Out of Balance

The Impact of Digitalization on Social Cohesion

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Introduction

Today, we have reached a tipping point in the public debate on future prospects of the digital society. While overcoming the promises of the early days of the internet for equal access and participation, we are facing a different reality. The danger that digitization amplifies social inequality ever more has become evident. It is one of the most important challenges that we need to address in a global scope when it comes to next level digital policy making. In the last years, we saw an internet out of balance with a growing paradox: As more and more people got access via mobile phones and Wi-Fi, the participation in a digital society did not rise accordingly. In the following, I will analyze some of the reasons for this development by describing the patterns of the digital divide. Furthermore, I will propose the concept of digital sovereignty for citizens as a guiding principle to bridge the gap of the digital divide. To conclude, I will discuss some steps that need to be taken for a pathway towards a more inclusive digital society.

The internet as utopia and dystopia

During my studies in the late 1990s, I was deeply impressed by the early promises of the internet, like many fellows of my generation. This unique endeavor of inventing a decentralized network with free access to knowledge, a virtual space where everybody could re-invent

him- or herself (or anything in between) seemed fascinating to many of us. Those were the early promises of the Californian Ideology (Barbrook and Cameron 1996), where we believed that a more equal distribution of resources on a global level could be made possible through the new digital technology. We were tech-optimists. Nicholas Negroponte, as one of the thought leaders of the early ages of the internet, put it this way: Digitization "has four powerful qualities that will result in its ultimate triumph: decentralizing, globalizing, harmonizing, and empowering" (Negroponte 1995, 68). This strong ideology prevailed over the last decades and still survived the burst of the first internet bubble at the beginning of the 21st century. We still observe its basic beliefs in the rise of the fablab and maker spaces as well as in publications like "Zero marginal cost society" by Jeremy Rifkin (2014). And indeed, there is still huge potential in the values and sharing principles of open source,[1] in the cheap and easy access to open hardware and open educational resources. Tech4Good, a normative approach using social computing to reach collective goals within communities, is still an intriguing idea – but it is also a quite privileged debate on the role of technologies. We see that the promised self-healing powers of the crowd that were meant to cope with the challenges of the internet did not fix it. Access to the technology as such did not make a change, because the social setting, individual skills and personal motivations were not considered adequately at first sight. Rather on the contrary, we now seem to be entering the "New Dark Age" (Bridle 2018), where the negative aspects of the "new" technology seem to dominate our perception of it. Radicalism and populism are on the rise, and a recent study by the Pew Research Center (Anderson and Rainie 2020) shows that more than half of the international experts that were asked about the future of the internet said that it fundamentally weakens our democracy.

Must we simply accept the tragedy of the digital commons (Matias 2015)? Not quite. Neither the utopian perception of the internet of the 1990s nor the dystopian view of the current debate alone really help in deciding about a future vision of internet governance. Hence, we see the level of urgency rising to define our agenda for an inclusive digital society that can build bridges to the promises of the early days – for more inclusion, participation and equality. In order to

1 See also Claudio Guarnieri's contribution to this volume.

achieve this, we need to understand much better the societal implications of the digital transformation and define policies and regulations to mitigate the current risks that we are facing – namely the risk that the project of an open digital society is doomed to fail.

The digital divide and the broken social elevator

Scholars have analyzed the fundamental structures of the digital divide (Eubanks 2018) in recent years and reflected on its development. With the rising number of people with access to this technology, we see huge differences in the adoption. Current research is differentiating at three basic levels: The first level, *infrastructure*, describes the individual or collective access to the ICT infrastructure with its hardware and software components, connectivity and stability as well as cost of access. The second level, *competencies*, addresses the skills needed to use ICT and the types of activities people perform online. The third level, *benefits*, where access and skills are given, shows how to use it for the achievement of specific individual or collective objectives (van Deursen and Helsper 2015, 31–32). This might be, for example, finding a better job through the use of social networks on the internet, improving individual skills online or participating in decision-making processes in an e-government setup. The analysis of these structures shows that inequality in digital access leads to inequality in participation and benefits on different levels, e.g., economical level (jobs and financial income), political level (elections and decision-making), social level (network and friends) or cultural level (cyber culture) (van Dijk 2013, 111–15). In our everyday life, these levels are interlinked and depend on each other.

On a global scale, the dominance of these parameters varies across various countries, between cities and rural areas, between socio-economic clusters and cultural setting, concentrating power and profit amongst just a few countries and companies. A recent UN-report emphasized the disparity of the digital economy. Antonio Guterres stated: "We must work to close the digital divide, where more than half the world has limited or no access to the Internet. Inclusivity is essential to building a digital economy that delivers for all" (UNCTAD 2019).

Research supporting his view shows that the prevailing patterns of existing social inequality are mirrored in the digital realm (Ragnedda and Muschert 2013) and, therefore, we see that digitization can act

as an amplifier for these patterns. If the first two levels, infrastructure and skills, are unevenly distributed amongst citizens, existing social classes are not only reproduced but further divided. There is a danger for social conflicts if the poorest are becoming the underdogs of the digital society, whereas just a few people are gaining extreme benefits from the transformation. Like in a dispersive prism (see figure 1) used to break white light up into its constituent spectral colors, existing social structures of unequal chances might spread through the prism of digitization.

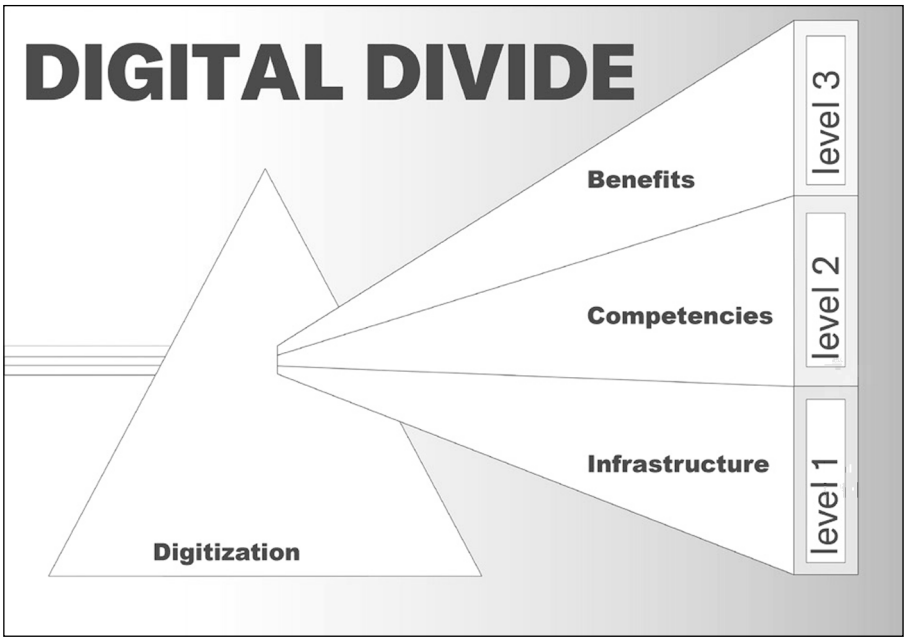

Fig. 1

Hence, what has happened in the last decades, where one of the big societal promises was the chance for social mobility? In the 1980s, it was symbolized by the concept of the social elevator (Beck 1986, 120–60) that described the potential for every individual to profit from social uplift. Through education and social welfare, everybody could climb up the social ladder, so goes the basic idea. But the barriers for a social uplift through education are getting higher. The OECD study

"A broken Social Elevator?" (OECD 2018) recently showed how persistent and multifactored the structures of inequality are today and how they are passed on to the next generation over the years. The authors described with the image of "sticky floors" that families and communities in many parts of the world are trapped at the bottom of the social ladder with poor chances for any social mobility, while at the top of that ladder the "sticky ceilings" seem to guarantee wealth and personal benefits throughout the decades.

When we zoom into structures of the digital divide, we also find these "sticky floors" and "sticky ceilings." A recent study on Germany's "digital index" showed that people with a higher education background are becoming digital pioneers (44% of the population) that benefit the most from digitalization, whereas people with minor formal education are falling more and more behind (18% of the population) (Initiative D21 2019/2020). We find one of the reasons for that in the lack of digital competences. The recent ICILS study analyzed computational skills and competences amongst school children in 12 European countries. Although some progress had been made in the last years to provide digital education in most of the countries, still 25% of students were demonstrating only functional working knowledge of computers as tools (Fraillon, Ainley, Schulz, Duckworth and Friedman 2019). This is a poor result for highly developed countries in Europe. Another reason lies on the infrastructure level, supposed to provide equal access. This is an even more fundamental challenge at global scale. While in the industrial nations the availability of (high speed) internet access (OECD) is growing year by year, allowing more and more people to get online everywhere, we see a different picture in the global south. The paradox of digital inequality (Gillwald 2017) shows us that although more and more citizens of African states are coming online, still the inequality grows and grows. In the last decade, there were high hopes for initiatives such as AISI (Africa Information Society Initiative) or OLPC (One Laptop Per Child), but they were ill adapted to the African environment. While OLPC laptops were expensive to build, limited in number and required electricity – something that wasn't possible in many schools at that time, AISI failed to deliver on its promise to connect villages with a global information network for similar reasons (Kubickova 2019). Today, mobile phones are seen as the best opportunity to get citizens online at large scale. In Sub-Saharan Africa, the mobile phone penetration rate is

forecasted to reach 50% of the population by 2023. South Africa has the highest mobile phone penetration rate (84%) of the continent. But still, digital exclusion is significant. It is based on the patterns of social inequality in general, like low income, unemployment, poor education and social isolation. Airtime and data volume for mobile phones is so expensive that it is used in many African countries as a currency and exchanged informally between peers. In South Africa, costs are so high that they exclude Township communities from usage. The dream of economic growth for all based on mobile phone access did not come true – as Ramesh Srinivasan (2013) shows when he criticizes a growing digital divide on global scale in his book *Who's Global Village*.

These examples highlight just a few aspects of the diverse landscape of digital inequality on a global level, by showing us the interdependencies between infrastructure, competencies and opportunities to create benefits for the population at large. We must come up with political concepts to address these challenges in order to avoid even more divergence of the social classes caused by the digital transformation of our societies. What are our guiding principles for future policy making, and what are our basic values to build upon? How do we get to a more sovereign approach to digitization?

Digital sovereignty

In the aftermath of Edward Snowden's global surveillance disclosure, more and attention has been given to the discourse on digital sovereignty. The term is referred to from different perspectives: from debates on the national and state sovereignty concerning the technical infrastructure, and therefore global network dependencies (Pohle and Thiel 2019 ; see also Friederichsen and Bisa 2016) to the individual level of basic skills and abilities to participate in a digital society while shielding one's own privacy. I will show that the individual level of digital sovereignty can play a major role in the discourse on how to bridge the gap of digital divide. Therefore, I will focus more on the individual level of sovereignty and highlight the ramifications of practicing digital sovereignty in everyday life. I will address the questions: What are the parameters to allow or hinder it? How does the concept address the above-mentioned challenges? And how is this concept reflected in examples of current digital policy making on the national level?

In this context, digital sovereignty[2] refers to whether citizens are "empowered and autonomous to act in various roles in the digital world" (Joost, Micklitz, Reisch et al. 2017, 3) – be it as participants on markets, in social networks or in policy-making processes, as prosumers within networks, or as citizens in a digitally embedded society. These roles contain the rights and obligations of citizens to participate and, therefore, to act in an independent, proficient and responsible manner in the digital realm. It refers to the "concrete development of a human personality in terms of being able to implement one's own strategies and decisions, where this involves a conscious use of digital media or is (co-)dependent upon the existence or functionality of digital media" (Mertz, Schlomann, Manderscheid, Rietz and Woopen 2016). "Digital society" (Katzenbach and Bächle 2019), a term which recently became popular but remains also quite vague, points out the changing landscape of the digital transformation which affects so many aspects of our everyday life. Against this fundamental transformation, we need to define the civic principle of sovereignty anew.

Building on this concept, the broad scope of it becomes obvious. If citizens are not enabled to act independently and in a responsible manner in these various roles of the digital society, basic civic rights are at risk of violation. Therefore, in a group of experts, we defined guiding principles for practicing digital sovereignty: *freedom of choice, self-determination, self-control and security*.[3] The first principle, freedom of choice, means that individuals should be at liberty to decide on their own whether to do or not to do something, e.g., to become an active manager of their personal data online and decide independently about whether to disclose, transfer, delete, trade or donate their data (data sovereignty) (Palmetshofer, Semsrott and Alberts 2016). The second principle, self-determination, is linked to the German right for "informational self-determination" (*"informationelle Selbstbestimmung"*) and refers to individual's ability to retain control over important decisions. This could lead to the

2 I first presented this concept in a report for the Federal Ministry of Justice and Consumer Protection in Germany in 2017 (Joost, Micklitz, Reisch et al. 2017).

3 See: Sachverständigenrat für Verbraucherfragen 2017. In this article, the principles were developed with focus on online consumers; here, I am transferring the principles to a more general setting of citizens online.

guideline that individuals should not be subject to an AI-based decision-making algorithm in cases where these decisions might have a significant impact on their personal lives (Sachverständigenrat für Verbraucherfragen 2017, 4), be it related to medical indications, a financial situation or a profiling based on race or gender. The third principle, self-control, addresses the challenge of individuals spending unlimited amounts of time online – or even suffering addiction to certain online activities. Self-control as a guiding principle therefore means that users are able to set their own limits and be aware of the consequences of their behavior online. The last principle, security, focuses on personal data, communication and infrastructure that needs to be protected against cyber-attacks, fraud or theft of data. Different measures need to be in place to protect users online, and they have to be initiated by the state, by corporations and service providers as well as by the users themselves. In this context, privacy-by-design and privacy-by-default standards play an important role for its practical implementation.

Fig. 2

As shown in figure 2, the potential of practicing digital sovereignty as such is framed by three basic constituents, namely *digital literacy*, *regulation* and *technologies* (Sachverständigenrat für Verbraucherfragen 2017, 5ff.). These define the scope and show their impact on the individual as well as collective potential for practicing digital sovereignty.

First, digital literacy[4] describes a set of skills needed to interact with digital media, deal with information online or manage one's own data, etc. It mirrors the second level of the digital divide with its focus on competences. Second, technology is used as an umbrella term to describe specific enablers or disablers of sovereign behavior online, e.g., security measures, transparent data management or user-centered design. It is linked to the first level of digital divide with respect to the infrastructure itself. Third, regulation refers to corporations offering the services online as well as government entities forming regulatory frameworks.

The model proposes that digital sovereignty emerges from balancing these three constituent parts. Their interdependencies are a fundamental challenge to any opportunities for practicing digital sovereignty on an individual as well as collective layer. Let us take the example of a responsible data management, where citizens should be able to disclose, share, delete, donate or sell their personal data online. This visionary approach has been formulated by some data activists and NGO stakeholders and promoted throughout the EU for some years already.[5] On the level of digital literacy, basic data management skills and data literacy would be needed in order to know about the value of one's personal data, the potential consequences of selling or sharing this data, as well as the potential drawbacks that one might face when not sharing data (e.g., in social networks). On the regulatory level, we see in the GDPR legislation the right to data portability (Art. 20) that should enable anybody to transfer one's freely data from one platform to the other. In principle, one could argue, if a citizen has the skills necessary to manage their data successfully and if they are entitled by European legislation to transfer data, there would be a future pathway for data sovereignty online. But in fact, this

4 See the European Digital Competence Framework (European Commission 2019); see also Buckingham 2015.

5 See e.g., MyData Global, https://mydata.org/.

is not true. The technology that is put in place by corporations like Facebook do not allow sufficient data transfer or demonstrate transparent management, as the data activist Max Schrems has shown several times in the last years, most recently denouncing 101 European companies for illegal transfer of (personal) data to the US.[6]

With this example, we see how the concept is reflected in current digital policy making. It shows us that the conceptual framework of digital sovereignty always needs to consider the trajectories between individual skills, regulatory power and the actual technology put in place. Many digital policies are struggling due to these interdependencies, like the German Network Enforcement Act ("*Netzwerkdurchsetzungsgesetz*") created in order to fight fake news and hate speech on social media platforms. Putting this regulation into practice was quite challenging as the detection of illegal content on platforms like YouTube, Twitter or Facebook required automated detection processes like filtering the uploaded content ("Uploadfilter") (IVD 2019). This was widely criticized as building up an infrastructure of censorship and violating the freedom of expression (Kurz 2017). At the same time, the efficiency and effectiveness of this regulation is not (yet) obvious as first evaluations show (Bitkom 2019). *Digital literacy* capacities to cope with fake news and illegal content online need to be build up accordingly, as well as automated procedures like image and text analysis to detect hate speech online (*technology*). Furthermore, the social implications of this legislation have to be taken into account, too, in order to understand the social dynamics of discrimination based on hate speech, cyber bullying, fake news and other illegal content. Evaluating the regulation meant to tackle the digital divide is important in order to understand the long-term consequences. Therefore, I would propose taking the framework of digital sovereignty as a metric for digital policy making in order to address the intersection of *technology*, *digital literacy* and *regulation* accordingly.

Outlook

So far, I have analyzed the patterns of the digital divide as one of the reasons why the social fabric is fraying in many parts of the world.

6 NOYB – Europäisches Zentrum für digitale Rechte (European Centre for Digital Rights), https://noyb.eu/de.

Furthermore, I have proposed the concept of digital sovereignty as a guiding principle for future digital policy making. Now, we can reflect on some of the consequences we might draw from the discussion. First and foremost, understanding the digital divide on a global level, with its inherent structures of inequality and its severe social implications, is one of the most important challenges that need to be addressed on different policy levels. If we analyze the underlying paradigm in digital agenda setting in many cases, we still see tech-optimism and the Californian Ideology making the rules. Shifting the focus to the social implications and setting the aim of a more equal and inclusive digital society at global scale, we will have to act responsibly and define some of the debates anew.

Therefore, we need to address all three different levels of the digital divide in agenda setting processes. Starting on the first level with a basic right for access, we have to see it as a fundamental part of the basic services for the public (as part of the *"Daseinsvorsorge"*) as proposed in the IGF "Internet Rights and Principles" agenda (IGF 2011). With regards to the second level, strengthening digital literacy at scale is of crucial importance. Providing access to education and resources cannot only be granted for privileged groups of people. Leveraging open source hardware and software as well as open educational resources are helpful to provide affordable access to resources, too. But on a more general level, we have to acknowledge the crucial role that digital literacy plays in allowing citizens to participate in a digital society. Therefore, we need to double down on our efforts to provide these skills in formal education as well as in informal settings – for every age and background. The slow rise in competencies in Europe, as stated in the ICILS study, should be a warning signal for policy makers that we are widening the digital gap for the years to come if we don't speed up with new concepts of digital education and learn from best practices.

Addressing the third level of the digital divide, the personal and community-oriented benefits, is a social aspect that needs to be considered in the digital agenda setting, too. Understanding individual needs and barriers as well as collective motivations must be taken into account because they are part of the reasons for a successful digital practice in everyday life settings. In order to understand the factual basis and development, we also need to focus our research on these social aspects of the digital society.

With the European vision for an "open, democratic and sustainable society" as proposed by the current digital agenda (European Commission 2019/20), we are heading in the right direction. The European policy frameworks are cycling around the notion of European (and humanistic) values against the backdrop of the violation of human rights facilitated by information and communication technologies, as we see it in China with the social scoring system as well as in other global efforts to undermine anonymity, boost censorship and expand surveillance. Data protection, cybersecurity and ethically designed artificial intelligence (AI) (Madiega 2020) are therefore in focus, as well as the current EU data strategy to provide better access to high quality data sets for businesses and public. If we would bring a more holistic view on the societal implications, patterns of inequality and the concept of digital sovereignty to the table, we might gain a better framework for the political decisions yet to come.

References

Anderson, Janna, and Lee Rainie. 2020. "Many Tech Experts Say Digital Disruption Will Hurt Democracy." *Pew Research Center*, February 21, 2020. https://www.pewresearch.org/internet/2020/02/21/many-tech-experts-say-digital-disruption-will-hurt-democracy/.

Barbrook, Richard, and Andy Cameron. 1996. The Californian Ideology. In *Science as Culture* 6, no. 1: 44–72.

Beck, Ulrich. 1986. *Risikogesellschaft. Auf dem Weg in eine andere Moderne*. Frankfurt (Main): Suhrkamp.

Bitkom. 2019. "Zwei Jahre NetzDG: Bitkom zieht Bilanz." Accessed December 16, 2019. https://www.bitkom.org/Presse/Presseinformation/Zwei-Jahre-NetzDG-Bitkom-zieht-Bilanz.

Bridle, James. 2018. *New Dark Age: Technology and the End of the Future*, quoted in Virginia Eubanks. 2018. *Automating Inequality. How High-Tech Tools Profile, Police and Punish the Poor*. London: St. Martins Press.

Buckingham, David. 2015. "Defining digital literacy." in: Morten Søby, ed.: *Nordic Journal of Digital Literacy, Jubileumsnummer 2006–2016*: 21–34.

European Commission. 2019. "Digital Competence Framework." Last modified 2019. https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework.

European Commission. 2019/20. "Shaping Europa's digital future." https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/shaping-europe-digital-future_en.

Fraillon, Julian, John Ainley, Wolfram Schulz, Daniel Duckworth, and Tim Friedman. 2019. *IEA International Computer and Information Literacy Study 2018 assessment framework*. Cham, Switzerland: Springer. Retrieved from https://www.springer.com/gp/book/9783030193881.

Friedrichsen, Mike, and Peter Bisa. 2016. "Einführung – Analyse der digitalen Souveränität auf fünf Ebenen." In *Digitale Souveränität: Vertrauen in der Netzwerkgesellschaft*, edited by Mike Friedrichsen and Peter-J. Bisa, 1–6. Wiesbaden: Springer VS.

Gillwald, Alison. 2017. "From Digital to Digital Inequality: The connectivity paradox." University of Antwerp. Accessed September 20, 2017. https://researchictafrica.net/publications/Other_publications/2017_Gillwald_From_digital_divide_to_digital_inequality.pdf.

IGF. 2011. *The Charter of Human Rights and Principles for the Internet*. Internet Rights & Principles Coalition, https://internetrightsandprinciples.org/charter/.

Initiative D21. 2019/2020. "Wie digital ist Deutschland?" https://initiative21.de/app/uploads/2020/02/d21_index2019_2020.pdf.

IVD. 2019. "File Defense 9." https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/Stellungnahmen/2019/Downloads/090619_Stellungnahme_IVD_EU-Richtlinien_Urheberrecht.pdf?__blob=publicationFile&v=3.

Joost, Gesche, Hans-Wolfgang Micklitz, Lucia Reisch, et al. 2017. *Gutachten des Sachverständigenrates für Verbraucherfragen: Digitale Souveränität*, 2017.

Katzenbach, Christian, and Thomas C. Bächle. 2019. "Defining concepts of the digital society." *Internet PolicyReview*, 8(4). DOI: 10.14763/2019.4.1430.

Kubickova, Iva. 2019. "EdTech: How Technology is changing education in Africa." WorldRemit. Accessed November 14, 2019. https://www.worldremit.com/en/stories/story/2019/11/14/edtech-africa.

Kurz, Constanze. 2017. "Facebook lehnt das NetzDG ab: Unbestimmt, unwirksam und verfassungswidrig." *Netzpolitik*, May 29, 2017. https://netzpolitik.org/2017/facebook-lehnt-das-netzdg-ab-unbestimmt-unwirksam-und-verfassungswidrig/.

Madiega, Tambiama A. 2020. *Digital sovereignty for Europe*. European Parlament. https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2020)651992.

Matias, J. Nathan. 2015. "The Tragedy of the Digital Commons." *The Atlantic*, June 8, 2015. https://www.theatlantic.com/technology/archive/2015/06/the-tragedy-of-the-digital-commons/395129/.

Mertz, Marcel, Marc Jannes, Anna Schlomann, Enza Manderscheid, Christian Rietz, and Christiane Woopen. 2016. *Digitale Selbstbestimmung*. Cologne: Cologne Center for Ethics, Rights, Economics, and Social Sciences of Health (ceres).

MyData Global, https://mydata.org/.

Negroponte, Nicholas. 1995. "The digital revolution: Reasons for optimism." *The Futurist* 29, no. 6.

NOYB – Europäisches Zentrum für digitale Rechte, https://noyb.eu/de.

OECD. 2018. "A Broken Social Elevator? How to Promote Social Mobility." OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264301085-en.

OECD. https://www.oecd.org/sti/broadband/broadband-statistics/.

Palmetshofer, Walter, Arne Semsrott, and Anna Alberts. 2016. "Der Wert persönlicher Daten: Ist Datenhandel der bessere Datenschutz?" *Publications of the Advisory Council for Consumer Affairs*. Berlin: Sachverständigenrat für Verbraucherfragen (SVRV) [Advisory Council for Consumer Affairs].

Pohle, Julia, and Thorsten Thiel. 2019. *Digital connectedness and sovereignty: An historical analysis of a strained relationship. Digitale Vernetzung und Souveränität: Genealogie eines Spannungsverhältnisses*. In *Internet und Staat*, edited by Isabelle Borucki and Wolf J. Schünemann. Baden Baden: Nomos. Available at SSRN: https://ssrn.com/abstract=3435002.

Ragnedda, Massimo, and Glenn Muschert, eds. 2013. *The Digital Divide. The Internet and Social Inequality in International Perspective*. Routledge Advances in Sociology Series. London: Routledge.

Rifkin, Jeremy. 2014. *The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism*. New York: Palgrave Macmillan.

Sachverständigenrat für Verbraucherfragen. 2017. *Digitale Sourveränität. Gutachten des Sachverständigenrats für Verbraucherfragen.* https://www.svr-verbraucherfragen.de/wp-content/uploads/Gutachten_Digitale_Souveränität_.pdf.

Srinivasan, Ramesh. 2017. *Whose Global Village? Rethinking How Technology Shapes Our World*. New York: NYU Press.

UNCTAD. 2019. "Digital Economy Report 2019. Value Creation and Capture: Implications for Developing Countries." https://unctad.org/system/files/official-document/der2019_en.pdf.

van Deursen, Alexander J.A.M., and Ellen J. Helsper. 2015. "The Third-Level Digital Divide: Who benefits most from being online?" In *Communication and Information Technologies Annual (Studies in Media and Communications)*, edited by Laura Robinson, Shelia R. Cotten, Jeremy Schulz, Timothy M. Hale, and Apryl Williams, 29–52. Bingley, UK: Emerald Group Publishing.

van Dijk, Johannes A.G.M. 2013. "Digitale Spaltung und digitale Kompetenzen." In *Informationsgerechtigkeit. Theorie und Praxis der gesellschaftlichen Informationsversorgung*, edited by André Schüller-Zwierlein and Nicole Zillien, 111–15. Berlin: De Gruyter.