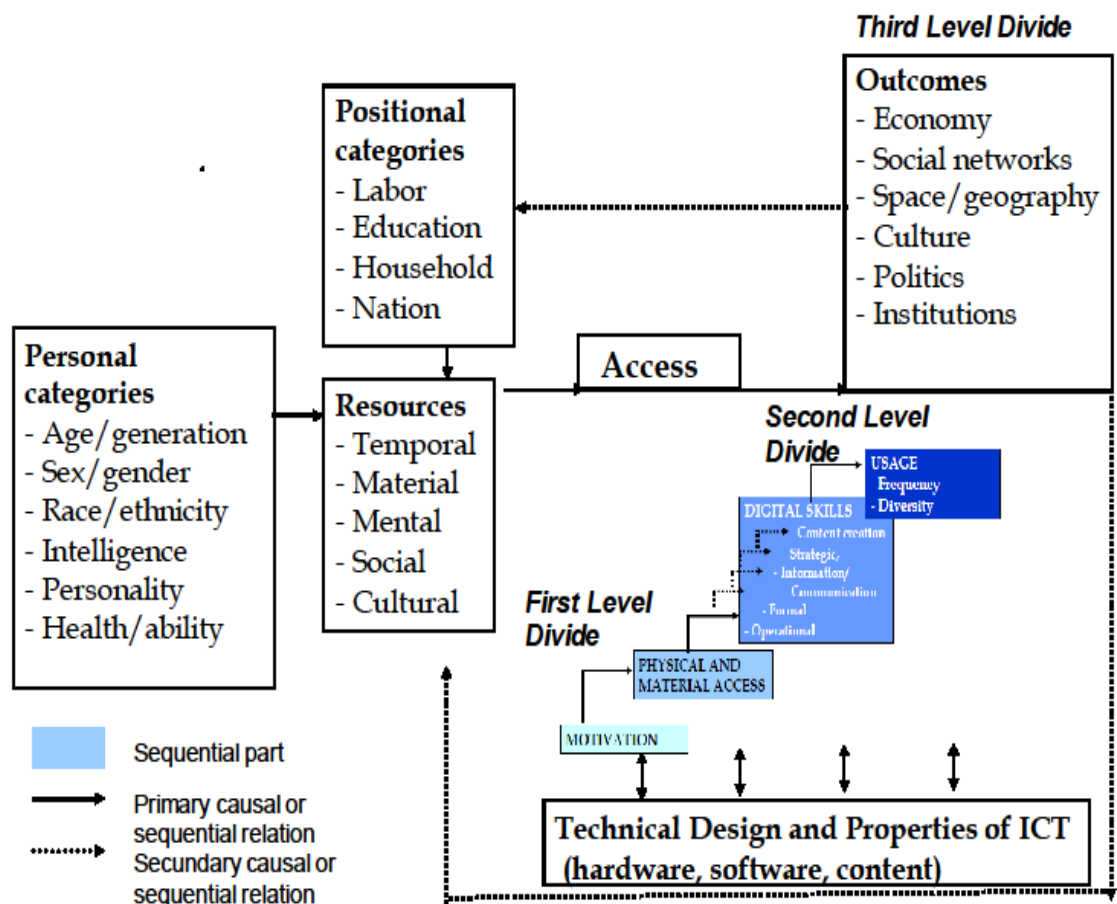


Figure 1. Causal and sequential model of access and effects of the digital divide

Adapted from Jan A.G.M van Dijk (2005), *The Deeping Divide*, p.24

and attitudes) are coming forward. Computer anxiety and technophobia are important and still occurring obstacles here. In this book Hirata is discussing the desires that people satisfy in using digital media; Klinkisch and Suphan are talking about self-esteem, self-respect and identity and Jane about 'cyberhate'.

In the first phase of digital divide research was dominated by economic, developmental and diffusion theory supported by descriptive demographic social surveys. Diffusion of Innovations Theory (D.I.T.), other diffusion theories and cost-benefit economic theories were popular (van Dijk, 2005, 2006). D.I.T. focused on personal and societal innovativeness, perceived characteristics of technologies and communication channels. Other diffusion theories (e.g. Norris, 2001) projected an evolution or first growing and then widening gaps of physical access to finally predict either normalization (everybody gets access) or stratification (some people keep to be excluded). A narrow economic supply and demand consumer theory assumed a *trickle-down principle* when the first users pay for the innovation and makes the adoption cheaper for later users (Compaine, 2001). In this book only Haffner addresses physical access issues discussing fixed and mobile digital infrastructures.

The second level divide

In 2002 Hargittai announced the second-level divide: to go beyond physical access only skills (computer literacy etc.) and actual usage completely describe and explain the digital divide. This level is dominant from 2005 until today. Almost every chapter in this book discusses the usage of digital media and some of them address problems of digital skills or literacy. Several frameworks of digital skills or literacy have been proposed. One of them is contained in the access part of Figure 1, a series of operational, formal, information, communication, strategic and content-creation skills (van Deursen & van Dijk, 2011; van Deursen et al., 2016). Most skills frameworks are inspired by media and communication studies and by educational science.

In the usage phase scholars primarily concentrate on the frequency and diversity of usage and their determinants. Many typologies of digital media usage applications have also been proposed. At this phase theory shifts to sociology, cultural studies, anthropology and media or communication studies. One of the theories explaining inequality of usage is the *usage gap* thesis that is a successor of the knowledge gap thesis of the 1970s. This thesis states that some sections of the population use the 'serious' applications of the Internet benefitting work, career, education and societal participation, and other sections the applications of entertainment and simple communication and commerce (van Dijk, 1999, Bonfadelli, 2002, Zillien & Hargittai, 2009, van Deursen et al., 2013).

In all phases of appropriation of technology the technical design and properties of ICTs influence the opportunities and risks of (no) access and in (not) taking these steps, and simultaneously the designs and properties are redesigned by users or non-users according to the Social Construction of Technology perspective (Kretchmer in this book). See Figure 1 below.

The third level divide

A few years ago a third level of digital divide research has been announced and started to be practiced (Helsper et al., 2015, Regnedda, 2017 and Regnedda & Ruiiu in this book). This focuses on the outcomes of the four phases of access: the benefits or effects of having and using digital technology, or not having and using it. These outcomes can be observed in all domains or spheres of society: the economy, politics, civil society, social relations, culture and spatial effects. See Figure 1 to the right. These outcomes are the stake of it all, the impact of the digital divide on society and (in)equality in general. In a feedback loop these outcomes reinforce or moderate the existing inequalities of personal and positional categories and their different resources (see Figure 1). Because here digital inequality is touching all domains of society theories need to be multi- or interdisciplinary. Economics, sociology, political science, educational science, media, communication or culture studies and many others all have a stake in this.

In the third level digital divide research it will become evident that digital inequality is not special. It is an aspect of social inequality in general. The only question is whether the outcomes will reinforce or mitigate existing inequality, in specific domains or in general. My own conjecture is that in the network society the outcomes of the digital divide will reinforce existing social inequality in several domains. The support of this conjecture is not only derived from my empirical work but also by the so-called network

'law of trend amplification' developed in van Dijk (2012). Digital media are able to both increase and decrease societal inequality, however according to many observers the current trend worldwide is growing inequality in several domains, first of all socio-economic inequality. When we started digital divide research most investigators thought that the free, accessible and useful applications of the Internet could lead to less inequality. Now, about 25 years later most observers are less optimistic than before.

The way forward

To go forward digital divide theory has to elaborate and to empirically operationalize the basic concepts. The frameworks produced have to be improved. Most existing frameworks and concepts are still relevant. The first phases of access, motivation and physical access are still crucial. Even in the richest technologically advanced societies some social categories have many more devices, software programs and subscriptions than others. However, inequalities of skill and usage opportunities will be most decisive.

The second advice is to build more systematic theories consisting of core statements or axioms, empirical statements and related heuristics for a methodology. We have to go beyond the stage of endless free new conceptualization, as if digital divide research is not already more than twenty years old.

Thirdly, we need theories which are, or can be backed by empirical results. The chapters in this book need more empirical support than actually produced. They only consist of arguments and references to work of others.

The theory of the digital divide needs to be multidisciplinary and preferably interdisciplinary. If anything has been demonstrated in this book is that the digital divide touches all aspects of contemporary society.

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