

THE FUTURE OF THE SELF

PRAISE FOR THE FUTURE OF THE SELF

‘An astonishing amount of information for educators, other professionals and parents on almost every aspect of technology’s impact on children’s development of “self” and sense of agency. Dr Kucirkova has written a powerful book about the growing impact of technology induced personalization on children and our collective future. The book contains rich information to how children learn that is embedded in context including social science, child development, philosophy and literature. A must read!’

– **Barry Zuckerman** MD, Boston
University School of Medicine, USA

‘Anyone concerned about the impact of technology on their life and the lives of children should rush to read *The Future of the Self*, by Natalia Kucirkova.

This book captures the multiple, interacting forces shaping the sense of self in the digital age and encourages readers to reflect on the implications.

The book explores how technologies personalize our experiences using data collected by search engines documenting our activities, educational software guiding our learning, and social media monitoring our interactions.

This book will motivate teachers, parents, designers, policy makers, and users of technology to re-examine the implications of personalization in their lives. Drawing on technological advances, research findings, and theoretical insights Kucirkova identifies trade-offs, dilemmas, and paradoxes that deserve our attention.

The book gives readers tools for thinking about the interacting factors determining how experiences are personalized. In one example, Kucirkova identifies the trade-offs that ensue when balancing personalization targeted to the individual and pluralization targeted to the overall audience. This distinction arises every time teachers make decisions about whether to assign the same book to their class or to let each student select their own book.’

– **Marcia C. Linn**, Evelyn Lois Corey Professor of
Instructional Science, Graduate School
of Education, University of California, Berkeley, USA

THE FUTURE OF THE SELF

Understanding Personalization in Childhood and Beyond

BY

NATALIA KUCIRKOVA

University of Stavanger, Norway and

The Open University, UK



United Kingdom – North America – Japan – India
Malaysia – China

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ABOUT THE AUTHOR

Natalia Kucirkova is Professor of Early Childhood Education and Development at the University of Stavanger, Norway and Professor of Reading and Children's Development at The Open University, UK. Her research concerns innovative ways of supporting children's book reading, digital literacy and exploring the role of personalization in the early years. Her research takes place collaboratively across academia, commercial and third sectors. She is author of *Digital Personalization in Early Childhood* (Bloomsbury) and *How and Why to Read and Create Children's Digital Books* (UCL Press) and currently blogs for *Psychology Today*.

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INTRODUCTION

You and I are the first generation to see children growing up with a paraphernalia of digitized personal data. Children's fragmented selves begin before they are born with embryo images, and in some cases with recorded genome sequences. The diversity of data that exists on today's children is unprecedented, as are the mechanisms for this data to be deployed for strategic educational, marketing, medical, biological and state-sponsored ends. While with the previous generation the self was unbound, today's generation cultivates inner worlds that are fragmented, with diverse identity markers, such as archived photos, real-time text messages or records of movement, amplified by diverse networks. The Generation Alpha, that is, children born between 2010 and 2025 are the first generation to pioneer digital personalization that significantly fragments and augments their "selves." This book provides you with some thinking tools to consider your own contribution to the rising levels of fragmented and amplified selves.

In the first decade of the twenty-first century, the personal data economy enabled personalization to grow from a cheap manufacture model to a highly sophisticated practice. The technological know-how of the personal data economy, however, has accelerated faster than general understanding of what constitutes "self". I want to challenge the technological representation of self which currently dominates debates about personalization and focus on the mechanisms of personalization that can inform a comprehensive theory. In this theory of personalization, the basic unit is choice – we are

who we are because of the choices we make. Choices communicate our identities and, therefore, *the practice* central to the study of personalization is identity. Education scholars, including myself, understand identity as a verb, as an action that is performed in dialogue with others. It follows that “personalization” is both a noun and a verb. Simply defined, personalization is a nexus of products, services and practices *tailored to one human being*.

Personalization is undeniable when we think about our everyday modern lives. Personalized education, personalized news, personalized medicine, personalized gifts ... the adjective “personalized” changes the meanings of the nouns it qualifies. There are different conceptualizations of personalization in different contexts. To some, personalization is simply tracking an individual’s behavior with adaptive technology, to others it is about empowering young children to explore and be creative. Whether we frame personalization in a deficit or opportunity frame, personalization by its very nature speaks to the “personal” in an individual human being. In education, attention to the individual child can motivate students to learn. In commerce, personalization can persuade customers to buy a product or to be hooked on a pointless game. Contextualizing activities as *your* journey, your story or your education affects how you perceive their value, and how much attention, intrinsic motivation and material resources you allocate to them. This is why personalization techniques are of great interest to designers, psychologists and educationalists for decades.

The current version of the Internet, the Web 2.0, with its social networking sites and user-generated content in blogs and private emails, is designed in a way that makes personalization indispensable: how else could we find relevant information in the large swaths of information contributed by every user? In education, however, the pendulum has been swinging between standardized and personalized education for decades. While marketing and global advertising have perfected the techniques of commercial personalization, educational approaches to personalization have been less successful. This is important to realize if we want to progress personalization that is not only engaging but also enriching. Adaptive and automated personalization enabled through personal mobile technologies that collect and algorithmically process personal

information has scaled up (and in some cases, supplemented) possibilities for personalization. These possibilities can be leveraged for not only motivating people but also for manipulating them. Yet, personalization techniques are not unique to digital marketing or technologies: human beings individualize their speech, thoughts and behavior in relation to the personal information they hold about individuals. If you know that your partner likes coffee, you will offer them coffee instead of tea (if you want to please them), serving it at the time of day you know they usually wake up and addressing your partner by their name. Alexa provides similar personalized service with digital information.

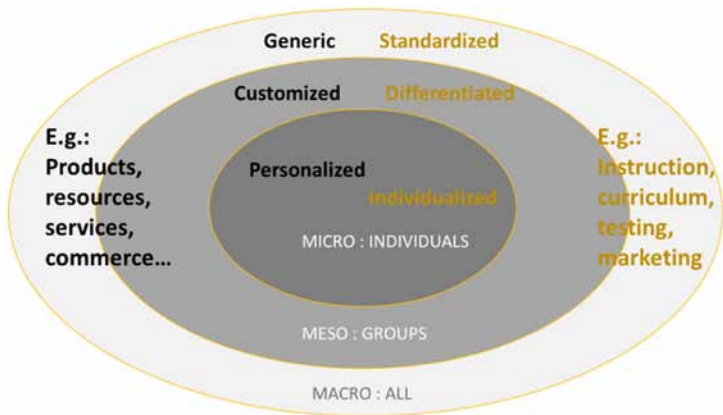
Digital personalization, or personalization mediated by technologies, can be more intense and in some instances, more precise than human-mediated personalization. If we understand technology as a tool that “organizes knowledge for practical purposes” (Mesthene, 1997, p. 75), then we cannot overlook the extreme pace at which it has evolved the sophistication of its software (e.g., apps) and hardware components (e.g., iPhones) in comparison to the development in other industry areas. On one hand, digital personalization offers greater precision with flowcharts and decision trees using personal information to make predictions and expand our “selves” with precisely defined values and exponential growth. On the other hand, digital personalization is a bedfellow of surveillance and commercialization tactics and as such, breeds the battleground for opponents of digital authoritarianism and critical edtech activists. I do not aim to add fuel to the techlash against Google, Amazon and Facebook. I want to engage in a research- and practice-informed discussion about what the benefits and limitations of digital and non-digital personalization are now, for children of today, and what they could become for future generations.

If we want to understand personalization in its entirety, we need to consider personalization not only in terms of what it is but also what it is not. In education, personalized learning is sometimes confused with differentiated learning and in business, personalized products are at times confused with customized merchandise. A simple way of understanding the difference is to think of the number of people that a product or activity is tailored to. Differentiated learning and customized products are relevant to groups of

people, while personalized learning and personalized merchandise are uniquely made for individuals. If we think of the sphere of influence in micro-, meso- and macro-terms, then you can locate personalization at the micro-level, customization/differentiation at the meso-level and generic/standardized products or processes at the macro-level (see Fig. 1).

If we agree that personalization is about adjusting products and processes to one single human being, then we need to ask *who* drives these adjustments. Are personalized products user-generated and managed by communities or the technology provider? Is personalized learning led by the teacher or the child? This is the point where we need to consider the techniques of personalization and ask who personalizes for whom. Personalized products and services can either be developed around, or *with*, the user/recipient. The level of user participation determines the quality of personalization and the extent to which personalization is “agentic,” that is, whether it reflects genuine choices of an individual’s identity, or spurious choices offered by someone else. Today’s generation is unique in the amount of non-agentic personalization steered by commercial and political forces as opposed to agentic personalization led by the individuals who produce the data. In my work, I have focused on approaches that cultivate personalization with children’s agency

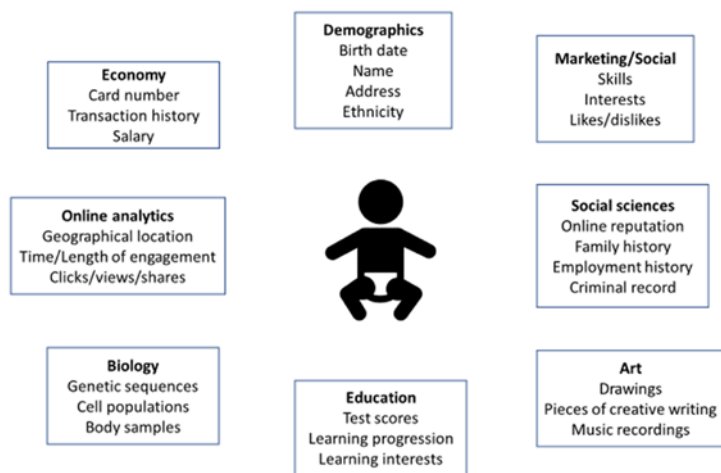
Fig. 1. Conceptual Model of Adjusting Practices, Processes and Products at the Macro-, Meso- and Micro-levels.



in mind. This is not to undermine the agency of adults: a Goldilocks solution which includes both child and adult agencies is necessary for holistic learning. Nevertheless, I foreground children's agency and agentic personalization in this book as it is these techniques that need to be most urgently developed and implemented.

Despite the popular belief that technologies provide equity of access, digital personalization carries the same biases as any other technology-mediated practice: as I will outline in this book, it can reproduce and amplify socio-cultural inequalities. By the advent of the personal data economy, the diversity and sophistication of using personal data have matured significantly. Not only are there new forms of identifying a person but there are also more precise ways to collect and strategically deploy the digital fragments of an individual. Here is a simple way of understanding the large and heterogeneous landscape of personal data: from a research and statistical perspective, data can be numerical (e.g., number of students in a class, test scores and speed of a car) or nominal (e.g., someone's ethnicity, hair color or gender). From the broader personal data economy, any piece of information that identifies an individual, counts as data. The commercial, health and education sectors use these types of data: body-related (somatic), psychological (personality traits), experience-related (likes and dislikes), needs-based (educational and developmental), demographic markers such as children's names, gender, address and date of birth and modal data, which can be further sub-categorized into linguistic and textual modes or in terms of sensory engagement into visual, auditory, gustatory, olfactory and tactile modes. The key personal data points that are (or soon will be) used by the data economy are summarized in [Fig. 2](#).

Within a diverse and plural understanding of data, "digital" personalization becomes a misnomer. Data are generated both from humans and non-humans and data are processed by human and artificially intelligent non-human brains, not only in interaction of humans with humans but also humans with the natural or artificial environment. Yes, there are some activities that are exclusively digital, such as, for example, watching videos, but digital as well as non-digital products can be personalized, such as books, for example. Indeed, all data, visual, audio or textual, can be either personalized or not, and this distinction is more sustainable than the

Fig. 2. Examples of Categories and Sub-categories of Personal Data.


digital/non-digital distinction (what is not digital today might be digital tomorrow). It is also a more complicated distinction because it relates to an understanding of the world that is defined by time and space boundaries. My understanding of this relationship has arisen from many sources; however, one that stands out in particular for me is the following experience from 2011.

I was field-testing the “Our Story” iPad application which I co-developed as part of my postgraduate studies at the Open University in the UK. I was proud that we had a working prototype and took the iPad to a small primary school to see how the children would use it to make their own multimedia stories. A child named Annie attended the class with whom I was testing the app. She was a soft-spoken, six-year-old pupil. This was before tablets and smartphones had become ubiquitous, but little Annie already had an iPad at home – accustomed to the device, she volunteered to give my app a try. She seemed entirely absorbed in using “Our Story.” Her peers looked on mesmerized, so I let her explore the functions without interrupting for about 10 minutes. Annie began composing her own multimedia story – she took pictures of her classmates, added her name to the title of the story and audio-recorded her friends’ giggles. After she had completed about six

pages, she proudly typed in “The End.” The teacher called Annie to stand at the front of the class and hold the iPad high to show all the children her story. The teacher pressed “Play” and bang! – the app had crashed. She pressed “Play” again but the story was no longer there. I tried to retrieve it but there was a bug in the code which had made Annie’s story disappear. Annie began sobbing, and all eyes in the classroom were on my red, embarrassed face. “Don’t worry Annie, you can make another one,” the teacher tried consoling her. “But it won’t be the same one” Annie replied crying. Annie was right – it would not be the same story – time determines the value of personalization. Had the app worked as it should, it would have preserved Annie’s story, and she could have shared it with her classmates, her family at home and grandparents in Australia. Annie could have made another story, but the quality of the content would have been affected by her initial experience. The photos of her classmates, their giggles and perhaps Annie’s typed text too, would be different. Authentic personal data are locked in time–space convergence. Digitization can grant personal data posteriority and mobility, but digitization is subordinate to the amplification possibilities of time and space. The higher the precision of personalization, the more acute the loss of a personalized product and inability of reproducing it in the future or in another location. This is an important realization not only for research or design but also for everyday life.

If we think of personalization as a practice based on collecting and curating personal fragments of individuals, then there are different *approaches* to personalization in different research disciplines. In computer sciences, the personal fragments are called personal data and are analyzed in relation to the possibilities of datafication, while in social sciences, the core focus is on ethical and social consequences of personal information. Psychologists study personalization related to identity, and specific cognitive phenomena, such as self-reference effect or self-referential speech. Personalized medicine is studied in medical sciences, and personalized education in humanities. The effects of personalization on consumer behavior, such as to act on a product recommendation or make a repurchase, are studied by economists. Personalized design or custom cosmetics are studied in schools of design, fashion and art. The study of personalization is thus a rich but disjoint field

and my attempt at a broader perspective should be understood as part of an endeavor that seeks to break new ground in a cross-disciplinary study of personalization.

Still, as much as I wish, I cannot represent all disciplines in one book and may have to gloss over some disciplinary nuances. My own research interests bridge both the humanities and sciences and draw on evidence from various sources including qualitative observations, quantitative experiments and theoretical analyses. Please refer to the Notes at the end of the chapters for more details on individual studies and links to the cited articles (Note 0.1).

I am concerned about the rise of personal economy and digital personalization in the twenty-first century and the extent to which personalization is becoming the defining feature of modern childhoods, but I cannot discuss personalization in simplistic positive/negative terms. The reasons why adults personalize products and services for children are motivated by a social justice agenda to ensure that all children feel that they belong (to a family, to a classroom and to a society) or a political ideal that aims to empower everyone to make a choice, or a profit-driven agenda for developing long-term clients. These motivations can overlap and we need to study their proportions in different circumstances rather than their end points. So that you understand the conceptual relations, it is important you understand that personalization is both an outcome and a mechanism. Poverty is another such hybrid. Researchers interested in poverty study how poverty arises, why it is perpetuated and what its impact is. The same applies to the study of personalization. This may be confusing but it also ensures the enduring nature of personalization: new technologies grant personal data new forms but technologies are just a part of the broader socio-material mechanisms, and outcomes, of personalization. When I try to explain what actually matters for our understanding of the impact of personalization, I use a simple story of “determinism” versus “relativism.”

The story starts with the legendary American physicist, Heinz Pagels. Pagels (1982) made several connections between Jean Piaget’s theories of child psychology and the foundations of quantum physics, and inspired me to think about the synergies between the history of physics, and the history of personalization. Here is the