

ON | OFF

Risks and Rewards of the
Anytime-Anywhere Internet



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v/d/f



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Zurich** ^{UZH}

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Preface

I cannot think of a more fascinating technology than the Internet and its related technologies that allow us to connect and communicate in a faster and more global way than ever before. As a child in the late 1980s, when nobody I knew had a mobile phone or had ever heard of the Internet, I wished for a ring on my finger that would let me talk to anyone, anytime, anywhere. Back then, it was unimaginable to be able to communicate with someone on another continent almost for free while sitting in the subway or walking in the street. If I pause to think about it, I am surprised how much I take this communication for granted today, even when I clearly remember the seeming impossibility of my childhood wish. The effects of digital information and communication technologies on individuals and society have been my major personal and academic interest for the past 15 years. The smartphone boom happened while I was already working on this project, and has made this research timelier. The more people own smartphones, the more resources they can access from *anywhere and anytime*, the more they are *hyper-connected*. We can send selfies from the Eiffel tower in real-time to our grandmother in Chile, we can look up a fact during an argument at the dinner table to see who is right, we can scroll through our Facebook newsfeed during a face-to-face conversation, we can livestream our Boston marathon experience to the world, we can be rescued by a helicopter in the Swiss mountains by activating an app, we can read and send work emails from the beach. There is a tremendous amount of both opportunity and risk involved in being hyper-connected.

The possibility of being “always on” is a new and a moving topic. While I have been conducting this research, not only has online connectivity become ever more intertwined with our lives, but also a number of new studies on specific aspects have been published. There has been a public debate and much speculation on the effects of hyper-connectivity—by politicians who suggested new laws to protect employees from workplace connectivity and to prevent burnout and by scholars and journalists who wrote highly influential books about social alienation between hyper-connected people, distracted and information-overloaded multitaskers, and massive privacy challenges in the era of Big Data and the Internet of Things. Academics have pointed out that there is no “pure offline” anymore and that the “disconnectionist” movement tends to turn “real life” into a fetish instead of accepting that Facebook *is* real life.

The ON/OFF study is a technology assessment of hyper-connectivity, also known as the anytime-anywhere Internet. Technology assessments traditionally take a new technology and explore its risks and opportunities using an interdisciplinary approach. Technology assessments generally have two goals. The first goal is to set research priorities by identifying the main opportunities and risks—usually with a focus on the risks. These priorities can be very broad depending on the technology and context, which is why an exploratory and interdisciplinary approach is so important. For this study, I interviewed 26 experts from various fields: health specialists, privacy activists, education and communication professionals, and business people. I combined the interviews with the results of my three surveys and a lot of additional data and research by others in various scientific fields.

The second goal of the technology assessment is to serve decision-makers—politicians and other leaders—by helping them make informed choices regarding emerging technologies that

already affect their field. For this study, I am targeting a number of groups. First, business leaders who think about the impact of digital technology on employees, their health, their focus at work, their flexible work schedules, and their data privacy. Second, leaders in education—school headmasters, teachers, and professors—who care about their students’ attention span and health while teaching them digital and social skills. Third, hyper-connected individuals and their families who might or might not think about how their online connectivity behavior affects their attention span, their sleep, their social relationships, and their data privacy. As for academia, I suggest the ON/OFF scale as a new theoretical framework to describe connectivity that goes beyond the online/offline dualism and as a potentially useful tool for further research.

While keeping an eye on the big picture and the global state of hyper-connectivity, the ON/OFF study largely focuses on Switzerland, Germany, and the United States, because these are the countries I know best personally and through my research. Luckily, these countries happen to be particularly interesting places when it comes to the Internet. They are among the most connected countries worldwide, and their current state is likely to be a glimpse into the future of currently less connected countries. Yet each of these countries has their own characteristics. The United States is at the center of the digital economy worldwide with large and very powerful and influential global corporations like Google, Facebook, Amazon, Apple, and Microsoft. Germany is the biggest European market and at the center of global discussions about data privacy. Some German companies also made international headlines by introducing connectivity regulations. Switzerland is a tiny nation, but one of the most connected countries worldwide. The World Wide Web invented by Sir Tim Berners-Lee at CERN in Switzerland and—while global Internet governance is being reconfigured—Geneva hosts offices of ICANN, a key institution for global Internet governance.

I appreciate both of my advisors’ commitment to underlining the positive aspects of the Internet while not neglecting the risks. I deeply admire their approach of using academic research as a tool to advance current public debates on media and technology in society and their efforts to share scientific insights with a larger audience rather than staying only within academic circles. With the ON/OFF study, I am hoping to make a research contribution in this same spirit.

Cambridge, MA, USA, in August 2015

After returning from the United States, I added more recently published data and studies to the manuscript. Thanks to the vdf Hochschulverlag AG at ETH Zurich and the SNSF Swiss National Science Foundation, I have been able to publish this book open access. I think scholarly publishing should always be open access.

Zurich, Switzerland in August 2016

Introduction

Are you always on? Or are you sometimes offline? Are you offline if you are not interacting with your connected devices? Or if no data about you gets collected? Do you check Twitter during dinner? Do you turn off your smartphone at night? Do you check work emails on vacation? Do you feel you have to disconnect regularly—to relax, to concentrate, or to protect your privacy? Or do you feel more relaxed when constantly connected because your loved ones, a work emergency, or the news are always at your fingertips? Why are some people—even within networked societies—still completely offline? And what does it even mean to be online or offline in the age of hyper-connectivity?

From a historical perspective, the possibility of being “always on” is new. Mobile devices combined with fast Internet connections change how we communicate, access, and share information; we may even share a great deal of data about our lives without being aware of it. Constant online connectivity blurs the lines between near and far, private and public, private life and work, productivity and distraction. Many enjoy the new opportunities of mobile working and flexible hours; others wish for clearer boundaries between work and their private lives. Some are tethered to their devices and but don’t mind; others wish they were free from their phones. A vast majority of the population in technologically advanced countries is hyper-connected and is struggling to balance their connectivity while almost two thirds of the global population are still largely offline. Many others might be partially connected to the Internet but with too small a device or too slow a connection to fully benefit, or may have censored access.

The ON/OFF study is a **technology assessment of hyper-connectivity**—the possibility of being always online using Internet-enabled mobile devices or desktop computers. This possibility of being connected to the Internet almost anywhere and anytime is largely due to the popularization of wireless handheld devices such as smartphones¹ in industrialized countries. While the “anytime-anywhere Internet” offers tremendous rewards, decision-makers in politics, in companies and organizations, and in the education system encounter a variety of challenges and risks with hyper-connectivity.

¹ I use the term smartphone for connected devices such as iPhones, BlackBerries, and other phones with touchscreens and Internet connection. I generally use the terms cellphones, mobile phones, and smartphones interchangeably, referring to devices that are able to do much more than just place phone calls. The term “mobile devices” includes smartphones, tablet computers, laptops, and in specific contexts even “wearable technology” (devices such as smart watches, connected wristbands, smart glasses, or sensors in clothes).

The **major research questions** of the ON/OFF study are:

- *What are the risks and rewards of hyper-connectivity?*
- *What is a timely definition of online versus offline?*

The secondary, more detailed research questions of the ON/OFF study are:

- What is the larger context of technology and society regarding hyper-connectivity?
- What are risks and benefits of being “always on” according to experts and previous research?
- Does it still make sense to distinguish online and offline?
- Who is still offline, and what motives are there to go offline temporarily or partially?
- What scientific evidence do we have so far regarding effects of hyper-connectivity?
- What responses and responsibilities exist regarding potential risks of hyper-connectivity?

ON/OFF Terminology

The title of this study is ON/OFF, which implies that there are still ways of being “off,” even though many experts argue that making distinctions between online and offline no longer makes sense. For this study, I use the terms **hyper-connectivity, being always on, and anytime-anywhere Internet** to **describe the possibility of being permanently connected to the Internet.**² The combination of smartphone popularity, other mobile devices, and comparatively cheap, almost ubiquitous Internet access have enormously increased the possibility for those with access to these technologies to be always on. With mobile feature phones, we had the possibility of being always connected through calls and texts. With ubiquitous Internet connection and Wi-Fi abundance, our smartphones and tablets enable us to be hyper-connected, to be constantly available to our contacts via email, texts, messenger services, and social media apps. Also, an abundance of digitized information is available online on the go, and we can publish more information online via mobile devices on social media and other services. The “hyper” in “hyper-connectivity” has a notion of “very much” or even “too much.” I use the term “hyper-connectivity” in the sense of “very connected,” i.e. devices like smartphones or tablets combined with the current infrastructure in industrialized countries that allow us to have mobile high-speed Internet connectivity.

A popular Internet meme³ uses the Maslow pyramid to describe in a humorous way just how important wireless Internet access is for many by putting it first as the most basic of needs, even more vital than food, shelter, or warmth (Figure 1).

² Other authors use similar terms to describe the same phenomenon, for example Thomas Steinmaurer’s “perpetual connectivity” or Peter Vorderer’s “permanently connected, permanently online” (POPC) (Steinmaurer, 2014; Vorderer, 2015).

³ Internet memes are typically pictures, catchphrases, pictured or filmed activities, or hashtags that spread online, mainly through social media, for entertainment purposes or sometimes for marketing or fundraising. Notable examples include cat memes (for example Grumpy Cat, a cat known for her exceptionally grumpy facial expression, or Nyan Cat, a flying animated cat video including a Japanese pop song), “planking” (people lying down in public places), and the Ice Bucket Challenge (viral marketing for the neurological disease ALS).



Figure 1 — Popular Internet meme using Maslow’s pyramid to claim Wi-Fi as basic need for the hyper-connected

Other terms used synonymously with hyper-connectivity are anytime-anywhere Internet, constant online connectivity, and permanent online connectivity.⁴ A number of terms I encountered that are related to the topic but focusing more on being disconnected/offline are unplugging, disconnecting, fear of missing out (FoMO), digital detox, digital Shabbat, social media diet, over-connectedness, Facebook quitter, information overload, information anxiety, and slow media. Most of these terms do not imply that connectivity and connectedness is negative or risky per se; they rather seem to contain a notion of too much connectivity.

The chapter *Beyond Digital Dualism* at the end of this study is about finding more systematic ways of analyzing the terms online and offline while thinking of them as a continuum of shades of grey rather than a black and white distinction. The title of the study **ON/OFF** takes the very extremes of the spectrum in order to **provoke a debate about what it actually means to be online and to be offline** depending on specific contexts.⁵ Also, I am using **ON/OFF** to refer to my **original research** specifically for this book.

Hyper-Connectivity and Decision-Makers

Decision-makers have already had to address challenges regarding hyper-connectivity, usually without reliable scientific basis. The ON/OFF study ultimately serves decision-makers in politics, in the world of work, in education, and in families with a big picture analysis of the era of ubiquitous connected devices and things. A few examples illustrate how benefits and risks of being always on have been impacting decision-makers on very different levels.

Politics. In 2014, Andrea Nahles, member of the German federal government, called for an “anti-stress law” in Germany, explaining, “There is no doubt that there is a link between constant connectivity and the rise in mental illnesses.”⁶ Swiss national congressman Jürgen Grossen

⁴ The terms constant/permanent online connectivity in scientific literature tend to be translated from German based on ständige Erreichbarkeit, ständige Verfügbarkeit, or ständiger Onlinezugang.

⁵ Also, “Shades of Grey” is no longer an appropriate title for a scientific study.

⁶ Lehmann & Quadbeck, 2014

submitted a postulate for the “creation of incentives to promote home office and teleworking in the federal administration” in order to benefit from the flexibility provided by mobile communications technologies. In May 2013, the Swiss Federal Council proposed acceptance of the postulate.⁷ German politician and privacy activist Malte Spitz published the data his cellphone provider stored about him. His location data and other digital information reveal very precisely where he slept and where he stayed, 24 hours a day, over the course of several months.⁸ Many countries have introduced bans or legal restrictions on the use of cellphone and other hand-held devices for vehicle drivers, while first tests suggest that connected self-driving cars are safer than cars with human drivers.

While Western societies are ever more connected, the costs of being disconnected in a global economy are higher than ever. The International Telecommunications Union states in their 2014 report that 4.3 billion people are still not online, and 90% of that 4.3 billion live in the developing world. The ITU⁹ director of the Telecommunication Development Bureau Brahima Sanou says that “increasing ICT¹⁰ uptake in the world’s least connected countries, which are home to some 2.5 billion people, should be the policy focus for the years to come.”¹¹ An ongoing program by the Obama administration in the United States is committed to connecting marginalized communities to the Internet.¹² New York City’s Mayor Bill de Blasio frames high-speed Internet access for all as a social justice issue.¹³

Employers. Most employers in the Western hemisphere provide Internet-enabled devices and webmail services for their employees because online connectivity offers gains in productivity, efficiency, and flexibility for many businesses and organizations. Flexible work schedules and being able to work from home are increasingly possible thanks to mobile online connectivity. However, a policeman sued the city of Chicago for work done outside of paid hours on his BlackBerry in 2010. Sergeant Jeffrey Allen argued that his connection to his workplace via his BlackBerry meant that the city of Chicago owed him overtime.¹⁴ In Germany, burnout is blamed for a large and increasing number of sick days a year and many attribute it to the amount of time that employees spend responding to e-mails on weekends and during vacation. Accordingly, the company Volkswagen has agreed to deactivate e-mails for its German staff members’ company BlackBerrys when they are off duty.¹⁵ Daimler employees can set their email inboxes to auto-delete during a vacation.¹⁶ In France, an agreement from 2014 between employers and unions ensures employees in the technology sector the right to disconnect and unplug at the end of the day.¹⁷ At the same time, many employers in the digital era struggle with the fact that their employees get interrupted during their work day by emails and private messages or spend time online for non-work purposes (cyberloafing).¹⁸

⁷ Die Bundesversammlung – Das Schweizer Parlament, 2013

⁸ ZEIT Online & Open Data City, 2011

⁹ The ITU is the International Telecommunication Union and is a specialized agency of the United Nations based in Geneva, Switzerland.

¹⁰ ICT is a common abbreviation for information and communications technology.

¹¹ International Telecommunication Union, 2014, p. iii

¹² Basu, 2015

¹³ NetGain conference “Working together for a stronger digital society”, New York City, February 11, 2015

¹⁴ Corley, 2010

¹⁵ The New York Times, 2011

¹⁶ Sonntag, 2014

¹⁷ Taylor, 2014

¹⁸ Lim & Teo, 2005; Lim & Chen, 2009; Cyberloafing (also cyberslacking, cyberprocrastination) means spending time online at the workplace or during business hours for non-work purposes.

Education. The concept of media literacy in education experienced a renaissance with the advent of digital technologies and hyper-connectivity. The education system currently faces the challenge of teaching the benefits of information abundance and digital skills, usually promoted by government programs for digital literacy,¹⁹ while most teachers have not been taught digital skills themselves. Simultaneously, mobile devices in schools and universities cause a fair amount of distraction among students.²⁰ The education systems in many countries have yet to find ways to teach by integrating the benefits of connected devices while reducing distraction in class. More radical voices in the debate about education in the digital age claim that schools as we know them are outdated and that teachers should become more like coaches, helping students navigate information and knowledge online. For decision-makers in schools and universities, finding smart policies on the use of connected mobile devices is challenging, from balancing educational benefits with digital distractions to preventing potentially unfair testing environments.²¹

These examples illustrate how *decision-makers* (such as politicians, employers, and leaders in education) have already been impacted by hyper-connectivity. The ON/OFF study aims at providing a more grounded picture for future decisions on hyper-connectivity in organizational contexts, but also to *individuals making decisions*, balancing the rewards and risks of hyper-connectivity in their own lives and families.

In a technology assessment, there often is a bias towards risks. If it were not for many rewards, the technology would not exist or get adopted in the first place. And because decision-makers are not only leaders and motivators but also risk managers, they need to be aware of potential pitfalls. The fact that the risks of hyper-connectivity take up more space in the ON/OFF study certainly does not imply that there are more risks than benefits.

Connectivity Risks and Rewards

Depending on who is writing or talking, online connectivity can be described as a blessing, but for cyberpessimists, online connectivity is more of a curse. There are many shades of grey between blessing and curse and between cyberoptimism and cyberpessimism. The possibility of being always on is for the main part a dilemma, offering incredible benefits, some of which come with a price tag.

When cellphones first became popular in the Global North in the late 1990s, many complained that, even though it may be practical in specific situations, they did not want to have a cellphone because they would be always available to others. Of course, most of these late-adopters are likely now willing cellphone users, and many of them are even smartphone users even though there are many more ways to be connected now than just phone calls and texts. Many people are on a connected computer at their workplace all day long, allowing them to theoretically visit any website—be it for professional or private reasons—while their smartphone sits on their desk, offering even more possible ways to stay informed and be in touch with friends and family via a number of apps. Despite the early doubters and the increase in the risks they so rightly identified, only a small minority are not yet participating in the benefits of being connected—at least in industrialized countries.

¹⁹ For example the Swiss government sponsored “Youth and Media,” the National Program for the Promotion of Media Skills.

²⁰ Shirky, 2014

²¹ Böhni, 2012

What topics would an exploratory study need to cover regarding risks and rewards of being always on? I submit the following highly debated topics: *blurring boundaries between the workplace and private lives; mobile flexible work; changing social relationships; privacy and cybersecurity issues; the 24/7 news cycle; health issues such as information overload, burnout, Internet addiction; and inequalities or variations in Internet access and use.* These are the topics I argue provide meaningful answers and examples that allow us to address common assumptions about societal changes due to hyper-connectivity including fears around connectivity and productivity in the workplace, generational gaps, Internet and cellphone addiction, burnout, and privacy challenges.

The study is divided into chapters following a thematic classification and combines theoretical aspects with related topics rather than strictly separating theory from research results. After this introduction, a methodology section provides information about data collection. *Chapter 1* presents a variety of **digital connections and divides** which shape the larger context of networked societies and connectivity behavior by looking at aspects such as global access, generation, personality, and culture. *Chapter 2* analyzes **blurring boundaries** as a major effect of hyper-connectivity. *Chapter 3* looks into hyper-connectivity and **social relationships**. *Chapter 4* focuses on effects of hyper-connectivity on mental and physical **health**, which is a major thematic focus of the ON/OFF study. *Chapter 5* looks at data **privacy and data security** aspects related to hyper-connectivity. *Chapter 6* looks at hyper-connectivity in the context of specific **institutions** such as companies and organizations, schools and higher education institutions, and news organizations. *Chapter 7* presents various **responses** that have been put forward in order to address risks and asks the question of **responsibilities**. *Chapter 8* deconstructs the online/offline dichotomy and suggests the **ON/OFF scale** as a new theoretical framework for research and practitioners. The conclusion challenges **popular assumptions** about hyper-connectivity using ON/OFF results and discusses **implications** for various decision-makers and for future research.

Methodology

The major goal of the ON/OFF study was to undertake a **technology assessment (TA)** of hyper-connectivity in a vast and a rapidly-changing field. TA has traditionally focused on assessing societal impact of specific technologies (such as nanotechnology, ICT technologies, personalized medicine, robotics, and genetic diagnostics). TA studies evaluate new technologies scientifically in order to contribute to a larger societal debate about their risks and rewards, generally with a bias towards risks. Sometimes, TA is described as a distinct discipline, which includes various approaches and methods.²² TA reports tend to be written by scientists for public and political opinion leaders or other decision makers. In the United States, the Office for Technology Assessment (OTA) operated between the 1970s and mid-1990s and was specifically established to provide scientific advice to the U.S. Congress. After the closing of the OTA in 1995, Congress directed Government Accountability Office (GAO) to conduct a TA pilot program; since 2007, Congress has established a permanent TA function within GAO.²³ In Europe, the European Parliamentary Technology Assessment (EPTA) is a network of technology assessment institutions specializing in advising parliamentary bodies in Europe. It was formally established in 1990. The EPTA has 16 members (the American GAO is an associate member), including the respective German and Swiss institutions.²⁴ The German national parliament has its own TA office (Büro für Technikfolgenabschätzung des Deutschen Bundestags). In Switzerland, the Center for Technology Assessment TA-SWISS is based on a mandate in the Swiss federal law and is devoted to technology assessment with public funding. Over time, the scope and variety of the TA field has increased, particularly regarding methods. TA methods range from trend extrapolation and expert panels to interventions in innovation networks and consensus conferences.²⁵

The ON/OFF Technology Assessment

Hyper-connectivity is still an emerging research topic, and is constantly evolving. While more and more people own Internet-enabled mobile devices, online connectivity behavior patterns change accordingly and create new or different consequences. While I am writing these lines, ever more

²² Van Den Ende, Mulder, Knot, Moors, & Vergragt, 1998

²³ Decker & Ladikas, 2004

²⁴ European Parliamentary Technology Assessment, n.d.

²⁵ Van Den Ende et al., 1998

surveys and studies are being done about specific aspects of online connectivity. So not only are the research objects—individuals, schools, and companies—moving, but so is the current state of research. Still, many aspects of the effects of hyper-connectivity on society are long-term, or relevant for at least a decade. Because of the pervasiveness of the Internet in hyper-connected societies, research on the effects is relevant and even exploratory results can be of importance. By definition, an exploratory design is used for TA if there are few or no earlier studies to refer to. The focus of this particular exploratory study is on gaining insights for later investigation by generating a well-grounded picture of hyper-connectivity, by refining issues for more systematic investigation and formulating, and by prioritizing new research questions. Additionally, this study attempts to clarify terms and concepts in the online/offline terminology.

The focus of the ON/OFF technology assessment study is on gaining relevant insights for decision-makers in politics, business, and the education system, and for future researchers, and so, like many other TA research reports, this study is based on expert interviews and the current state of research including an extensive literature review. Additionally, I use the results of three ON/OFF surveys specifically conducted for this study. Because the most important goal of TA is assessing societal impact and contributing to decision-making processes with a solid scientific analysis, my own empirical ON/OFF data—numerous expert interviews and three surveys—contributes in assessing risks and rewards of hyper-connectivity but is not the centerpiece of the ON/OFF study. The main academic contribution of this study is a systematic exploration of major risks and rewards of the anytime-anywhere Internet by combining scientific reports from various academic disciplines, expert statements from scholarly and practical perspectives, and survey data—my own data and third-party surveys if they provide more recent, more representative, or more specific insight than my own data. It is about using the best data currently available in order to answer the ON/OFF study's major research questions: *What are the risks and rewards of hyper-connectivity? What is a timely definition of online versus offline?*

Mixed Method Research

Although this study is rooted in media and communication research, it hails from various disciplines and uses a multi-method research design. Mobile and online communication has become an interdisciplinary and international research topic.²⁶ In order to expand the breadth of the research and to verify results gained both from qualitative and quantitative methods, a research design based on mixed methods is appropriate for this study, as “the goal of mixed methods research is not to replace either of these approaches but rather to draw from the strengths and minimize the weaknesses of both in single research studies and across studies.”²⁷ There are several advantages to conducting mixed method research:²⁸ *Triangulation*: seeking convergence from different methods studying the same phenomenon; *Complementarity*: seeking elaboration, illustration, and clarification of the results from one method with results from another method; *Initiation*: discovering paradoxes and contradictions that lead to a re-framing of the research question; *Development*: using the findings from one method to help inform the other method; *Expansion*: seeking to expand the breadth and the range of research by using different methods for inquiry com-

²⁶ Döring, 2008, p. 227

²⁷ Johnson & Onwuegbuzie, 2004, pp. 14–15

²⁸ Greene, Caracelli, & Graham, 1989, p. 259

ponents. As this study aims to cover a broad range of risks and rewards, all the qualities of mixed method research mentioned above apply.

The ON/OFF study combines the following methods: *expert interviews, online surveys, paper and pencil survey, literature review*. From late 2013 to early 2015, I collected data for ON/OFF based on the mixed method research design. This includes:

- **ON/OFF Expert Interviews** *with a variety of experts based in the United States, Switzerland and Germany from 2013 to 2015 (N=26)*
- **ON/OFF Offline Day Adult Survey 2013 in Switzerland (N=148)**
- **ON/OFF Student Survey 2014 in Switzerland (N=151)**
- **ON/OFF Global Internet Expert Survey 2015 in 13 countries (N=22)**
- **Extensive literature review.**

I draw on an extensive—but not exhaustive—literature review, and use results produced by my own surveys and interviews combined with findings from relevant studies by third parties to create a well-grounded picture of the situation around hyper-connectivity. The limits of a technology assessment study are relatively small sample sizes and, thus, the findings are not generalizable—neither globally nor to the population of a specific country at large. However, correlations found in my samples are indicators for future research with larger samples and may lead to the reassessment of popular assumptions on hyper-connectivity and societal issues. In the following, the various kinds of data collection for the ON/OFF study are discussed: expert interviews, surveys, and literature review.

Expert Interviews and Content Analysis

Experts have special knowledge about social circumstances, and expert interviews are a method of systematically tapping into that knowledge. Expert interviews are widely used in science to understand more about social processes, policy-making, regulations, or predictions of the impact of new technologies on society. Many TA studies are mainly based on expert interviews. In expert interviews, experts are not the primary objects of research. They are rather “witnesses” of processes or phenomena that are of interest to the research.²⁹ I prepared and lead the interviews on the basis of Gläser & Laudel’s work on scientific expert interviews.

Based on the highly debated topics around connectivity mentioned in the introduction (*blurring boundaries between the workplace and private lives, mobile flexible work, changing social relationships, privacy issues, news and information at our fingertips, health issues such as information overload, burnout, Internet addiction, and inequalities or variations in Internet access and use*), I chose experts in the three countries I did my research in. Some are international outstanding scholars in their field; some are experts who have previously worked or publicly commented on at least one of the above-mentioned topics. A handful of them I had met previously or were recommended to me. Some experts that I would have wanted to talk to could not get back to me due to time restrictions. The **26 ON/OFF expert interviews** were conducted in three different countries **between 2013 and**

²⁹ Gläser & Laudel, 2010

2015: United States, Germany and Switzerland. They generally lasted about an hour, give or take.

| | |
|------------------------|--|
| Experts | N = 26 |
| Occupation | 5 psychologists, 2 medical doctors, 3 corporates of ICT companies, 1 expert in digital inclusion, 1 privacy lawyer, 1 member of a hacker organization, 1 head of a cyborg association, 1 teacher, 1 head of school, 1 managing university director, 2 IT specialists in the education sector, 1 expert for occupational and public health, 1 labor union specialist, 2 social media specialists, 1 journalist, 1 expert on Mennonite and Amish culture, 1 sleep researcher |
| Countries of residence | United States, Switzerland, Germany, Canada |

I used detailed interview guidelines for every interview. The central question for all interviewees concerned *identifying opportunities and risks of constant online connectivity from their professional and personal perspectives*. For each interviewee, I added a few questions specific to their expertise related to online connectivity.

Interviews are a highly reactive method of data collection. For the sake of scientific transparency, I collected detailed information about the circumstances of the expert interviews. In their book on expert interviews, Gläser & Laudel recommend keeping an interview journal for large studies based on expert interviews because the circumstances may influence the outcome of the interview.³⁰ All the interviews were audio recorded and transcribed including details about the circumstances. The interviewees were told that the recording was not for publication but for transcription purposes only. Every interview was different depending on the professional background of the expert and the way their manner—whether they would talk on their own initiative or wait for my questions. In all interviews, usually in the beginning, I asked what they considered to be the biggest opportunities and risks of the possibility of being always on. I also asked most interviewees, as time allowed, if the organization or company they work for has any connectivity policies, or norms and values about when to be available for co-workers or clients. Another question I asked almost every expert was about the distinction between online and offline—if it still made sense to them to make a distinction.

The expert interviews are listed in chronological order (from 2013 to 2015) and include:

- The expert's first and last name
- The company or organization the expert has worked for, the title or expertise
- Where they are based.

³⁰ Gläser & Laudel, 2010

| | |
|-------------------------------|---|
| 1. Barbara Josef | Chief Communications Officer at Microsoft Switzerland, Head of Home Office Day Zurich, Switzerland |
| 2. Silvia Kölliker | Expert for Occupational Health and Addiction Prevention Lucerne, Switzerland |
| 3. Hernani Marques | CCC Chaos Computer Club, External Communications Zurich, Switzerland |
| 4. Patrik Hilfiker | IT Specialist at Didacware Zurich, Switzerland |
| 5. Bruno Kollhorst | Social Media Specialist at Techniker Krankenkasse Hamburg, Germany |
| 6. Mathias Egger | Psychotherapist at Clinica holistica Susch, Switzerland |
| 7. Kathlen Eggerling | Labor Union Specialist at Ver.di Berlin, Germany |
| 8. Alexander Steinhart | CEO Offtime Berlin, Germany |
| 9. Marcel Bernet | Corporate Communications Consultant, Coach Zurich, Switzerland |
| 10. Philip Strasser | Medical Doctor at SwissLife Zurich, Switzerland |
| 11. Monika Bär | Principal at the Minerva Business School Zurich, Switzerland |
| 12. Agnes von Wyl | Professor for Clinical Psychology at ZHAW Zurich University of Applied Sciences Zurich, Switzerland |
| 13. Reto Schnellmann | Managing Director at ZHAW Zurich University of Applied Sciences Winterthur, Switzerland |
| 14. Jason Washburn | Assistant Professor for Psychiatry and Behavioral Sciences at Northwestern University Feinberg School of Medicine Chicago, IL, USA |
| 15. Chris Peterson | Board member of the National Coalition on Censorship and Admissions Officer, Teacher, and Researcher at MIT Massachusetts Institute of Technology Cambridge, MA, USA |
| 16. Claire McCarthy | Pediatrician at the Boston Children's Hospital, Assistant Professor at Harvard Medical School Boston, MA, USA |
| 17. Royden Loewen | Professor for Mennonite Studies, University of Winnipeg, Canada Winnipeg, Canada |
| 18. Steven W. Lockley | Neuroscientist, Division of Sleep and Circadian Disorders, Brigham and Women's Hospital; Associate Professor of Medicine, Division of Sleep Medicine, Harvard Medical School Boston, MA, USA |
| 19. Enno Park | President Cyborgs e.V. Berlin, Germany |
| 20. Emy Tseng | Senior Communications Program Specialist, National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce Cambridge, MA, USA |
| 21. Kimberly Young | Psychologist and global expert on Internet addiction Bradford, PA, USA |
| 22. Kurt Opsahl | Lawyer at the Electronic Frontier Foundation (EFF) San Francisco, CA, USA |
| 23. Ursula Oesterle | Innovation expert, Swisscom Silicon Valley Outpost Palo Alto, CA, USA |
| 24. Diane Schiano | Psychologist at the Mental Research Institute Palo Alto, CA, USA |
| 25. Steve Jordan | High school teacher at the Cambridge Rindge and Latin School Cambridge, MA, USA |
| 26. Nick Lüthi | Journalist at Medienwoche and Lecturer in Journalism Bern, Switzerland |

The process of transcription was lengthy even without transcribing my introductions explaining the goals and purpose of the study to my interview partners. Every interviewee was told that they would be able to authorize quotes before publication in order to make sure that I was correct about what they said and meant, especially when translating some of the interviews from German to English. I analyzed the expert interviews according to Mayring's content analysis, which is a typical approach for the qualitative analysis of interviews.³¹

Surveys and Data Analysis

The surveys, combined with the expert interviews, the literature review, and results from third-party studies, which were published during the course of this research, serve as rough empirical indicators in a field that is just emerging. None of these surveys are globally representative because of their sample sizes and because two were conducted only in Switzerland one of the most connected countries in the world (even more so than the United States and Germany). Still, the surveys allowed me to ask specific questions regarding connectivity behavior and attitudes previously not found in research studies, and my own data allowed for some quantitative data analysis for exploratory purposes.

The Offline Day Adult Survey was ironically an online survey that I distributed on the occasion of the Offline Day in December 2013 in Switzerland. Two popular and high-profile Swiss bloggers and Internet pioneers called for Swiss people to go offline for 24 hours on a Sunday. In the Swiss blogosphere, on Twitter and Facebook, many started debating the use of a day purposefully spent offline. Major Swiss newspapers such as the *Neue Zürcher Zeitung* wrote about the Offline Day, so news about the day was publicized in print as well. I contacted the initiators of the day and they agreed to distribute the link to the survey on their respective blogs. Also, I sent the link to the survey to roughly thirty students of mine at Zurich University of Applied Sciences after we had talked about the Offline Day in class. Even though the occasion of the survey was the Offline Day, many questions related to general aspects of hyper-connectivity and many were the same as in the student survey of a similar sample size, so rough comparisons are possible between the adult professionals and the students. I exported the results in a cvs format from Google Forms and imported the data into SPSS (Statistical Package for the Social Sciences), which I used for data analysis.

ON/OFF Offline Day Adult Survey in 2013

| | |
|----------------------|---|
| Respondents | N = 148 |
| Gender | Female = 51% Male = 49% |
| Age | 40 years old (mean) 40.5 years (median) min. = 22 years max. = 57 years |
| Country of residence | Switzerland |

The Student Survey was a paper and pencil survey. I pretested it with three individual interviewees, and consequently changed some questions based on feedback and results. I distributed the survey at three different school types in Switzerland. The "Gymnasium" is a competitive and rather elite kind of high school, which exists in German-speaking countries. The best students in

³¹ Mayring, 2010

elementary school directly go to the Gymnasium for six years starting around age 13 and graduate around age 19. A number of students first go to a different secondary school and then switch to the Gymnasium for the last four years. Graduation from the Gymnasium is a direct entry ticket to the best universities in the country. About 20% of every generation graduates from a Gymnasium.³² Roughly the same system exists in Germany and Austria. I refer to the Gymnasium, the best-educated students of that age, as High School (HS). KV students (KV, Kaufmännische Grundausbildung), or as I will refer to it in English, commercial school (CS) students are the large majority of students in Switzerland of that age group. Most commercial school students go to a secondary school between 13 and 16. Information Technology (IT) school students are a minority of students—in general as well as in the sample—but a particularly interesting minority given the topic.

While the school types differ largely, the age groups are similar (at least the means): between 17 and 19 years. The gender differences are striking, as the high school students are more female on average than the other students, while IT seems to remain a very male domain. The Gymnasium students were roughly 50 students from the Alte Kantonsschule Aarau, where two teachers kindly distributed the paper and pencil surveys according to my instructions and had their students fill in the forms in class. It took them roughly 15 minutes to complete the survey. The commercial school students took the survey in a similar way in three different cities at the Minerva Business School (Zurich, Luzern, and St. Gallen). The IT students were part of a class at the Wirtschaftsinformatikschule Schweiz (WISS). I collected the survey results on paper from some of my own Minerva students and those of some fellow teachers, and digitized and analyzed the data with the software SPSS.

ON/OFF Student Survey in 2014

| | |
|----------------------|--|
| Students | N = 151 |
| Gender | Female = 56% Male = 42% Not specified = 2% HS students F = 67% M = 33% CS students F = 65% M = 35% IT students F = 4% M = 96% |
| Age | 18.5 years old (mean) 18 years (median) min. = 14 years max. = 33 years HS students 16.8 years old (mean) CS students 19.6 years old IT students 18.8 years old |
| School | Gymnasium / high school (HS) = 32% KV / commercial school (CS) = 50% IT school (IT) = 17% Not specified = 1% |
| Nationalities | Swiss = 58% Dual citizens (Swiss plus other) = 19% Other = 16% Not specified = 7% |
| Country of residence | Switzerland |

The Global Expert Survey was an online survey conducted through the Internet expert mailing list of the Global Network of Internet & Society Research Centers, and was facilitated with assistance from the Berkman Center for Internet & Society at Harvard University, which is the initiator and leader of the growing Network of Centers. A total of 22 experts in 13 different countries and of 14 different nationalities responded to questions specifically addressing Internet experts about hyper-connectivity, including questions about their definition of online versus offline and common motives to stay offline/go offline temporarily in their respective country. Some cultural questions were included in order to get an idea of how culture could play a role in attitudes towards connectivity and potential infrastructural challenges to being connected at all. A broad range of experts in countries in Western and Eastern Europe, North and South America, the

³² Bundesamt für Statistik, 2015

Middle East, Asia and Africa responded. While this is far from being representative, it is an interesting mix of experts bringing in a global perspective, which was not possible with the other surveys. The results were imported to SPSS and Excel for data analysis.

ON/OFF Global Internet expert survey in 2015

| | |
|------------------------|---|
| Experts | N = 22 |
| Survey | The online survey of 26 questions got sent out to the netsociety mailinglist of the Global Network of Internet & Society Research Centers with 190 addresses. |
| Occupation | Members of the "The Global Network of Internet and Society Research Centers." Launched in 2012, the global Network of Internet & Society Centers (NoC) is a collaborative initiative among academic institutions with a focus on interdisciplinary research on the development, social impact, policy implications, and legal issues concerning the Internet. |
| Nationalities | Italy, Israel, United States, Singapore, Germany, Poland, United Kingdom, Austria, Brazil, Argentina, Pakistan, Sweden, South Africa, Palestine, Hungary |
| Countries of residence | Italy, Israel, United States, Singapore, Germany, Poland, United Kingdom, Brazil, Uruguay, Pakistan, South Africa, Palestine, Australia/Hungary |

Literature Review

The ON/OFF study contains some of the latest and most up-to-date research published. While I was collecting data through interviews and surveys, I made an effort to keep up with relevant new publications or specifically looked for publications in academic fields related to topics mentioned in the expert interviews. I included data by more recent and/or more comprehensive third-party surveys in order to ensure the best possible technology assessment—even at the expense of neglecting some of my own data. I used a broad range of literature including scholarly books (I found some of them via unorthodox ways such as Amazon’s recommendation system and procured them from Zurich’s Zentralbibliothek and Harvard’s Widener Library) and scientific journal articles I found by using Google Scholar and other databases while searching specific topics such as social media and loneliness or blue light and sleep. A significant amount of research by others I found via the Twitter community I have built over the past few years, which includes a large number of Internet researchers and institutions such as the Pew Research Center. Some literature has been sent my way by researchers in the Berkman community or by people who have followed my ON/OFF blog. A large portion of the literature I used focuses on the U.S., Germany, and Switzerland.

Digital Connections & Digital Divides

We live in a hyper-connected world and it can feel like most of us are always online, always connected to the Internet. As of 2015, around 40% of the world population has had an Internet connection. 40% is a lot, especially considering that less than 1% of people were online in 1995,³³ but it is still less than half of the global human population. Smartphone ownership rates in emerging and developing economies are rising at an extraordinary rate but ownership rates in emerging economies still trail that of many wealthy countries.³⁴ As digital technologies became increasingly popular, scholars and activists started to point out that the explosive growth of the Internet could exacerbate existing inequalities. The more some are connected, the wider the divides between the information-rich and the information-poor. At the beginning of the 21st century, Pippa Norris, a political scientist at Harvard, defined three types of digital divides: a global divide between industrial and developing societies, a social divide within nations in terms of access, and a participatory divide.³⁵ More than a decade later, digital divides continue to exist and are described by a vast amount of academic literature.³⁶

The following categories are frequently explored in relation to digital divides: developed/developing country, social economic status, social milieu, age, gender, race/ethnicity, education, personality, abled/disabled, entrepreneur/employee/unemployed, family/single person, time resources, technical equipment, technical skills, and motivation.³⁷ Many of these categories shape individual connectivity behavior in one way or another.

³³ Internet Live Stats, 2016

³⁴ Poushter, 2016

³⁵ Norris, 2001

³⁶ Jaeger, 2011, Dijk, 2012, Hassani, 2006, Jones, Johnson-Yale, Millermaier, & Pérez, 2009, Hargittai, 2002

³⁷ Dijk, 2012, p. 60f; Lutz, 2016

Given the benefits of being connected, why are so many still disconnected or offline, permanently or temporarily? In the ON/OFF Global Expert Survey 2015 (N=22), an international group of experts on Internet and society were asked to report on *common motives in their country for people to be still offline or to go offline (temporarily)*. It was up to the experts to define “offline” for this question. Their responses are on the right side in Figure 2 (after every comma, there is a separate response, (2) indicates that the exact same response was reported by two different respondents). On the left side, I summarized the responses to broader categories of motives to be offline (or go offline temporarily).

| Summarized motives to be offline | Responses by ON/OFF Internet experts |
|--|--|
| To avoid information overload, stress, distractions, burnout in order to rest and recover peacefully or be more productive | information overload (2), email overload, exhaustion, burnout (2), decrease stress, de-stress (particularly temporarily), not be disturbed by office mails, avoid work emails, increase productivity, get work done, rest, recovery, peace and quiet, more peace in general, seeking peace of mind, enjoying freetime, don't want to be bothered all the time from friends and so on |
| Cost | Cannot afford it, cost, high cost of Internet connection and equipment, high cost of broadband services |
| Infrastructure restrictions | Power and broadband Internet outages, poor quality of broadband, poor connectivity, lack of 3G networks, infrastructural restrictions |
| Lack of skills and incentive | Lack of skills (2), lack of knowledge, low education level, lack of incentive, lack of motivation and need |
| Age and generation | Age (eyesight issues and lack of digital literacy), generational gaps, old age, different generation |
| Privacy, surveillance, and cybersecurity | Privacy, don't want to be surveilled, security |
| Family time | Family time, to engage with the community and the family |
| Lifestyle choices and technology criticism | To feel special, to show independency from media devices, to show a critical attitude towards media, media criticism, fear of technology, skepticism to use social media, protest against the norm |
| Rural areas, sleep, being on a plane, being a proxy user, bad experiences | Rural areas (2), sleep (2), being in an airplane, people who use internet through an intermediary (a family member, for instance), bad experiences |

Figure 2 — Common motives for people to still be offline or to go offline (temporarily) — ON/OFF Global Expert Survey

Some of these “offline motives” are structural (rural areas, infrastructural restrictions, cost) and were primarily mentioned by ON/OFF experts based in the Global South. Other motives are subject to individual choice (lack of incentive, fewer distractions, avoiding information overload, engage in family time, lifestyle choices), and some are based on concerns (burnout, privacy). “Offline motives” to avoid the mental costs of hyper-connectivity were mostly mentioned by experts based in the Global North. A major paradox of the current digital age is that more than half of the global population face issues of access to the Internet and are still offline, while in hyper-connected societies, citizens struggle with the challenges of being always online and look for ways to disconnect. Most of the “offline motives” mentioned by the ON/OFF surveyed global Internet experts are discussed in this study.

Digital technologies connect humans, ideas, and information. But they also create new divides. Questions about online connectivity are closely intertwined with digital divides. This chapter is about gaining relevant theoretical and empirical insights in major dimensions that play into why individuals are still offline or (temporarily) disconnect from the Internet:

- Geography and technology history (*1. Space and Time*),
- Socio-demographics (*2. Access, Skills, and Participation, 3. Generation, Gender and, Race*),
- Psychology (*4. Motivation and Personality*),
- Culture (*5. Culture*).

1. Space & Time

In the debate about digital divides, geography—or more precisely, the North-South-divide—has played a very important role. The same is true for different technological adoption rates. Being connected through rudimentary or highly advanced technologies at varying speeds creates gaps between the connected and the (mainly) disconnected.

For the hyper-connected, the Internet has become seemingly non-physical—Wi-Fi and mobile broadband Internet can make it feel like the Web is in the air. However, connectivity—even hyper-connectivity—is not possible without the fundamentally physical infrastructure of the Internet. An example of this infrastructure is the submarine communication cables that connect the five continents (Figure 3).³⁸ Even among the countries they connect, these cables can play a role in inequalities of connectivity due to differing levels of fragility, unequal dedication to maintenance, and varying governmental policy. While most European, American, and Asian countries are resistant to or at a low risk of disconnection, many African and some Arab and Asian countries are at a moderate or severe risk of disconnection due to accidents or politically motivated censorship (or even incarceration of political activists raising their voices online³⁹). Countries with a high risk of disconnection have only few links to the outside world, which are controlled by very few companies and are therefore at a higher risk of censorship.⁴⁰

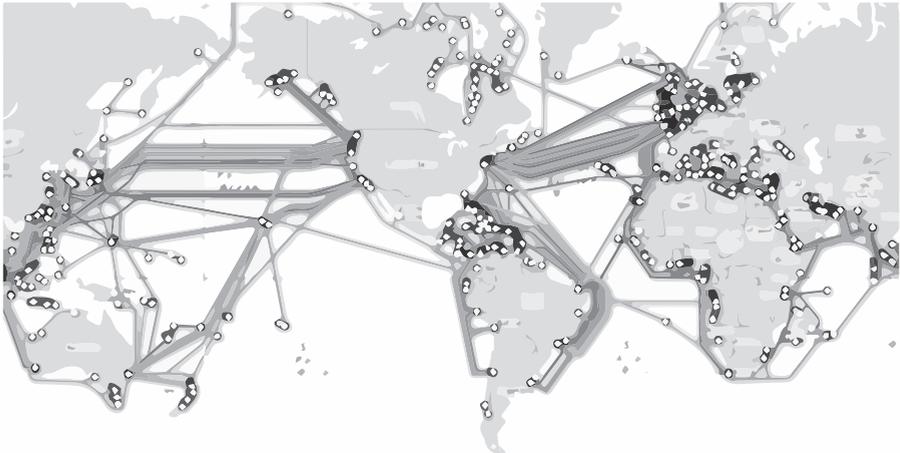


Figure 3 — About 200 submarine communications cables connect the world.⁴¹

³⁸ TeleGeography, 2015

³⁹ Electronic Frontier Foundation, 2015a

⁴⁰ Lee, 2014

⁴¹ Illustration based on a map by TeleGeography, 2015

It is an unlikely scenario, but apparently, breaking about 200 of these cables would be enough to make the whole world go offline.⁴² However, several corporations are working hard at making the developing world go online without cables. It is likely that the submarine communication cables will be incrementally replaced by wireless technologies. The Internet space race is definitely on: major Silicon Valley companies are testing projects like Google Loon and Facebook has launched Aquila solar-powered drones for wireless Internet access. The drones and Google's high-altitude balloons are planned to operate at an altitude of 18 to 27 km, which is above the altitude of commercial planes.⁴³ Even if new technologies promise to connect remote areas and developing countries in the near future, for now, our Internet access still depends on which part of the world we inhabit.

Technological Acceleration

Hyper-connectivity is part of the larger scientific debate about the information age, the network society, and societal impacts of technology in general. One of the most widely cited authors regarding the global network society is Manuel Castells. In the first volume of his trilogy *The Information Age: The Rise of the Network Society*,⁴⁴ the sociologist analyzes the shift from the industrial society to the information society. He emphasizes that the network structure of new media and communication technologies contributes to fundamental structural changes in society and culture. For Castells, network logic is, along with information, pervasiveness, flexibility, and convergence, a central feature of the information technology paradigm.⁴⁵ Hartmut Rosa's publications show how digital technologies, among other modern innovations, change the perception of time and social identities.⁴⁶ Among additional indicators of change—such as acceleration of transportation and production—Rosa demonstrates that communication has accelerated by a factor of 10^7 from the carrier pigeon⁴⁷ to the Internet in about 150 years (Figure 4).⁴⁸

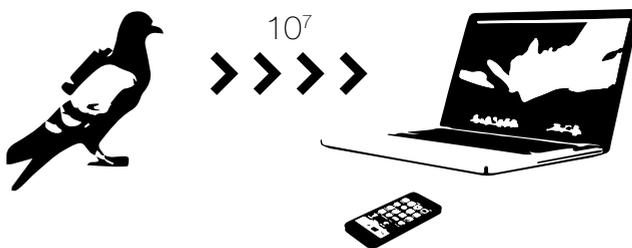


Figure 4 — From carrier pigeons to the Internet—communication is 10,000,000 times faster

⁴² Patalong, 2015

⁴³ Hern, 2015b

⁴⁴ Castells, 1996, 2000

⁴⁵ Fuchs, 2007, p. 100

⁴⁶ Rosa, 2005

⁴⁷ Paul Reuter, the founder of the Reuters news service, used carrier pigeons around 1850 to transfer messages between Brussels and Aachen, the missing link in telegraph communication between Paris and Berlin (The Editors of Encyclopædia Britannica, 2013).

⁴⁸ Rosa, 2012, p. 4

In order to emphasize the role of ever-accelerating technology and the shift in perception of time, Rosa uses the term “shrinkage of the present,”⁴⁹ while media theorist Douglas Rushkoff argues that with real-time technologies such as Twitter and email, we have arrived in the age of the “present shock.”⁵⁰ Rushkoff describes the Internet as an instantaneous network where time and space get compressed. He argues that there is a dissonance between our digital selves and our analog bodies, which has thrown us into a new state of anxiety.

The following numbers illustrate the acceleration of information and communication technology adoption:

| Information technology | Years from creation of the technology to reaching 50 million users |
|-------------------------------|--|
| Radio (approx. 1890) | 38 years |
| TV (approx. 1925) | 13 years |
| World Wide Web (approx. 1995) | 4 years |
| Smartphone (approx. 2007) | 1 year |

Figure 5 — Acceleration of information technology adoption⁵¹

While it took 38 years for the radio technology to reach 50 million users, it took only one year to reach the same amount of smartphone users (Figure 5). Global Internet use grew steadily since the late 1990s in all parts of the world, but unevenly (Figure 6).

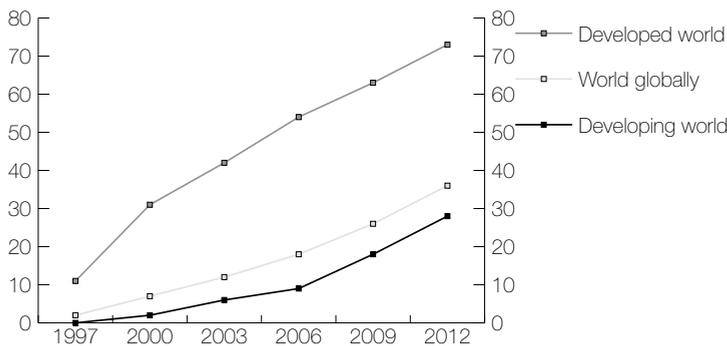


Figure 6 — Global Internet users per 100 inhabitants⁵²

In 2014, roughly 75% of all Internet users⁵³ worldwide lived in the top 20 countries, the remaining 25% is distributed among the other 178 countries. China represents 22% of all Internet users (more than the United States, India, and Japan combined). India has the highest growth rate but as of 2014 a penetration rate of just 19%. Major Western countries—such as the United States, Germany, France, the U.K., and Canada—have a penetration rate of more than 80%.⁵⁴

⁴⁹ Original in German: Gegenwartsschrumpfung

⁵⁰ Rushkoff, 2013

⁵¹ Rosa, 2012, p. 6

⁵² International Telecommunications Union, 2014

⁵³ Internet user is defined as an individual who has access to the Internet at home, via computer or mobile device.

⁵⁴ Internet Live Stats, 2016

A common example of exponential technological acceleration is “Moore’s law.” Gordon Moore, co-founder of the IT company Intel, described in 1965 his observation that, over the history of computing hardware, the number of transistors in a dense integrated circuit doubles approximately every two years.⁵⁵ Although Moore’s prediction dates back to the early days of computers, it has continued to be a surprisingly accurate rule of thumb for more than half a century, and technology manufacturers have only recently slowed past this rate.

In 1984, psychologist Craig Brod wrote, “One of the most seductive features of the computer is its incredible speed.”⁵⁶ But few things are as relative as the perceived speed of a computer over time. The “incredible speed” of 1984 would probably lull any current users of digital devices to sleep. The trend of acceleration is also evident in Internet usage behavior. For example, an increasing percentage of email users expect fast responses to messages.

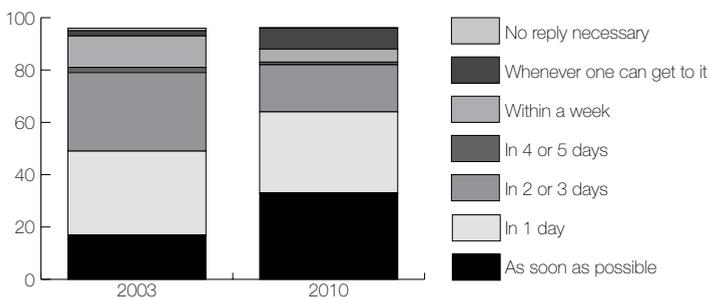


Figure 7 — How quickly should users reply to a personal email message?⁵⁷

In the U.S. survey of the World Internet Project, 64% of email users said they expect a response to a personal email message as soon as possible or in one day—up from 49% seven years earlier (Figure 7).⁵⁸

Technology and Social Change

Melvin Kranzberg—a U.S. professor of history from the 1950s to 80s—is known for his laws of technology, the first of which states, “Technology is neither good nor bad; nor is it neutral.” He explains that, “technology’s interaction with the social ecology is such that technical developments frequently have environmental, social, and human consequences that go far beyond the immediate purposes of the technical devices and practices themselves, and the same technology can have quite different results when introduced into different contexts or under different circumstances.”⁵⁹ Sociologist Rosa argues that technological acceleration fosters social change and mobility.⁶⁰ In his model of the societal acceleration cycle (Figure 8), Rosa describes the economic “time is money” principle as the motor of technological acceleration in modern societies. Going

⁵⁵ Moore, 1965

⁵⁶ Brod, 1984, p. 6

⁵⁷ Lebo, 2011, p. 126

⁵⁸ Lebo, 2011, p. 126

⁵⁹ Kranzberg, 1986, p. 544f

⁶⁰ Rosa, 2012, p. 6

by the definition given by cultural theorist Chris Barker, “Modernity is marked by the post-medieval rise of industrial capitalism and the nation-state system. These institutions of modernity are associated with the social and cultural processes of individualization, differentiation, com-modification, urbanization, rationalization, bureaucratization and surveillance.”⁶¹

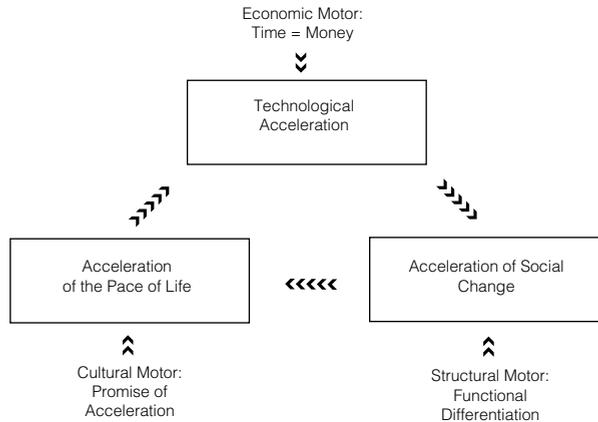


Figure 8 — Dimensions of social acceleration⁶²

Rosa states that in modernity, innovations in technology (transport, communication technologies, and production) accelerate social change. Functional differentiation is generally considered an essential characteristic of modern societies and is closely related to the idea of division of labor. However, applied to society as a whole, it points to the division into specialized subsystems (legal, political, military, economic, scientific, religious—sectors with distinctive institutions and actors). According to Rosa’s model (Figure 8), functional differentiation is the structural motor of acceleration of social change. This leads to a faster pace of life, which is also fostered by the cultural promise of acceleration. Rosa understands the promise of acceleration as an inherent motor of culture, which creates a demand for ever-increasing technical acceleration.

In Rosa’s cyclical model, no starting point can be identified. Economic, social and technological factors all contribute to a circuit of innovation, change and acceleration. Besides social acceleration of communication and information, Rosa lists other indicators of social mobility, such as increasing geographic mobility (place of residence), familial mobility (partner, divorce, way of life), professional mobility (job), political mobility (swing voters), and religious mobility. He states that in the pre- and early modern period, family and occupational structures were based on the family as an economic unit, while in high modernity work, family, religion, and politics were increasingly individualized. In late modernity, according to Rosa, there is a concept of serial monogamy in terms of successions of jobs and intimate partners.⁶³

To sum up, technological innovation is a major driver for societal acceleration. In the developed world, information and communications technologies have exponentially accelerated the speed of communication as the Internet enables users to communicate and access information in real-time. But digital technologies are far from the only drivers of acceleration in modern socie-

⁶¹ Barker, 2007, p. 211

⁶² Rosa, 2007, p. 5

⁶³ Rosa, 2007, p. 10

ties. On a global level, Internet penetration is spreading unevenly and at different rates with the developing world left behind technologically—and in many ways economically as well. A majority of the world population is still essentially offline (or connected with major limitations), and large digital divide has persisted between developed and developing countries for the past two decades.

2. Access, Skills, & Participation

The largest gap between those who are online through access to the Internet on a computer or a mobile device is based on geographical location and a fast or slow speed of technology adoption. But other divides have played an important role in explaining why parts of the global population and some minorities within hyper-connected industrialized countries are still largely offline or at least without broadband Internet. Emy Tseng, a prolific U.S. expert in digital inclusion, says in the ON/OFF interview, “The implication of the digital divide got magnified, even though the actual numbers have gotten smaller of people not online.” She explains that the more people are connected, the more those who are still offline feel their disconnection. This is true within the highly connected United States, and even within the global digital capital San Francisco, where a small proportion of the population is not connected, “[a]nd in fact, the cost of not having [regular Internet access], is higher than ever before.”⁶⁴ Across digital divides, apart from being connected at all, there are two main factors, on a global scale but also for marginalized communities within connected countries. Firstly, it matters *how you are connected* to the Internet (what kind of devices—small or large screens—and whether you have broadband Internet at home). The second important factor is your knowledge of *digital skills*, which is largely influenced by income and education.

Access Divides in the United States, Germany, and Switzerland

According to a 2015 OECD publication, the *United States* is number 23 in a global ranking of Internet penetration with access for roughly 80% of the population older than 18 years, slightly below the OECD average.⁶⁵ On average, about 70% in the U.S. had broadband at home, but while only 42% of low-income households have broadband access at home, in high-income households 96% do. Men are more likely to have home broadband or a smartphone than women, and there are significant gaps between White, Black and Hispanic communities, with Black and Hispanic communities being the least connected groups. The education gap is large: individuals with a college degree are far more likely to have any type of Internet access, to have broadband at home, and to additionally own a smartphone than individuals without college education. Additionally, a third of the U.S. population that did not graduate from high school does not have Internet access; only 4% of those with a college education do not. 24% of the rural population is not connected, while 13% of the urban population and 13% of the suburban is not.⁶⁶ Tseng underlines that there are many digital divides in the U.S., but that they are mostly related to economic marginalization.

⁶⁴ ON/OFF expert interview with Emy Tseng in November 2014 in Cambridge, MA, USA

⁶⁵ OECD, 2015

⁶⁶ Rainie, 2013, p. 4–12; Anderson & Perrin, 2015

Then again, connection is not the only factor. Tseng says, “It takes really sophisticated knowledge to navigate through a lot of forms like job applications. And it takes language skills, and a level of comfort and knowledge of navigating through windows. It is not that easy to apply for a new passport online. And more and more of these things are designed that people are ‘digital natives’ in mind and that exacerbates the gap.” Regarding the question of being online or not, she concludes, “It is not just, are you online or are you offline, it is about skills.”⁶⁷ The skills divide is sometimes called the “second-level digital divide.”⁶⁸ Tseng observes that there is generally more focus on the technology side than on the social support side in digital inclusion programs. Yet in her experience, social support is a key component to Internet adoption. Social support infrastructure includes trainers, teachers, librarians, community health workers, and community liaisons. She highlights the importance of training the trainers, paying for their extra time, and building cohorts. Many digital inclusion programs failed because the “support system” was expected to do the same work as usual and add digital training on top of it without being trained or paid for the new work. In her experience, it is crucial to build a community first and then the technology.⁶⁹

Germany ranks number 12 in a global OECD ranking of Internet penetration with almost 90% connected.⁷⁰ However, a government-supported and nationally representative study in the same year found that 80% of the total German population is online, and 98% of those between 14 and 30 years. The researchers identified various social milieus with specific attitudes towards online connectivity. Many were surprised that the first deep-dive study about Internet use in Germany found that more people than previously assumed are offline or quasi-offline (about 27 million Germans). They concluded that about 40% never or rarely use the Internet, about 40% of the grew up with the Internet and use it regularly, and the remaining 20% welcome the benefits of the Internet but are skeptical regarding negative consequences of the digital age and are concerned about privacy.⁷¹

Switzerland is among the most connected countries worldwide ranking number 9 in the OECD report with an Internet penetration of roughly 90%.⁷² According to representative University of Zurich studies,⁷³ the most relevant digital divides in Switzerland are age (about half of Swiss individuals older than 70 use the Internet), education, gender, income, and employment (but these divides mainly play out with regard to using the mobile Internet). The authors point out that 40% of the non-users still benefit indirectly from the Internet by having other people take care of things online (proxy users). Proxy users are mainly women and older than 50 years old. Roughly half of the non-users report that they don’t see a point in using the Internet because they don’t need it or are not interested in it. The costs are not relevant for Swiss non-users.

⁶⁷ ON/OFF expert interview with Emy Tseng in November 2014 in Cambridge, MA, USA

⁶⁸ Hargittai, 2002

⁶⁹ ON/OFF expert interview with Emy Tseng in November 2014 in Cambridge, MA, USA; Emy Tseng’s talk at the Berkman Center for Internet and Society at Harvard University/Cambridge Housing Authority’s Work Force Center in March 2015

⁷⁰ OECD, 2015

⁷¹ Deutsches Institut für Vertrauen und Sicherheit im Internet (DIVSI), 2012

⁷² OECD, 2015

⁷³ Latzer, Büchi, & Just, 2015a, p. 6; Latzer, Just, Metreveli, & Saurwein, 2013, p. 5–7

Too Expensive, Small Screens, and Infrastructural Restrictions

Another access divide, which matters in this context, are infrastructure restrictions and costs. Many—even within hyper-connected societies—simply cannot afford the cost of being connected.⁷⁴ Alternatively, they might not be able to afford broadband access or a larger connected device and are therefore limited to a small screen. On some small devices like smartphones, a lot of digital benefits are drastically reduced when it comes to certain beneficial activities such as filling out forms for government services or college applications.⁷⁵ The type of device and the type of connectivity (3G or broadband, reliable or unreliable Internet access) which users have access to creates digital divides that are hardly discussed. ON/OFF experts mention areas like parts of the Middle East or Pakistan where mobile web access is not available, is limited due to regular power outages, or very unreliable.⁷⁶ In the United States, those with college educations and a household income higher than \$75,000 are more likely to use the Internet,⁷⁷ and certain groups in the U.S. rely on smartphones for online access at elevated levels: younger adults, those with low household income and lower education levels, and non-whites. Compared with smartphone owners who are less reliant on their mobile devices, smartphone-dependent users are less likely to own some other type of computing device, less likely to have a bank account, less likely to be covered by health insurance, and more likely to rent or to live with a friend or family member rather than own their own home.⁷⁸ Having Internet access only on a small screen correlates with other types of disadvantages, which may exacerbate existing social divides.

Looking at access and skills is not enough to predict online participation and connectivity behavior. Participation divides have been attributed to socioeconomic status and to the fact that only few people are actually interested in sharing material online.⁷⁹ Regarding participatory divides in social media adoption, media and communications researcher Eliane Bucher describes the “very uneven distribution of participation throughout social media [...] as an indicator for an equally uneven distribution of skill, knowledge, and mental readiness to engage in conversations.”⁸⁰ Moreover, she portrays a new type of participatory divide between those who make productive use of the social media conversations and those who are hesitant to create and share social media content or who experience overload and stress (see subchapter *Burnout & Information Overload*).

3. Generations, Gender, & Race

Probably the most discussed digital divide in Western countries is the generational divide: born digital or not. The debate is related to the field of media socialization and media education. In research on media socialization, media are considered among family, peers, school, and leisure associations to be important “agents of socialization”—they shape our norms and values about what is appropriate behavior and how to interact with others, and highly influence our perspec-

⁷⁴ Basu, 2015

⁷⁵ Hassani, 2006; ON/OFF expert interview with Emy Tseng in November 2014 in Cambridge, MA, USA

⁷⁶ ON/OFF Global Expert Survey 2015

⁷⁷ Perrin & Duggan, 2015

⁷⁸ Smith, 2015

⁷⁹ Hargittai & Walejko, 2008

⁸⁰ Bucher, 2013

tive on our community, our country, and the world at large. Theories of socialization assume that children and youth are particularly prone to look up to role models because their identities tend to be less defined than those of adults. Socialization is a life-long process and characterized by milieus, psycho-social developmental tasks, societal adaptation processes, and the wish to belong to a specific or several social groups.⁸¹ In his book about media socialization and youth, media scholar Daniel Süß describes the status of defining media for several generations. According to his research, a feature of every generation is which defining medium was of particular importance to them in their childhood and youth. As opposed to generations like the “TV generation,” he characterizes the “net generation” as a generation growing up with mobile connection and using multiple media in parallel.⁸² Many other publications address the digital generation.⁸³ The most influential one was by American educator Marc Prensky who in 2001 coined the key terminology of “digital natives” and “digital immigrants.”⁸⁴ Another influential publication fuelling the global debate on digital generations was the book *Born Digital* by Internet law scholars John Palfrey and Urs Gasser.⁸⁵ The *Born Digital* authors covered a broad range of topics relevant to the question “how is the first generation of digital natives different from older generations?” based on original research, including interviews with young Internet users around the world. Their definition of digital natives as being those born after 1980 has been very helpful but also contested—mainly because the term digital natives itself has been subject to heated debates.⁸⁶

There is an important geographical intersection with the generational divide. In 2013, the International Telecommunication Union (ITU) tried to measure “the world’s digital natives,” using a definition of 15 to 24-year-olds with at least five years of online experience. They concluded that 30% of world’s youth have been online for at least five years, which corresponds to 5% of the world population. Today, globally, 56% of young Internet users are digital natives, but in developing countries less than one in two young Internet users are digital natives (47%), compared to 86% in developed countries. The countries with the highest numbers of digital natives according to the ITU definition are China, USA, India, Brazil, and Japan. The countries with the highest percentage of digital natives as part of the total population are Iceland, New Zealand, Korea Rep., Malaysia, and Lithuania. The countries with the highest percentage of digital natives as part of the youth population are Korea Rep., Japan, Netherlands, Finland, and Latvia.⁸⁷

Older adults in the U.S. have lagged behind younger adults in their adoption, but by 2015 more than half of senior citizens use the Internet.⁸⁸ In Switzerland, mobile Internet use has skyrocketed among young users with the fast popularization of smartphones (Figure 9). Compared to Germany and the United States,⁸⁹ Swiss youth have adopted smartphone technology significantly faster. In 2014, 95% of Swiss youth owned a smartphone, while in the U.S. in 2015, nearly 75% “have or have access to a smartphone.”⁹⁰ One of the obvious explanations of this significant

⁸¹ Süß, 2004, p. 25; Genner & Süß, 2016

⁸² Süß, 2004, p. 47

⁸³ For an overview (in German): Schulmeister, 2009

⁸⁴ Prensky, 2001

⁸⁵ Palfrey & Gasser, 2008

⁸⁶ Bennett, Maton, & Kervin, 2008; Schulmeister, 2009; Rieder, 2014; Wampfler, 2014a

⁸⁷ International Telecommunication Union, 2013

⁸⁸ Perrin & Duggan, 2015

⁸⁹ Feierabend, Plankenhorn, & Rathgeb, 2014; Lenhart, 2015a

⁹⁰ Lenhart, 2015a

adoption gap is the comparatively high average household income and smaller income disparities in Switzerland.⁹¹

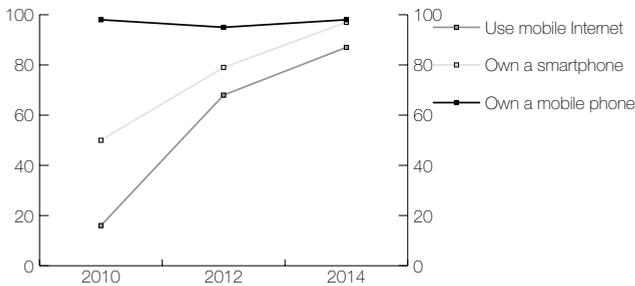


Figure 9 — Percentage of youth in Switzerland using cellphones and mobile Internet⁹²

In Germany, a government-supported representative DIVSI report from 2013 found that 98% of the 14 to 24-year-olds use the Internet versus 81% of the general population. Hence, young users are significantly more connected than older users. The report concluded that the 14 to 24-year-olds hardly ever distinguish between time spent online and offline. The smartphone has become a companion in any situation and most young users keep in constant touch with their friends via online communities and messengers. In the report, many differences in online behavior within these young users have been documented. Being online is not the same for every young person with online experience—they live in different milieus (especially related to educational levels), have different approaches to the Internet, and have different attitudes regarding cybersecurity and levels of trust in online activities.⁹³

DIVSI researchers use their own definitions of digital natives and the related terms, for which age is not the most relevant category but rather levels of confidence and trust in using the Internet:⁹⁴

- **Digital natives** have fully integrated the Internet into their daily lives and navigate the digital world with high levels of confidence and self-evidence. Online and offline continue to blur for this group.
- **Digital immigrants** use the Internet regularly but selectively and are skeptical about many aspects, particularly data privacy and cybersecurity.
- **Digital outsiders** are very anxious about the Internet and hardly ever use it.

⁹¹ World Bank, 2016

⁹² Willemse et al., 2014

⁹³ DIVSI & SINUS-Institut, 2013, p. 4–5; Lutz, 2016

⁹⁴ DIVSI & SINUS-Institut, 2013, p. 19

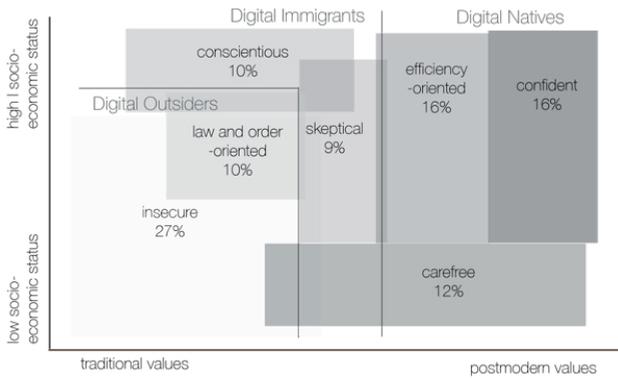


Figure 10 — Internet usage behavior of the general German population⁹⁵

The DIVSI distinctions of various Internet milieus in the general population (Figure 10) and even within the younger population (Figure 11) have successfully challenged many sweeping generalizations about young and old Internet users by identifying significant differences in confident Internet usage behavior. Nevertheless, age matters: among young Germans, many more confident users have been identified than among the larger German population.

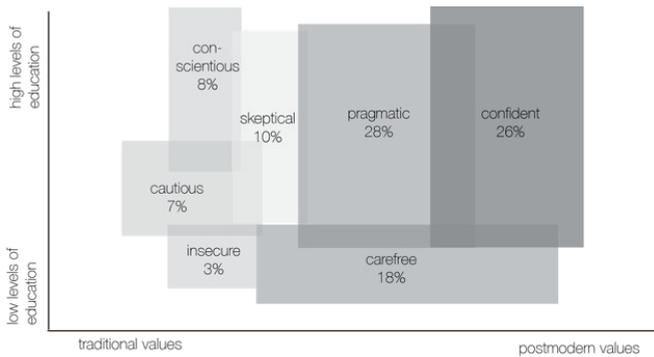


Figure 11 — Internet usage behavior among 14 to 24-year-old Germans⁹⁶

The DIVSI research underlines the importance of the educational divide present in all age groups. Additionally, the value axis (traditional to postmodern) provides a further dimension, which proves to be essential when describing online connectivity behavior.

A common assumption about young Internet users and hyper-connectivity was expressed by ON/OFF expert and social media professional Bruno Kollhorst: “Digital natives up to about 30 years feel less pressure to constantly communicate. Older employees say that digital communication is stressful for them and they find it harder to cope with email overload and similar things.”⁹⁷ However, 82% of U.S. American smartphone-owning seniors age 65 and older described their phone as freeing, compared with 64% of those ages 18 to 29. Also, many more

⁹⁵ DIVSI & SINUS-Institut, 2013, p. 26

⁹⁶ DIVSI & SINUS-Institut, 2013, p. 26

⁹⁷ ON/OFF expert interview with Bruno Kollhorst in January 2014, Zurich, Switzerland – Hamburg, Germany

younger smartphone users say they feel distracted by their phones compared to older users: 73% of young users versus 32% of users over 50 (Figure 12).⁹⁸

| Percentage of smartphone users | Users by age group | | |
|---|--------------------|-------|------------------------|
| | 18–29 | 30–49 | 50+ |
| Users who described their smartphone as freeing (rather than a leash) | 70% | 68% | 50–64: 77% 65+: 82% |
| Users who described their smartphone as connecting (rather than distracting) | 63% | 71% | 50–64: 81% 65+: 82% |
| Users who indicate that their phone made them feel productive over the past week | 78% | 79% | 80% |
| Users who indicate that their phone distracted them over the past week | 73% | 62% | 32% |
| Users who indicate that their phone made them feel frustrated over the past week | 45% | 39% | 23% |

Figure 12 — Smartphone users in the United States in 2015⁹⁹

Interestingly, older Americans express significantly more positive emotions about being hyper-connected through their smartphones than younger Americans. One potential explanation is that young users use their mobile devices more often than older users, and are therefore more distracted and have more potential to be frustrated. Another explanation is that older users remember the disadvantages of not being connected better than young users and are therefore more grateful of the benefits, especially related to be able to reach out in case of urgent health issues. Additionally older users may have learned earlier than younger users about time management and not to react to every interruption, and users who have retired may be less stressed regarding workplace connectivity than users who may feel their mobile devices are more of a leash than a tool providing more freedom.

A large Swiss survey about digital lifestyles in the year 2013 confirms that older individuals also feel safer ignoring messages. The study surveyed 2,863 individuals asking, “Would you get back to your boss’s text message in the middle of the night?” Over all, roughly 60% of the respondents would not dare ignoring their boss’s text message. Interestingly, the results had significant generational effects. Two thirds of the respondents over 40 years would ignore it, while those younger than 21 would not.¹⁰⁰ Younger people are more likely to sleep with their connected device turned on, and may therefore wake up more easily. Also, it seems easier to ignore a message by a superior for an employee with many years of experience than as a person who has just entered the workforce.

The ON/OFF surveys revealed some generational differences between students (average age 18) and adults (average age 40), which can be found within the respective chapters.

⁹⁸ Anderson, 2015; Smith, 2015

⁹⁹ Anderson, 2015; Smith, 2015

¹⁰⁰ Moser, Rummler, & Scheuble, 2013

Gender and Race

The gender divide in hyper-connected societies is mainly about a different use of connectivity, and not about Internet access per se.¹⁰¹ Large quantitative studies such as the Swiss JAMES study on youth and media reveal major gender differences in Internet usage preferences. The numbers of teenage boys and girls who have access to the Internet at home and/or own a smartphone are identical. The frequency in usage is virtually identical as well. However, boys are much more likely to play (online) games on various devices, while girls tend to be significantly more active on social media (especially Instagram, Tumblr, and Snapchat; Facebook activity is similar). Boys tend to use video sites like YouTube and news sites more often than girls. Girls significantly better protect their privacy in social networks and also report worrying more about digital privacy.¹⁰²

The major gender differences in socializing technologies among youth have been confirmed by 2015 U.S. data. While 57% of U.S. teens have made new friends online, boys use video games as a way to spend time with their friends significantly more than girls. More than half of all teen boys in the U.S. play online video games at least weekly with more than a third of boy gamers playing over the Internet with friends on a daily basis; among gaming girls, only one in five plays online video games at least weekly. Male teen gamers especially talk with their friends through voice connections during gaming to chat and to collaborate within the game (22% of boys talk daily with friends while playing video games, compared with just 3% of girls). While online video games are a major way for teenage boys to connect with peers, girls make friends online predominantly through social media sites—41% of U.S. female teens have made friends through Facebook, Twitter, or another social media site.¹⁰³

Research in the U.S. shows that male college students tend to use the Internet as a source of entertainment, while female college students are more likely to go online for communicative and educational purposes. Communicating socially ranked first for females and second for males among student's most frequent uses of time spent online.¹⁰⁴ Some studies suggest that if negative stereotypes are associated with female use of technology, they may be socially reinforced, and this could ultimately contribute to digital divides between male and female students.¹⁰⁵

The ON/OFF surveys reveal some gender differences as well. Detailed results are presented within the respective chapters. An important result regarding hyper-connectivity is that females tend to worry more about digital privacy, cellphone or Wi-Fi radiation, or negative consequences for their health. It is not possible to draw a conclusion on whether females seem to worry more about technological consequences on health and privacy specifically or if they tend to worry in general more often than males.¹⁰⁶

In the United States, gender differences in usage tend to be more significant than those between different racial/ethnic groups.¹⁰⁷ Compared to Whites and English-speaking Asian-Americans, African-Americans and Hispanics have been somewhat less likely to use the Internet. Among non-users in the U.S. are 14% of Whites, 20% of Blacks, 18% of Hispanics, and 5% of

¹⁰¹ Jones et al., 2009, p. 246

¹⁰² Willemsen et al., 2014

¹⁰³ U.S. teens ages 13 to 17, Lenhart, 2015b.

¹⁰⁴ Jones et al., 2009, p. 259

¹⁰⁵ Jones et al., 2009, p. 248

¹⁰⁶ More about gender and technology from a communication perspective can be found in Jackson, 2007.

¹⁰⁷ Jones et al., 2009

English-speaking Asians.¹⁰⁸ Hispanics tend to be the minority on which U.S. government digital inclusion programs focus.¹⁰⁹ A study on racial differences in Internet use among U.S. college students confirmed that, “the students surveyed varied with regard to their use of the Internet as an academic resource. Hispanic students in particular were significantly less likely to use the Internet for academic purposes than their non-Hispanic White and non-Hispanic Black counterparts.”¹¹⁰ In opposition to the United States, in Europe, including Germany and Switzerland, racial or ethnic differences are not discussed in academic literature. Related research in German-speaking countries specifies, if anything, “immigration background.”

Conclusively, age, gender and race are relevant socio-demographic categories when discussing online connectivity behavior. Although age matters—young users are significantly more confident than older users—it is often overlooked that the generational divide intersects with other divides such as geography (developing or developed world), income, education, culture, and personality. Motivation and personality are particularly neglected in scholarly digital divide literature, which tends to focus on access divides and generational divides.

4. Motivation & Personality

Understanding personal motivations and personality traits is crucial for comprehending individual differences in online connectivity behavior. There is a complex interplay between personality and context that shapes online connectivity behavior. Whether personality is an independent variable with a direct impact on online behavior, whether it is a moderating variable regulating the strength of influence of personality on online behavior, or whether it is a dependent variable affected by other independent variables is contested and may depend largely on the context.¹¹¹ Contexts vary widely according to, for example, private or professional settings, corporate culture, and social pressure from friends and family. Anthony Giddens’ *theory of structuration*,¹¹² a pillar of contemporary social science theory, helps explain and underline why social, organizational, cultural, and economic contexts matter in order to explain connectivity behavior. According to the theory of structuration, social practices and individual behavior are inseparable from structures such as social norms in a specific context. Media psychological research suggests that there are significant links between personality traits and online behavior.

The Big Five

The most widely used model in contemporary trait psychology is based on the five factor personality traits or Big Five, which include the following traits: *extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience*.¹¹³ These same personality dimensions, which are based on the NEO Personality Inventory, are often used in media and cyber psychological studies looking

¹⁰⁸ Perrin & Duggan, 2015

¹⁰⁹ ON/OFF expert interview with Emy Tseng in November 2014 in Cambridge, MA, USA

¹¹⁰ Jones et al., 2009, p. 260

¹¹¹ Pöschl, 2010

¹¹² Giddens, 1984

¹¹³ Costa & McCrae, 1985, Goldberg, 1981

into personality and online behavior.¹¹⁴ Before summarizing previous findings of Internet and personality research, a few words about the Big Five. The Big Five Model has been developed by a number of researchers over the past decades using large samples of self-report and questionnaire data and factor-analysis. The Big Five personality dimensions (Figure 13) subsume most known personality traits and remain the most widely used and recognized model in personality psychology up to this day. Each of the five personality traits contains facet scales. Every personality dimension corresponds to a spectrum, so for example if you have a low score in extraversion, you are rather introverted.

| <i>Personality Dimension</i> | <i>Facets</i> | <i>Spectrum</i> |
|-------------------------------|---|---------------------------|
| Extraversion | Warmth / Gregariousness / Assertiveness / Activity / Excitement Seeking / Positive Emotion | Introverted ↔ Extraverted |
| Neuroticism | Anxiety / Hostility / Depression / Self-consciousness / Impulsiveness / Vulnerability to Stress | Anxious ↔ Unflappable |
| Agreeableness | Trust / Straightforwardness / Altruism / Compliance / Modesty / Tendermindedness | Unempathetic ↔ Empathetic |
| Conscientiousness | Competence / Order / Dutifulness / Achievement Striving / Self-Discipline / Deliberation | Spontaneous ↔ Disciplined |
| Openness to experience | Fantasy / Aesthetics / Feelings / Actions / Ideas / Values | Practical ↔ Imaginative |

Figure 13 — Big five personality traits based on the Revised NEO Personality Inventory by Paul Costa and Robert McCrae¹¹⁵

Previous Internet and personality research¹¹⁶ has found the following:

Extraversion. Introverts tend to be reserved and highly deliberate and enjoy spending time alone, whereas extroverts are sociable, gregarious, and outgoing. Research results linking extraversion to online behavior are inconsistent. Some findings show that shy and introverted individuals tend to be more active in computer-mediated communication because the perceived anonymity helps them overcome inhibitions. Generally, extroverted individuals tend to show more outgoing and active behavior online than introverts. A small but significant relationship could be found between extraversion and frequent online connectivity.

Neuroticism. A low score on neuroticism is described as emotional stability. The evidence seems contradictory. Some studies suggest that emotional stability increases with online communication, especially for socially excluded people—minorities due to disability, sexual orientation, or other reasons—who find support and like-minded others. At the same time, emotionally unstable people run a higher risk of addictive behavior online. There is some evidence that individuals who score high on neuroticism use social media more frequently than individuals with lower scores.

Agreeableness. Individuals with low scores in agreeableness tend to be suspicious, whereas individuals with high scores tend to be very friendly and cooperative. Scholars have found increasing agreeable behavior of users online, others decreasing altruistic behavior. Increasing or decreasing altruism related to Internet use depends on the kind of Internet use and the underlying intentions of the user.

¹¹⁴ Blumer & Doering, 2012; Amichai-Hamburger & Vinitzky, 2010

¹¹⁵ Costa & McCrae, 1985

¹¹⁶ Blumer & Doering, 2012; Amichai-Hamburger & Vinitzky, 2010; Correa, Hinsley, & de Zúñiga, 2010; Montag et al., 2014; Budmiger & Böhm, 2012; Richardson, 2009

Conscientiousness. Low scores on conscientiousness are related to careless and impulsive behavior; high scores to self-discipline and a sense of duty. There is some evidence that conscientious individuals spend less time online and are less likely to be active members of social media communities, whereas people with lower scores on conscientiousness are more likely to run the risk of getting lost in cyberprocrastination.¹¹⁷

Openness to experience. Low scores are related to more conservative attitudes and more common interests; high scores are associated with high levels of curiosity and openness to new ideas and alternative perspectives. Technological early adopters generally have high scores in this dimension, and frequent social media use is positively related to openness to experience. Open individuals find ever more ideas online, while less open individuals tend to be overwhelmed by the large variety of information.

Research on the relationship between online behavior and the Big Five is still somewhat inconsistent.¹¹⁸ Personality traits *alone* clearly are not sufficient to explain online connectivity behavior regarding frequency and intensity, but a large number of studies has shown other facets that relate to online behavior and social media use, such as: self-esteem, shyness, political participation, life satisfaction, development of identity, and relationship building.¹¹⁹

Integrators and Separators

Apart from the Big Five and other personality traits, an important psychological dimension of connectivity behavior is how individuals integrate their work and life domains. In occupational psychology and management science, this has been described as individual role segmentation-integration preference (the desired amount of overlap between work and non-work roles) and has been debated long before the digital age of hyper-connectivity.¹²⁰

Connectivity behavior is related to role integration preference.¹²¹ Psychology professor Agnes von Wyl underlines in the ON/OFF interview individual differences regarding integrator and separator personalities: “You cannot paint with a broad brush. Everyone has to find out what feels right for them. For example Angela Merkel gets associated with her position as the German chancellor every minute of the day. She is never really off duty. I could never do that.”¹²² Research findings show that employees who integrate work into nonwork set fewer boundaries for using communication technologies during nonwork time.¹²³ Also, high role integration is related to less negative reactions to interruptions.

However, those who integrate work and nonwork also report more conflicts between professional and private lives.¹²⁴ ON/OFF expert and Microsoft executive Barbara Josef says she has an integrator personality. She much prefers being professionally contacted on a Sunday while hiking than working typical 8 to 5 shifts. Ms. Josef points out that because of these two different personality types, integrators and separators, corporate connectivity regulations do not really

¹¹⁷ Cyberprocrastination refers to time spent online without getting things done. Other synonymous terms are cyber-slacking and cyberloafing. See subchapter *Productivity & Distraction*.

¹¹⁸ Blumer & Doering, 2012

¹¹⁹ Junco, 2014, p. 131

¹²⁰ Nippert-Eng, 1996; Edwards & Rothbard, 2000; Clark, 2000; Hecht & Allen, 2009

¹²¹ Richardson, 2009, p. 90

¹²² ON/OFF expert interview with Agnes von Wyl in August 2014 in Zurich, Switzerland

¹²³ Richardson, 2009, p. 90

¹²⁴ Olson-Buchanan & Boswell, 2006; Richardson, 2009

work. To tell the difference between integrators and separators, she uses two simple examples: Separator tend to use two different mobile devices, with one for work and one for your private life; integrators probably invite friends from the office to their home.¹²⁵ More about role integration preferences can be found in the chapter *Blurring Boundaries*.

Other Personality Aspects and Motivations

Additional personality-related aspects are relevant to online connectivity behavior. Those that are widely discussed include Internet addiction disorder or compulsive Internet use, burnout, narcissism, loneliness, and fear of missing out (FoMO). In fact, the ON/OFF global expert panel has rated Internet addiction the most debated risk of hyper-connectivity (see subchapter *Addiction*).

A popular statement about Internet use is that it—especially with social media and more recently the selfie culture—enhances or even creates narcissistic personalities. So far, there is hardly any scientific evidence that narcissism can be caused by Internet use, and it is more likely that narcissistic personality types tend to use social media more intensely than others. However, there is some scientific evidence that there is a link between a narcissistic personality disorder and burnout (see chapter *Health*, subchapter *Burnout*). Fear of missing out (FoMO), personal boundaries, and loneliness are discussed in the chapter *Social Relationships*.

A common but often neglected motivation of frequent online connectivity is individual interest in information and communication technology. The term *early adopter* describes a person who starts using a technology as soon as it becomes available. Research on IT adoption describes a personality characteristic of personal innovativeness with information technology (the willingness of an individual to try out any new information technology).¹²⁶ As mentioned above, there may be a significant overlap between the Big Five personality dimension openness to experience, early adopters, and personal innovativeness with information technology. Many sweeping generalizations on the Internet and generations neglect individual variations in technology affinity by claiming that younger generations generally have a better understanding and higher affinity regarding technology. Contrary to this idea, a large Swiss study on senior citizen's Internet use (N=1,100) showed that personal interest in technology proved to be one of the strongest predictors of Internet use for people aged 65 and older.¹²⁷

The concept of monochronic/polychronic personality types identifies individuals who prefer engaging in a single task (monochronic) or two or more tasks at the same time (polychronic).¹²⁸ Polychronic individuals prefer multitasking environments,¹²⁹ which is likely to affect their online connectivity behavior and their level of digital distraction and inspiration. Polychronicity is further discussed in the subchapter *Productivity & Distraction*.

Neuroscientific research has revealed that the motivation of gains in reputation (positive social feedback concerning one's character) can predict social media behavior such as a more intense use of Facebook.¹³⁰ There is also scientific evidence for why Facebook users are motivated to quit the social networking platform: a study with more than 300 Facebook quitters and the

¹²⁵ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

¹²⁶ Agarwal & Prasad, 1998

¹²⁷ Schelling & Seifert, 2010, p. 53

¹²⁸ Bluedorn, Kaufman, & Lane, 1992

¹²⁹ Schell & Conte, 2008

¹³⁰ Meshi, Morawetz, & Heekeren, 2013

same amount of Facebook users found Facebook quitters to be significantly more cautious about their privacy, have higher Internet addiction scores, and be more conscientious than Facebook users. The main reason for quitting Facebook was privacy concerns.¹³¹ More about data privacy can be found in the chapter on *Privacy*.

To sum up, personality traits and individual motivations are intertwined with online connectivity behavior. According to studies, the personality dimensions of openness to experience and extraversion tend to be positively correlated with active and frequent online connectivity behavior and motivation to use new information technologies. Conscientiousness tends to prevent users from spending a lot of time on social media. Additional motivations to quit social media platforms like Facebook are related to higher Internet addiction scores and privacy concerns.

5. Culture

The traditional phone connected households and offices. In the age of mobile devices, “the person—not the place, household or workgroup—[has] become even more of an autonomous communication node.”¹³² According to media scholar Steinmaurer’s concept of “mediatized connectivity”, the possibility of being always on leads to a fundamental social and cultural shift.¹³³ Anthropological and ethnographical approaches have been used by a number of prominent Internet researchers in order to study Internet culture and behavior online.¹³⁴ In the context of the ON/OFF study, “culture” can refer to specific national, regional, or even global behaviors and values linked to connectivity. It can also refer to a subculture. This subchapter explores how culture plays a crucial role in technology use. Understanding differences in online connectivity behavior means exploring the qualities of differential use and “the social and cultural norms that reinforce digital divides.”¹³⁵

Technology Adoption and Culture

Looking back at the historical diffusion of communication technology, cultural differences in technology adoption could be noted even among Western nations. Around 1900, the adoption rate of the telephone in the U.S. was exponentially accelerated compared to European countries such as Germany, Great Britain and France.¹³⁶ Sociologist Werner Rammert underlines the importance of taking into account the cultural and social patterns within a society that shape a technology’s diffusion and integration. In the case of the telephone in the U.S., Rammert identifies an open and pragmatic culture of communication and information-oriented social practices that promoted the adoption of the technology in everyday life. In Europe however, the telephone was initially used primarily as a business tool and the adoption took off much later than in the United States

¹³¹ Stieger, Burger, Bohn, & Voracek, 2013

¹³² Wellmann 2001 quoted in Steinmaurer, 2014, p. 97

¹³³ Steinmaurer, 2014, p. 102

¹³⁴ Horst & Miller, 2012. For example American researchers Sherry Turkle and danah boyd have used ethnographical methods to study online behavior.

¹³⁵ Jones et al., 2009

¹³⁶ Rammert, 1993, p. 249

(Figure 14).¹³⁷ It is apparent that the major distances in North America compared to Western Europe may have additionally increased the telephone adoption rate in the U.S.

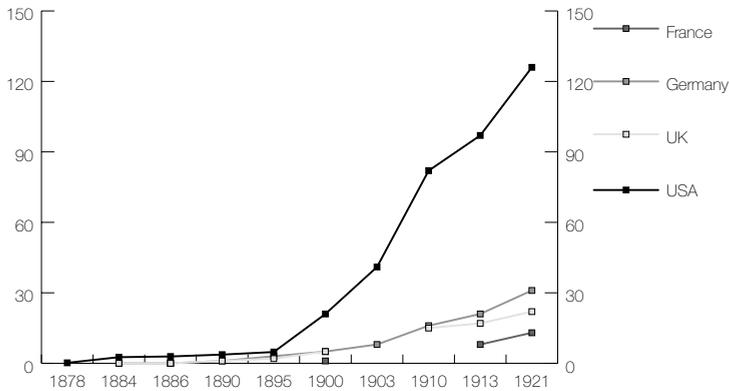


Figure 14 — Adoption rate of telephones in four countries, 1878—1921¹³⁸

Moreover, cultural differences were found in attitudes towards cellphone connectivity among Spain, Italy, Finland, and Germany in 2002. In a survey (N=400), researchers asked in which places participants thought cellphones were exceptionally annoying. In all four countries, the first four situations were the same: first, movies, theater, museum; second, official events; third, churches; and fourth, waiting rooms. But generally, for Spaniards and Italians, the cellphone seemed to be much less annoying than for Germans and Finns.¹³⁹ Even though 2002 was before the smartphone era and the study mainly concerned people talking on the phone loudly, this data indicates the relevance of cultural differences regarding hyper-connected devices in social settings, and it reflects underlying variations in cultural attitudes. In this case, the attitude in question regarded bringing private conversations into the public, which Southern European countries have a reputation for being less comfortable with.

A more recent example of culture impacting the use of mobile communication technologies is the 2016 ban of mobile phones on unmarried women under the age of 18 in Gujarat, India. The reason cited by authorities was to avoid distraction from studies. Ranjit Singh Thakor, the president of a district council, said, “Let them study, get married, then they can get their own phones. Until then, they can use their fathers’ phones at home, if necessary.”¹⁴⁰

The ON/OFF results support the idea that Internet use and connectivity behavior are culturally moderated. The United States, Germany, and Switzerland are culturally not as diverse when compared to non-Western countries. Still, even within these three industrialized, relatively technology-saturated nations, the ON/OFF study found significant differences in technology use and in the debate about hyper-connectivity. While in Germany and Switzerland the debate around the risks of hyper-connectivity is mainly about health issues such as information overload and burnout, the ON/OFF interviews revealed that burnout due to hyper-connected mobile

¹³⁷ Rammert, 1993, p. 262; Steinmaurer, 2014, p. 95

¹³⁸ Rammert, 1993, p. 249

¹³⁹ Höflich, 2011, p. 152

¹⁴⁰ Khan, 2016

devices is not currently considered a major risk of hyper-connectivity in the United States.¹⁴¹ The 22 ON/OFF global Internet experts pointed to even larger cultural differences between different continents and cultures in use of technology in social settings. The social and cultural etiquette around the use of connected mobile devices is subject to cultural context (chapter *Social Relationships*).

Connectivity and flexibility in work culture are closely related, says ON/OFF expert and Microsoft spokesperson Barbara Josef: “We perceive cultural differences very strongly within Microsoft. The Nordic countries are the most flexible ones, in the United States being present at the office is still very important. In Eastern countries, there is physical presence almost without exception, simply because an office with a receptionist and a golden doorknob means prestige. These country-specific aspects allow for conclusions regarding the work culture.”¹⁴²

Cultural Dimensions Theory

Social psychologist Geert Hofstede was one of the first to describe intercultural differences in the modern world of work and technology. At IBM in the 1970s, he surveyed IBM employees around the globe and found significant cultural differences in cultural attitudes and behavior. Hofstede ended up developing the highly influential cultural dimensions theory. Hofstede found the following cultural dimensions:¹⁴³

| <i>Cultural Dimension</i> | |
|---|---|
| Individualistic / Collectivistic | This parameter delineates how personal needs and goals are prioritized versus the needs and goals of the group, the clan, or the organization. |
| Masculine / Feminine | Masculine societies have different rules for men and women, while these rules vary less in feminine cultures. |
| Uncertainty Avoidance | This parameter measures if people are comfortable with taking risks and ready to change the way they work or live or if they prefer the known systems. |
| Power Distance | The degree to which people are comfortable with influencing upwards. In high power distance societies, inequality in distribution on power in society is more accepted. |
| Time Perspective | Long-term perspective, planning for future, perseverance values versus short-term, past and present oriented. |

Figure 15 — Cultural dimensions according to Hofstede

In business and cross-cultural communication studies, Hofstede’s dimensions are used as a form of a gold standard in analyzing cultural differences. In their study on the role and effect of national culture on global Internet use and access, an Asian research team found empirical evidence linking nearly all of Hofstede’s cultural dimensions to a nation’s Internet penetration.¹⁴⁴ The results of a recent U.S.-Dutch study indicate a link between Hofstede’s cultural dimensions and the use of social media and other sources for decision-making. For example, relationship-oriented

¹⁴¹ ON/OFF expert interviews with Kimberly Young and Jason Washburn, USA

¹⁴² ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

¹⁴³ Hofstede, 1980

¹⁴⁴ Wen Gong, Zhan G. Li, & Rodney L. Stump, 2007

collectivists rely to a greater extent than individualists on social media, which are described as an alternative for interpersonal word-of-mouth communication.¹⁴⁵

Technology-Adverse Subcultures within Hyper-Connected Countries

Of course, sweeping generalizations about cultures are doomed to reinforce clichés or not to accurately portray the specifics. Two subcultures within the technology-embracing Western world, which tend to be much more technology-adverse than the mainstream culture, provide interesting examples. One of the culturally most extreme examples mentioned in the public debate about hyper-connectivity and also in the ON/OFF interviews are the American Amish and Mennonites.¹⁴⁶ Their very specific approach to technology adoption in general has become more fascinating the more technologically advanced and connected the people around them. One of the major concerns within the Anabaptist movement (which includes Amish, Mennonites, and similar groups) is how technology may impact social settings and community. The chapter *Social Relationships* includes a closer look at communication technology within Amish and Mennonite communities based on literature and an ON/OFF expert interview.

The Anabaptists were not the only ones to express skeptical attitudes towards technology. The term Luddite is still present in popular discourse. In the 19th century, Luddites were textile workers in England who saw the Industrial Revolution threaten their income and skills by replacing them with machines and low-wage workers. In response, they destroyed industrial equipment and smashed machinery.¹⁴⁷ Similar incidents have happened in other countries.¹⁴⁸ Today, the term is used to describe someone who is anti-technology or anti-computerization within a highly developed society, or someone like virtual reality pioneer Jaron Lanier who has lost faith in technology.¹⁴⁹

Waldorf schools can be considered a kind of subculture within the Western world with specific norms and values, especially regarding pedagogy and technology. Waldorf schools are based on Rudolf Steiner's perspective on the world and have traditionally had a rather skeptical attitude towards electronic and digital technologies.¹⁵⁰ In Germany and Switzerland, Waldorf schools have invited professor Manfred Spitzer, a contested neuroscientist and author of anti-technology books, to give talks and claim the Waldorf pedagogy is in line with his findings.¹⁵¹ In two of the most technologically advanced places in the United States and the world—Silicon Valley and Seattle—Waldorf schools have strict technology policies as well. According to the *New York Times*, the chief technology officer of eBay sends his children to a nine-classroom

¹⁴⁵ Goodrich & Mooij, 2014

¹⁴⁶ The artist “The Amish Futurist” gave a surreal performance lecture at the largest European Internet conference re:publica 2014 in Berlin. Other press articles mentioning the Amish and being disconnected from the Internet: Brady, 2013; Hasel, 2014. The American Amish were also mentioned in the ON/OFF expert interview with Steve Jordan in January 2015 in Somerville, MA, USA.

¹⁴⁷ Jones, 2013

¹⁴⁸ For example, in 1832 in Uster, Switzerland, independent textile workers burned down a textile factory (Historisches Lexikon Schweiz, 2013).

¹⁴⁹ Appleyard, 2014

¹⁵⁰ Richtel, 2011

¹⁵¹ For example talks at the Rudolf Steiner Schulen Zurich and St. Gallen in 2013, and Waldorfcampus Heilbronn in 2002. A press release by the German association of Waldorf schools suggests that Spitzer's findings support the Waldorf low-tech approach (Bund der Freien Waldorfschulen, 2006).

Waldorf school, and so do employees of Silicon Valley giants like Google, Apple, Yahoo, and Hewlett-Packard.¹⁵² Apple's Steve Jobs reportedly was a "low-tech parent" deliberately limiting the use of technology at home for his kids.¹⁵³

In conclusion, cultural theory and some empirical evidence clearly indicate that culture and subculture significantly influence connectivity behavior and cultural attitudes towards connected devices in social settings. The current state of research is still in an exploratory stage but there seems to be potential for larger cross-cultural studies that more accurately describe cultural differences regarding connectivity and may prove to be useful in the field of intercultural communication.

¹⁵² Richtel, 2011

¹⁵³ Bilton, 2014

Blurring Boundaries

Hyper-connected devices foster ongoing technological convergence, which blurs the lines between media consumption and media creation; between different types of media such as newspapers, TV, and radio; between media content and personal communication; between private and public communication; between private and professional communication. The increasing integration of hyper-connectivity in our daily lives blurs boundaries between local and global locations and contacts, private and professional spaces, and working hours and leisure time. Connected mobile devices blur the lines between deliberate and unintentional data sharing and between productivity and distraction. Additionally, hyper-connectivity has been substantially changing the field of media and communication studies, prompting scholars to discuss the term “mediatization.”¹⁵⁴

1. Mediatization & Domestication

“Mediatization”¹⁵⁵ has become a key concept in current international media and communications studies. The concept has been used in recent years in order to analyze “the interrelation between the change of media and communication, on the one hand, and the change of culture and society on the other.”¹⁵⁶ As Sonia Livingstone pointed out in her presidential address at the International Communication Association in 2008, the field moves beyond the traditional dualism of mass and interpersonal forms of communication with new, networked, and interactive forms of communication and information. In the same keynote address, Livingstone underlined the term “mediatization” and that communication scholars need to attend to the societal implications of the com-

¹⁵⁴ Originally, media and communication scholar Sonia Livingstone’s seminal talk and paper was called “On the mediation of everything” (Livingstone, 2009).

¹⁵⁵ And similar terms like “mediation” and “mediaization.”

¹⁵⁶ Hepp & Krotz, 2014, p. 3

mon claim that “everything is mediated.”¹⁵⁷ Communication scholar Thomas Steinmaurer introduced the term “mediatized connectivity.”¹⁵⁸ He argues, “The process of convergence between mobile communication technologies and the global infrastructure of the Internet, combined with applications of ubiquitous computing, has established a new dispositive of communication within society that is at the same time deeply integrated in to the structures of everyday life.”¹⁵⁹ He suggests a theoretical model (Figure 16) as a tool to analyze the role of—what he calls—“perpetual connectivity” (which can be considered a synonym to the ON/OFF terms hyper-connectivity and being always on) in a larger technological, societal, and economic context. The model illustrates various aspects of blurring boundaries.

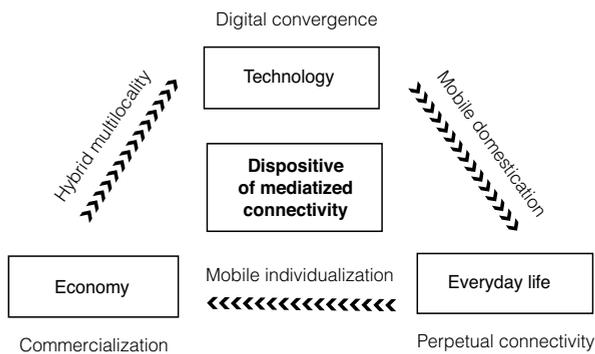


Figure 16 — The dispositive of mediatized connectivity in context according to Steinmaurer¹⁶⁰

Digital convergence refers to previously separate technologies and media formats such as text, audio, video, and other data that can now interact when digitized. In Steinmaurer’s model of mediatized connectivity, digital convergence is the premise of *mobile domestication*. The domestication theory in science and technology describes how users appropriate innovations and new technologies.¹⁶¹ Mobile domestication refers to the appropriation of users of mobile technologies. Steinmaurer points out the benefits of *perpetual connectivity* for the individual: “Mobile technologies of communication may strengthen the flexibility of the individual and create new ways of adopting or appropriating media technologies on the level of the mobile individual.”¹⁶² In a domestication process, technologies are first adapted to daily practices, then the users change accordingly, and finally this adaption of user behavior shapes the next generation of technologies as the economy reacts to the new demands of users. Finally, *hybrid multilocality* refers to the “changing notions of place and space and how these concepts get transformed in the contexts of ubiquitous and continuous access to communication networks on the level of the mobile individual.”¹⁶³ Other scholars have similarly described how the impact of mobile communication technologies leads to a “deterritorialization” and a potential “growth of cosmopolitan culture,”¹⁶⁴ or furthers the “decline

¹⁵⁷ Livingstone, 2009

¹⁵⁸ Steinmaurer, 2014

¹⁵⁹ Steinmaurer, 2014, p. 102

¹⁶⁰ Steinmaurer, 2014, p. 102

¹⁶¹ Berker, Hartmann, Punie, & Ward, 2005

¹⁶² Steinmaurer, 2014, p. 100

¹⁶³ Steinmaurer, 2014, p. 100

¹⁶⁴ Tomlinson, 1999

of social structures based on physical space.”¹⁶⁵ One of the major consequences of hyper-connectivity is blurring boundaries between various contexts: private and public, private and professional, physical and digital, local and global. The term “context collapse” has been coined to describe this phenomenon.¹⁶⁶

2. The Internet in Our Daily Lives

How hyper-connected are we as individuals? Does it still make sense to talk about individuals “using the Internet” and “going online”? Depending on the definition of online and offline (see chapter *Beyond Digital Dualism*), it can be argued that it is outdated for people with smartphones and a reliable Internet connection: they don’t *go* online; they *are* online. Still, a large number of studies try to quantify the amount of time individuals spend online or try to identify the role of the Internet in our lives. Meanwhile, for many connected individuals, it has become unthinkable to live without the rewards of the Internet.

Roughly 3,000 professionals from 15 countries¹⁶⁷ between the ages of 18 to 50 responded to one 2014 survey about technology.¹⁶⁸ The authors divided the respondents into “Gen Y” (generation Y, 18 to 30 years old) and “Gen X” (31 to 50 years old). The findings show how deeply our lives are intertwined with mobile Internet technology, not only for the young users:

- The majority of Gen X and Gen Y professionals would select their smartphone over of their television.
- Nearly half (42%) of Gen X and Gen Y professionals would choose Internet access rather than their sense of smell.
- 54% of Gen Y and 38% of Gen X professionals first look at their smartphone upon waking up. Additionally, roughly 1 in 5 from both groups would be most concerned about losing their smartphone, if robbed.
- More than half of professionals (Gen X and Gen Y) consider themselves accessible for work 24 hours a day, 7 days a week, including 3 in 10 who are accessible by both email and phone.
- Roughly two thirds of Gen X and Gen Y professionals believe that an organization that has adopted a flexible, mobile and remote work model has a competitive advantage over one that requires employees to be in the office from 9am to 5pm every weekday.¹⁶⁹

The blurring boundaries between Internet use at work and home are supported by U.S. data from the World Internet Project. A majority says they often or sometimes use the Internet at home for their job, and at their job for non-work activities (Figure 17).¹⁷⁰

¹⁶⁵ Höflich & Gebhardt, 2005

¹⁶⁶ boyd, 2013; Davis & Jurgenson, 2014

¹⁶⁷ United States, Canada, Mexico, Brazil, United Kingdom, France, Germany, Netherlands, Poland, Russia, India, China, Japan, South Korea, and Australia

¹⁶⁸ Connected World Technology Report, 2014

¹⁶⁹ Connected World Technology Report, 2014

¹⁷⁰ Lebo, 2013, pp. 32

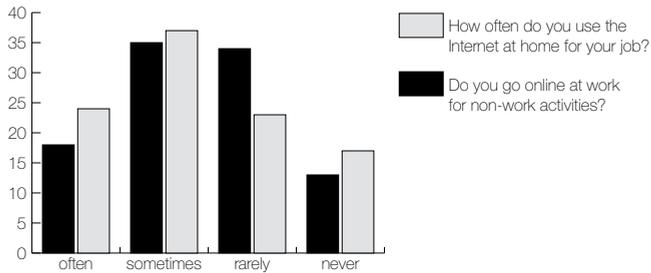


Figure 17 —Internet at home for job vs. online at work for non-work activities¹⁷¹

Certainly, how crucial mobile communication technology is perceived to be as a part of everyday life largely depends on the country and their levels of technology adoption. Switzerland is among the most connected countries worldwide. According to a 2014 representative survey, 86% of the Swiss population agrees with the statement “mobile communications technology has become an integral part of daily life.” 85% agree with “mobile communications technology leads to the expectation that everyone has to be always connected.”¹⁷² In Switzerland, hyper-connected mobile devices have been increasingly “domesticated.”¹⁷³ In 2014, Swiss smartphone users (N=1,151) reported using the following mobile devices to go online at least once a day:¹⁷⁴

- *Smartphone*: 75% (11% constantly, 50% more than once a day, 14% once a day)
- *Laptop*: 59% (6% constantly, 28% more than once a day, 25% once a day)
- *Tablet*: 60% (4% constantly, 30% more than once a day, 26% once a day)

As I will argue below, the definition and the understanding of “online” and “going online” is debated. In this context, it is safe to assume that most respondents understand “go online” to mean “actively go online,” and may or may not realize that their devices likely include many apps that may be constantly connected. An ever-increasing number of Swiss Internet users (actively) “go online” for daily life activities such as reading news online (76% of respondents), looking for information online about political campaigns (42%), looking for health-related information (64%), making online payments (58%).¹⁷⁵ The most common reasons for Swiss smartphone users to “go online” in 2013 were:

- While waiting: 73%
- In public transport: 71%
- In bed: 50%
- While watching TV: 50%
- While listening to the radio: 43%
- At school: 30%
- While shopping: 30%
- In the car: 28%
- On the toilet: 28%

¹⁷¹ Lebo, 2013, pp. 32

¹⁷² Bieri et al., 2015, p. 27 — Representative survey for the Swiss population older than 16 years (N=1,000).

¹⁷³ According to Steinmaurer’s description of a technology domestication process in which technologies have become part of daily routines (Steinmaurer, 2014, p. 100).

¹⁷⁴ Piga, 2014, p. 9

¹⁷⁵ Federal Statistical Office Switzerland, 2014

- During meetings: 23%
- While using a computer: 22%
- While reading a newspaper: 21%¹⁷⁶

The numbers above clearly indicate that hyper-connectivity is, for many people, interwoven with mundane daily activities such as waiting, commuting, or using the bathroom, which beautifully illustrates the blurring boundaries or context collapse. For the activities listed above, the smartphone is by far the device of choice and favored over other mobile devices (laptops and tablets).¹⁷⁷ The domestication process of hyper-connectivity—the growing integration of connected devices into daily lives—has been additionally fuelled by the fact that connected devices have become increasingly mobile over the past few years: smaller and lighter yet more powerful.

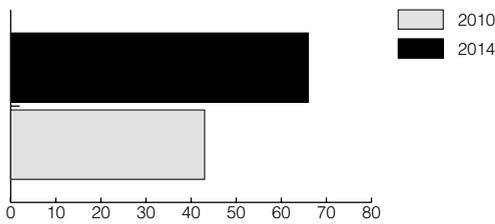


Figure 18 — Percentage of Swiss Internet users who went online outside of their home and office in the previous three months¹⁷⁸

A rising number of Internet users went online on the go (Figure 18), especially using a phone or a tablet, though many fewer went online outside the home on a laptop (Figure 19). It is safe to assume that the large increase in mobile Internet use in Switzerland is due to the boom in smartphone adoption, which happened between 2010 and 2014.

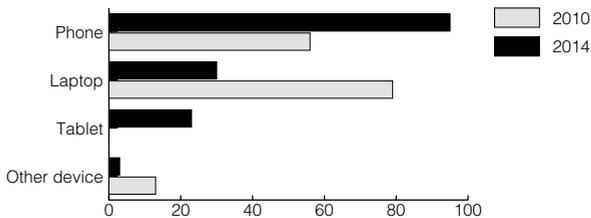


Figure 19 — Devices used by Internet users outside of home and office in the previous three months in percent of Internet users¹⁷⁹

¹⁷⁶ Piga, 2014, p. 17

¹⁷⁷ Piga, 2014, p. 20

¹⁷⁸ Federal Statistical Office Switzerland, 2014

¹⁷⁹ Federal Statistical Office Switzerland, 2014; “Other device” includes tablets in 2010.

Device mobility has not only or even primarily been used to go online outside of the home and office, a representative German study argues. By comparing the increased number of connected devices per household with people using the Web on the go, the authors concluded that mobile devices are used more *within* the home (e.g. bedroom, kitchen, bathroom) than to go online anywhere else.¹⁸⁰

In the United States, the smartphone adoption rate is not as high as in Switzerland and Germany. However, a majority of Americans own smartphones and U.S.-based research teams were the first to study blurred boundaries caused by hyper-connected devices.¹⁸¹ In 2014, 58% of Americans were smartphone users, and 42% were tablet users. 73% of all U.S. Internet users used at least one social networking site (mainly Facebook).¹⁸² 24% of U.S. teens go online “almost constantly,” mainly via smartphones.¹⁸³ Young users—as described in the subchapter *Generations, Gender, Race*—are often portrayed as more active and savvy Internet users who lack a sense of what life was like without the Web. Still, the most important places for teens to spend time with close friends are still mainly physical spaces: school (83%), followed by someone’s house (58%), and then online (e.g. social media or gaming sites, 55%). The most common way to get in touch with peers among teens in the U.S. is texting.¹⁸⁴

Many studies on teens focus on how many use specific information and communication technologies, but the diversity of use and specific motivations for use or non-use are understudied. An in-depth study in the United States examined teen’s technology use as part of their everyday lives, focusing on demonstrating the wide range of use between non-use and heavy use (continuums of technology use). The work emphasizes that increasingly available technology and media blur everyday life contexts. Additionally, researcher Rachel Magee identified four factors influencing teens to limit their use of technology: local policy and access (e.g. technology restrictions at school), affective state (e.g. frustrations with technology like slow Internet access or data loss, mood management), life stage and goals (e.g. getting rid of social media profiles at the beginning of college application or job hunting, pay attention to classes), and relationships (e.g. online aggression and drama)¹⁸⁵ (see subchapter *Motivation & Personality*).

In 2015, a large comparative study about 16 to 25 year-olds in the United States, Brazil, Singapore, and Switzerland (N=4,030) showed that a very similar percentage of youth in each country said “I could not do without the Internet”/“The Internet plays a significant role in my life”: roughly 90%.¹⁸⁶ Not only do an overwhelming majority of young people describes the Internet as central to their lives, but also the time they spend with media in general has been increasing constantly. In 2010, a comprehensive and influential study (N=2,000) was published about U.S. American 8 to 18 year olds and their media habits. One of its important findings states, “Over the past five years, young people have increased the amount of time they spend consuming media by an hour and seventeen minutes daily, from 6:21 to 7:38—almost the amount of time most adults spend at work each day, except that young people use media seven days a week instead of five.”¹⁸⁷

¹⁸⁰ van Eimeren, 2013, p. 389

¹⁸¹ Gant & Kiesler, 2002; Peters & Allouch, 2005; Mazmanian, Yates, & Orlikowski, 2006

¹⁸² Rainie, 2014

¹⁸³ Lenhart, 2015a

¹⁸⁴ Lenhart, 2015b

¹⁸⁵ Magee, 2015

¹⁸⁶ Golder et al., 2014, p. 20

¹⁸⁷ Rideout, Foehr, & Roberts, 2010, p. 2

While many studies on media use report how much time youth spend using media, they do not measure the emotional bond to specific types of media. Attempting to do both, the ON/OFF Student Survey data supported the hypothesis that Internet-enabled devices—cellphones (in Switzerland, 95% of 12 to 19 year-olds own a smartphone) and computers—are the media Swiss students say they could not do without (when given the following options: TV, radio, computer, mobile phone,¹⁸⁸ books, newspaper, music player, Figure 20). This is hardly surprising, especially because smartphones are multifunctional devices serving as music players and alarm clocks while aiding in information seeking and communication, but there are some interesting details to the analysis.

The most significant difference is the first priority emotional bond by gender: Cellphones are by far female students' most important device among the options (almost four out of five females say they could not do without their cellphone). In contrast, male students have a stronger emotional bond with computers than cellphones. The reverse (cellphones for male students, computers for female) is true for the second priority. But for both genders cellphones and computers are by far the media they think of as the most significant.

In many ways, the distinction between various devices is becoming increasingly irrelevant. For example, many listen to music on their smartphones—and listening to music has remained the major and favorite media activity for more than a decade.¹⁸⁹ German youth's favorite ways of listening to music were, in order: radio, mp3 player, Internet, cellphone/smartphone, computer (offline), CD player, TV.¹⁹⁰

Mobile devices tend to be all-purpose devices (almost all of the activities listed above can be done on a smartphone or tablet), which makes the distinction between different devices at the very least questionable. Still, the numbers show that TV as a device remains important—third priority for both genders—even if watching TV content on mobile devices and computers is possible. Books still play an important role for many students, especially females, and music players are essential for a significant number of students of both genders.

| | |
|----------------------------|---|
| Question | I could not do without ... |
| Options | TV Radio Computer Mobile phone Books Newspaper Music player |
| Priorities | First priority second priority third priority |
| Total priority (N = 139) | Total: Mobile phone Computer TV |
| Female priorities (N = 78) | Total: Mobile phone Computer TV |
| Male priorities (N = 61) | Total: Computer Mobile phone TV |

Figure 20 — Summary “I could not do without ...” by gender and priorities — ON/OFF Student Survey (2014)

As of 2014, 95% of Swiss teens owned a smartphone (Figure 21), which is presumably one of the highest smartphone adoption rates worldwide (higher than in Germany and the United States; see chapter *Digital Connections & Digital Divides*).

¹⁸⁸ Cellphone, mobile phone, and smartphone are used as synonyms.

¹⁸⁹ Feierabend, Karg, & Rathgeb, 2013, p. 11

¹⁹⁰ Feierabend et al., 2013, p. 9

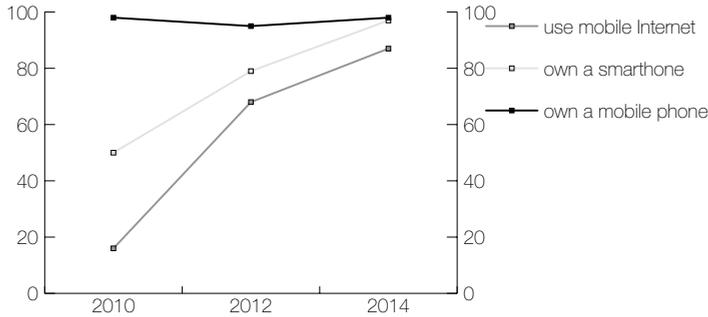


Figure 21 — Percentage of youth in Switzerland with mobile Internet access (12 to 19 years from 2010 to 2014)¹⁹¹

In just a few years, smartphones have become ubiquitous in Switzerland. Some teenage smartphone owners report not using the Internet on their mobile device, although it is very likely that they do and are not aware of it. Many other devices may have access to the Internet, including Wi-Fi enabled music players and TV sets. These innovations, among others, can make it difficult to answer the question many studies pose about how much time youth spend online.

How Much Time Do Youth Spend Online?

Recent representative studies have found that teenagers report spending roughly two to three hours online per day in Germany and Switzerland.¹⁹² However, there is a caveat: with technological convergence and ever more connected devices, self-reporting as a data collection method for the average time spent online is becoming increasingly unreliable. Additionally, the definition of “online” is debated (even among Internet experts, see chapter *Beyond Digital Dualism*), and research results make it clear that many respondents of large surveys do not realize that time spent using messengers such as WhatsApp or social networks such as Facebook is actually time spent online. In the ON/OFF Student Survey, respondents claimed using WhatsApp more often than the Internet (Figure 22). Similar results were found in the representative Swiss JAMES study 2014.¹⁹³ And, as the most unmasking headline of a recent press article said, “Millions of Facebook users have no idea they’re using the Internet.” The article reported that in surveys conducted in Asia and other parts of the world, a large percentage, in some countries even a majority, agreed with the statement “Facebook is the Internet” or “I use Facebook but not the Internet.”¹⁹⁴

¹⁹¹ Infographic based on data from JAMES studies 2010, 2012, and 2014 (Willemse et al., 2014; Willemse, Waller, Süß, Genner, & Huber, 2012; Willemse, Waller, & Süß, 2010)

¹⁹² Feierabend, Plankenhorn, & Rathgeb, 2014, pp. 63; Willemse et al., 2014

¹⁹³ Willemse et al., 2014

¹⁹⁴ Mirani, 2015

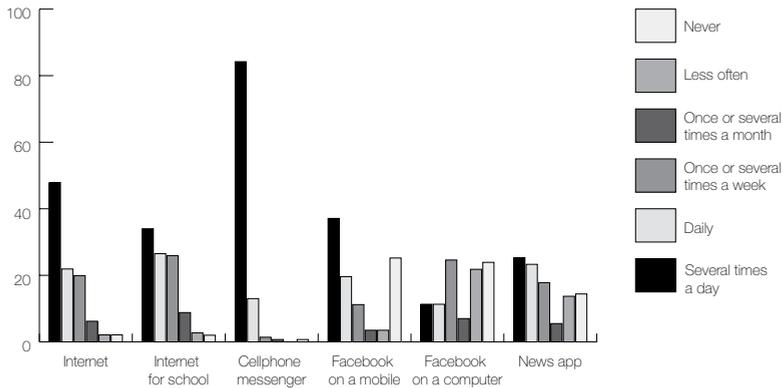


Figure 22 — Students' usage frequency in percent (N = 146) — ON/OFF Student Survey

Using cellphone messengers—mainly WhatsApp—is by far the most frequent online activity the ON/OFF surveyed students engage in (Figure 22). Regardless of school type, almost every single surveyed student uses a cellphone messenger at least daily, an overwhelming majority several times a day. However, there are differences between school types¹⁹⁵ on other forms of very frequent Internet use: high-school students (57% several times a day, 20% daily) and IT students (40% several times a day, 30% daily) use the Internet for school significantly more often than commercial school students (18% several times a day, 30% daily).

The most popular social networking app, Facebook is used several times a day or daily by more than half of the students on a phone and by about a fifth on a computer. IT students use Facebook more often on a mobile device, and significantly more often on a computer, than all other students. Interestingly, the best-educated students (HS) use news apps significantly less frequently than lesser-educated students. It is very likely that they use other news sources instead (like websites by traditional newspapers, print newspapers, and TV).¹⁹⁶

Going Social and Being Entertained

Previous research on online youth behavior showed that teens tend to do online what they have always done before: hang out with their peers. A digital layer has been added to the village squares, shopping malls, parks, and parking lots where teens meet. There are additional spaces beyond physical boundaries to “negotiate identity, gossip, support one another, jockey for status, collaborate, share information, flirt, joke, and goof off.”¹⁹⁷ Indeed, the ON/OFF students' three favorite apps are all about being social (Figure 23). Not only by far the most frequently used but also ON/OFF student's favorite app is WhatsApp (127 out of 151 students). Facebook (47) and Instagram (37) come in second and third. There is a “long tail”¹⁹⁸ of many more apps that were mentioned in the ON/OFF Student Survey 2014 (Figure 23) by a small number of students.

¹⁹⁵ CS = commercial school, average-educated students / HS = high school, highly educated students / IT = IT school, students specializing in ICT

¹⁹⁶ See Willems et al., 2014, p. 18

¹⁹⁷ boyd, 2010; p. 79

¹⁹⁸ Long tail is used in describing the “less popular” part in unequal distributions.

Although ON/OFF surveyed students are older in average as the representative sample of the Swiss JAMES study, their preferred apps are the same: WhatsApp, Facebook, and Instagram.¹⁹⁹



Figure 23 — Favorite apps as reported in the ON/OFF Student Survey (N=151)

An international youth study (N=4,030) confirms that messaging and texting is the ultimate way to contact peers. WhatsApp was most popular with youth in Switzerland, where 80% reported that it was their favorite way of getting in touch with friends, followed by Singapore (79%) and Brazil (49%). In the United States, texting (via SMS, 67%) is the most popular way of getting in touch with friends (WhatsApp: 3%).²⁰⁰

While on mobile devices social apps dominate, on larger devices such as laptops and computers, video entertainment comes in first. YouTube is by far the most popular website among ON/OFF students. Google and Facebook come in second and third respectively. Again, this ranking is identical with the representative data from the JAMES study 2014. After the top three sites, there is a “long tail” of websites, which are popular with a smaller number of students. These websites include tabloid news sites such as 20 Minuten and Blick, Wikipedia, Tumblr, and, sites that stream illegally uploaded video and movie content (kinox.to, movie4k).

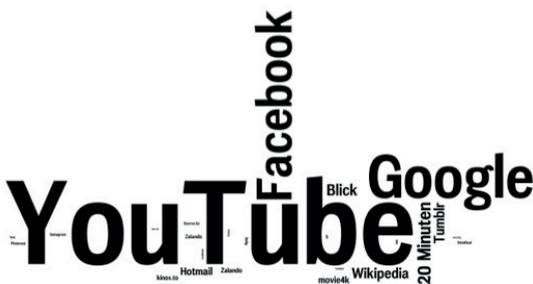


Figure 24 — Favorite websites as reported in the ON/OFF Student Survey (N=151)

It is safe to assume that time spent online has been increasing along with ongoing smartphone adoption globally and in hyper-connected countries. But it has become hard for individuals to accurately estimate how much time they actually spend online or on specific platforms. American psychologist and social media researcher Rey Junco was able to show that students strongly over-estimate the time they actively spend on Facebook (146 min. estimated versus 26 min. meas-

¹⁹⁹ In 2015 and 2016, Snapchat has been on the rise among teens in Western countries.

²⁰⁰ Golder et al., 2014, p. 30; Unlike in many other countries, in the U.S., the Facebook-owned messenger WhatsApp has remained unpopular so far (Neurogadget, 2015).

ured).²⁰¹ Additionally, a 2015 German representative study reported that most young people are highly digitally connected and do not distinguish between online and offline anymore.²⁰²

In summary, the claim that the Internet is very important in youth's lives is overwhelmingly supported by empirical evidence. But questions remain: what does it mean for research if self-reporting the time we spend online is highly inaccurate? Even then, what do we mean when we talk about "spending time online" anyway? And for what purpose do we try to distinguish online and offline?²⁰³

Getting the Daily News

Media use, especially when it comes to news, has often been described as daily rituals: getting the newspaper in the morning and reading it over coffee, sitting around the family table and listening to the news on the radio, watching the news on TV after dinner at the same time every day. These rituals have changed with constantly updated news channels at our fingertips. The Internet and mobile devices have been changing the way news gets produced and consumed dramatically over the past two decades, and the Internet has blurred lines in news media in many ways: between reader and writer (prosumer = producer + consumer),²⁰⁴ between media formats (TV, newspaper, magazine article, book, blog post, tweet, radio), between professional and amateur journalism, between for-profit, public, and non-profit media, between old media and new media.²⁰⁵ The blurred lines between journalists as private individuals and as professionals publishing on social media have been challenging for news organizations, which are worried about potential damage to their reputations when journalists post controversial content on social media.

The Internet is not the first 24/7 news media. News radio has operated for decades every day of the week around the clock. Many years later, cable television news channels brought news to their viewers near-constantly, in contrast to daily newspapers with their day-by-day pace. But fast reporting would see further increase with the advent of online news and the 24/7-news cycle.²⁰⁶ The recent rise of smartphones in particular is changing the way people create, consume, share, and interact with news. For the first time in history, almost everyone in the Western world carries a device in their pocket that allows them to stay informed at any time, anywhere. News is specific to culture and country and depends on factors such as the degree of the freedom of press, on the general literacy, linguistic diversity, and infrastructural challenges (see subchapter *News Organizations*).

About a quarter of the ON/OFF surveyed students use news apps several times a day. Many get news via push notifications on their phones, or they visit news websites several times a day from work, on their commute, or while waiting. An increasing number gets their news "accidentally" from Facebook.²⁰⁷ When and how we get the news has become more individual and very much intertwined with other daily activities.

²⁰¹ Junco, 2015

²⁰² DIVSI & SINUS-Institut, 2013, p. 4–5

²⁰³ See chapter Beyond Digital Dualism for a detailed discussion on online vs. offline and the ON/OFF scale.

²⁰⁴ The term *prosumer* was coined by media theorists in the 1970s and 80s such as Marshall McLuhan and Alvin Toffler. They predicted that the roles of the consumer and the producer would blur in the age of technology and mass customization.

²⁰⁵ Schudson, 2011

²⁰⁶ Weaver, Beam, Brownlee, Voakes, & Wilhoit, 2006

²⁰⁷ Mitchell, 2015

The lines between media use and daily activities have been blurred before. Also, mobility and speed are not new in the world of media, nor are complaints that life is too fast, that the past was better, or that people consume media superficially on the go while ignoring the friend sitting next to them, as this quote from William Smith's *Morley: Ancient and Modern* published in 1886 illustrates: "With the advent of cheap newspapers, and superior means of locomotion [...] the dreamy quiet old days are over and gone for ever; for men now live think and work at express speed. They have their *Mercury* or *Post* laid on their breakfast table in the early morning, and if they are too hurried to snatch from it the news during that meal, they carry it off, to be sulkily read as they travel [...] leaving them no time to talk with the friend who may share the compartment with them. [...] The hurry and bustle of modern life [...] lacks the quiet and repose of the period when our forefathers—the day's work done—took "their ease" [...] from fifty to a hundred years ago."²⁰⁸(Figure 25).

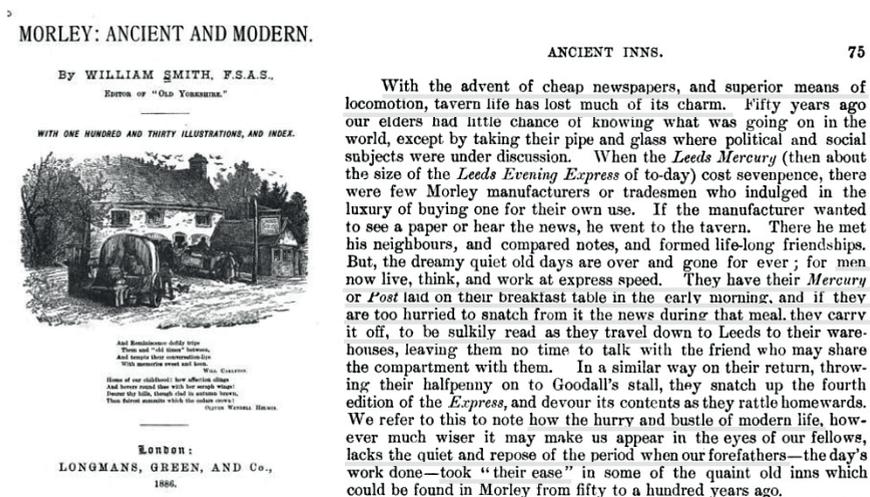


Figure 25 — *Morley: Ancient and Modern* by William Smith published in 1886

In the past, the blurred lines between media use and other daily activities were reduced to news consumption while eating breakfast, while traveling, or while choosing to read the newspaper over a conversation with a friend sitting next to you. Today, mobile media use is far from limited to news consumption. Still, the tone of the description of how new media—in this case, cheap newspapers in the late 19th century—changed behavior is surprisingly similar to the debate about social consequences of connected mobile devices: accelerated lifestyle, overcoming boredom while commuting, ignoring friends sitting next to us.

²⁰⁸ Smith, 1886, p. 75

3. Productivity & Distraction

Blurred boundaries also mean that while working on highly demanding tasks in our office or at school, our private contexts can still be fully present through hyper-connectivity. And of course, vice versa: work and school are often carried over into off-hours. A key debate about hyper-connectivity questions whether connected mobile devices help us connect and be more productive, or distract us from being productive because of incessant interruptions and multi-tasking. A number of ON/OFF experts have expressed concerns over a reduced attention span as a potential risk of hyper-connectivity. In the world of work, the reservations are largely related to multi-tasking and digital interruptions during complex tasks, which supposedly make employees less productive. In the realm of education and parenting, expressed worries relate to shortened attention span while studying and a continuous lack of concentration for homework and tasks at school. Parents and educators ultimately fear a lower level of school performance.

The Brain and Continuous Partial Attention

MIT professor Sherry Turkle describes the communication culture of “Always-On/Always-On-You” in which we have gotten used to hasty messages that we answer quickly. She finds a “continuous partial attention” and says that attention is becoming the scarcest resource.²⁰⁹ Cognitive scientist Torkel Klingberg underlines that the brain has a limited capacity for dealing with information and that frequent interruptions and multitasking are poisonous for concentration.²¹⁰ In his best-selling book *Payback*, Frank Schirmmacher, the former co-publisher of the national German newspaper *Frankfurter Allgemeine Zeitung*, expressed his concerns regarding information overload resulting in a lack of concentration and deep reflection.²¹¹

Other best-selling authors that have shaped the public debate about the Internet and attention include German brain researcher Manfred Spitzer’s book *Digitale Demenz*²¹² and U.S. journalist Nicolas Carr’s *The Shallows*.²¹³ In the technology community, both authors are contested and have been criticized for cultural pessimism, but their books have been bestsellers with broad audiences in Europe and the United States.²¹⁴ Spitzer argues that the use of digital devices weakens the brain’s memory functions and is responsible for a number of negative health consequences including attention deficit and hyperactivity disorder (ADHD). In *The Shallows*, Carr seems equally concerned with what “the Internet is doing to our brains.” He argues the Internet reduces the attention span and has made it much harder to genuinely engage with difficult texts and complex ideas, saying, “Over the last few years I’ve had an uncomfortable sense that someone, or something, has been tinkering with my brain, remapping the neural circuitry, reprogramming the memory.”²¹⁵ Carr seems convinced that the risks of the Internet outweigh its benefits in terms of productivity. Both Spitzer and Carr argue that Internet use changes the structure of the brain. This theory is not without some basis given the fact that the brain is constantly shaped by our

²⁰⁹ Turkle, 2008, p. 129

²¹⁰ Klingberg, 2008

²¹¹ Schirmmacher, 2009

²¹² Spitzer, 2012

²¹³ Carr, 2011. The citation refers to the subtitle of Carr’s book *The Shallows*.

²¹⁴ Bartens, 2012; Siegel, 2010

²¹⁵ Carr, 2011, p. 5

experiences and habits. Neuroplasticity is the medical term for the brain's ability to reorganize itself according to new situations.²¹⁶ Neuronal structures in the brain adapting to new circumstances is not per se a good or a bad thing. Carr, however, is nostalgic: "Even when I was away from my computer, I yearned to check e-mail, click links, do some Googling. I wanted to be connected. [...] The Internet, I sensed, was turning me into something like a high-speed data-processing machine. I missed my old brain."²¹⁷ Later in the book, Carr says that the influx of competing messages online overloaded our working memory and that "the more we use the Web, the more we train our brain to be distracted."²¹⁸ What Carr neglects in his argument is that using the Web is not inherently distracting—it depends on how we use the Internet and what for. Neuroplasticity can be about getting into the habit of constant distraction, but Carr seems to suggest that neuronal pathways are only about negative habits. Neuronal pathways get shaped by whatever habits we have. What if we train attention and focus?

Carr mainly uses anecdotal evidence and Spitzer tends to use his rhetorical skills and his standing as a neurological scientist to convince large audiences, but Spitzer often is not very meticulous about making the scientifically important distinctions between causality and correlation. For example, he blames technology for bad school performance even though studies show that media use only marginally impacts school performance. Good grades are mainly due to students' intelligence, motivation, and the quality of teaching.²¹⁹ Still, being constantly busy and avoiding boredom has been shown to hinder creativity and deeper understanding.²²⁰ Inevitably, hyper-connectivity is a tradeoff between productivity, attention, creativity, and distraction.

Hyper-Connectivity as a Dilemma

For many, hyper-connectivity is something of a dilemma.²²¹ Being able to access new messages and information whenever and wherever is very convenient and distracting at the same time. Recent research confirms that simple cellphone notifications are a major driver of distraction and can impair our ability to focus on a task. The study found that the level of distraction is comparable to actual cellphone use.²²² Distraction can be detrimental to the attention we pay to complicated tasks in the workplace or while studying. If we are distracted, we memorize information and knowledge less effectively. Previous research shows that there are strong connections between memory and attention.²²³

A recent survey in the United States about the dilemma of constant connectivity via smartphones showed that about three quarters of the respondents perceive smartphones as connecting rather than distracting and only a small percentage says connectivity is more annoying than helpful (Figure 26). About half of the respondents said they could not live without their smartphone while the other half reported that their connected device is not always needed.

²¹⁶ Rugnetta, 2008

²¹⁷ Carr, 2011, p. 16

²¹⁸ Carr, 2011, p. 194

²¹⁹ Waller, Willemsse, Genner, & Süß, 2013

²²⁰ Gasper & Middlewood, 2014; Zöllner, 2004

²²¹ Arnold, 2003

²²² Stothart, Mitchum, & Yehner, 2015

²²³ Johnston, Linden, & Shapiro, 2012

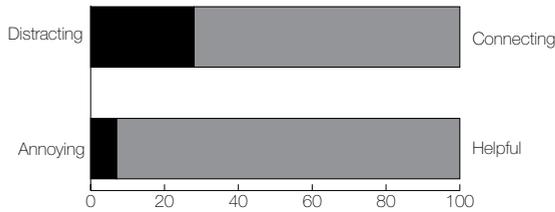


Figure 26 — Connectivity is perceived as more connecting and helpful than distracting and annoying.²²⁴

Taking a closer look at the dilemma of productivity versus distraction, there are significant generational differences among Americans surveyed by Pew Research in 2014. About 80% of all respondents older than 18 years confirmed that using their smartphones made them feel more productive over the past week, no matter their age. However, 73% of the youngest group (18 to 29 years) said they have felt distracted, versus 62% of the 30 to 49 year-olds, and only 32% of those older than 50 years.²²⁵

Students and Digital Distractions

How do students deal with digital distractions? A large majority of teachers in the United States mention both positive and negative aspects of online connectivity in a survey (N=2,462). 75% of U.S. teachers say that the Internet and digital search tools have had a “mostly positive” impact on their students’ research habits. However, 87% also say these technologies are creating an “easily distracted generation with short attention spans.” Overall, 64% of the surveyed teachers say today’s digital technologies “do more to distract students than to help them academically.”²²⁶ Similar results stem from a 2012 teacher survey (N=685) in the U.S. about academic performance and entertainment media (TV shows, music, video games, texting, iPods, cell phone games, social networking sites, apps, computer programs, online videos, and websites for students use for fun).²²⁷ The biggest problem area for teachers is students’ attention span (71% report entertainment media use has hurt students). According to the surveyed teachers the use of entertainment media additionally hurts writing skills, homework, the ability to communicate face to face, and the students’ critical thinking. Interestingly, there were no statistically significant differences between older and younger teachers.²²⁸ 63% among the surveyed teachers reported that their students’ media use has helped their ability to find information quickly and efficiently.²²⁹

A small majority of ON/OFF students (51%) feels distracted by constant connectivity. Female students (56%) tend to feel more distracted than their male counterparts (45%) (Figure 27). More significant differences can be found between different school types than between gen-

²²⁴ Smith, 2015

²²⁵ Smith, 2015

²²⁶ Purcell et al., 2012

²²⁷ Rideout, 2012

²²⁸ Rideout, 2012, p. 7

²²⁹ Rideout, 2012, p. 9

ders.²³⁰ 60% of the best-educated students (HS) feel distracted by constant online connectivity, the commercial school students (CS) are evenly divided, and only a third of the IT school students (IT) feels distracted.

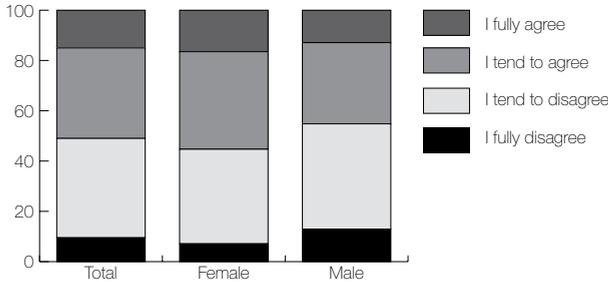


Figure 27 — “I feel distracted due to constant online connectivity.” Students by gender in percent (N=147) — ON/OFF Student Survey

42% of those students who fully agree with the statement “I feel distracted due to constant online connectivity” say they never or seldom check their phone immediately when a message pops up. 48% who say they are not distracted often check new messages immediately as soon as it pops up on their phone.

Surprisingly, a vast majority of students (72%) say they don’t mind constant online connectivity, even if half of them say it distracts them (Figure 28).

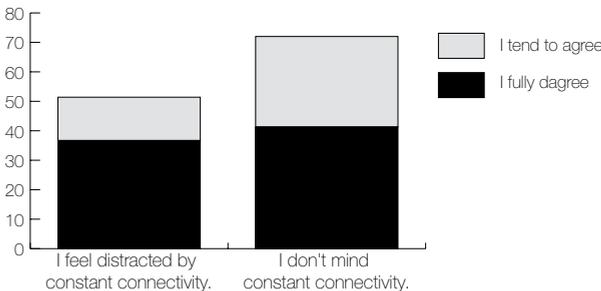


Figure 28 — Students in percent: comparison distraction vs. not minding (N = 150) — ON/OFF Student Survey

Multitasking and Focus on Work or Homework

The preference for engaging in two or more tasks simultaneously (multitasking) has been termed “polychronicity” and has been described by scholars as part of an individual’s personality. The opposite end of the spectrum from polychronicity is “monochronicity,” which describes a pref-

²³⁰ CS = commercial school, average-educated students / HS = high school (Swiss Gymnasium), highly educated students / IT = IT school, students specializing in ICT

erence for doing one thing at a time.²³¹ Katherine Richardson's research revealed that workplace connectivity frequency and duration is related to polychronicity.²³² Multitasking is one of the major topics being debated regarding mobile devices and hyper-connectivity. The debate is usually around productivity, whether hyper-connectivity furthers or hinders productivity, or if being connected while doing other things reduces our attention span.²³³ Research indicates that multitasking—trying to accomplish two things at once, like exchanging e-mail and writing a report—actually hinders productivity. Multitaskers may spend 50 percent more time on those tasks than if they work on them separately.²³⁴

Two young students in the U.S. recently conducted a highly publicized study about multitasking and homework, and they were invited to present their results at the American Association of Pediatrics. For most of the 400 surveyed students (ages 10 to 19), doing homework while listening to music, texting, and tweeting led to worse results, while a minority—the “high media multitaskers”—were better at filtering out distractions and in fact performed worse when made to focus on a single task.²³⁵ It does not seem far-fetched to assume that future research could show that those high media multitaskers are probably polychronic personality types.

A Stanford-based research team found a correlation between heavy multitasking and poor task-switching ability in an experimental study (N=262). Heavy media multitaskers had greater difficulty filtering out irrelevant stimuli from their environment. Low media multitaskers had more attentional control and found it easier to focus on a single task in the face of distractions.²³⁶ These results somewhat contradict the common narrative that heavy multitaskers are better able to deal with distractions.

Self-Control and Digital Distractions

The ability to control impulses has been claimed to be one of the most important factors for success, as was famously demonstrated by the marshmallow experiment in the 1960s and 70s. The Stanford marshmallow experiment on delayed gratification found that self-regulation in childhood can predict future success.²³⁷ The premise of the test was simple: you can eat one marshmallow now or, if you can wait, you get to eat two marshmallows later. The results were astonishing. The preschoolers who were able to wait for two marshmallows, over the course of their lives, have a lower BMI, lower rates of addiction, a lower divorce rate and higher SAT²³⁸ scores. The marshmallow test in the digital age is about challenging the willpower of students to resist digital distractions. In a recent psychological U.S. study (N=921), high school students in their senior year were asked to allocate their time between solving simple math problems (which were framed as being beneficial for problem solving skills) and alternatively playing Tetris or watching entertaining videos. Students could answer as many math problems as they wanted in five four-minute sessions. They were instructed that they could take a break any time to watch videos or play Tetris. The study found that—even when factoring out intelligence, gender, ethnicity, socio-

²³¹ Bluedorn et al., 1992

²³² Richardson, 2009, p. 88

²³³ Willingham, 2015

²³⁴ Richtel, 2003

²³⁵ Caulfield & Ulmer, 2014

²³⁶ Ophir, Nass, & Wagner, 2009

²³⁷ Mischel, Shoda, & Rodriguez, 1989

²³⁸ SAT = standardized test used in the United States for college admissions

economic status, and interest in math—the students’ self-control and grit in the test significantly correlated with their school grades (GPA, grade point average).²³⁹

There are no significant statistic relationships in the ON/OFF data between self-control items (“I find it hard to finish a task that isn’t fun.”/“I am very spontaneous.”/“I am good at resisting temptations.”/“I wish I had more self-discipline.”) and the feeling of being distracted by constant connectivity. However, there is a significant result in the data indicating that finding it hard to say no correlates with feeling distracted by constant connectivity. In other words, the ability to set social boundaries is linked to feeling less distracted by hyper-connectivity. The ability to set boundaries seems to be a better predictor than self-control when it comes to being affected by digital distractions.

Digital Interruptions and Cyberslacking in the Workplace

Early academic research on blurring boundaries regarding professional and private connectivity was conducted in Singapore. Management scholar Vivian Lim defined “cyberloafing” as “any voluntary act of employees’ using their companies’ Internet access during office hours to surf non-job related Web sites for personal purposes and to check (including receiving and sending) personal e-mail as misuse of the Internet.”²⁴⁰ A similar term with a largely overlapping definition is “cyberslacking,” “a work-avoidance strategy that serves primarily as a means of expressing workplace grievances, and to a lesser extent, as a source of personal gratification.”²⁴¹ The third related term is “cyberprocrastination”, which describes the act of needlessly delaying tasks by surfing the Web to the point of experiencing subjective discomfort—basically an adaptation of traditional procrastination for the digital age. Procrastination is a topic that has been studied long before the Internet played a role. In 1984, psychologists found that problems with procrastination in college students significantly correlated with depressive symptoms, anxiety, low self-esteem, and lack of assertion.²⁴²

Companies are worried that employees are less productive because of the constant flow of email and time spent “cyberslacking,” or that the constant availability of social media and private digital distractions in the workplace makes employees less productive. A 2010 survey (N=1,000), found that business professionals manage multiple “inboxes” including email and social media for several hours during a workday. Survey respondents were asked, “How often do you interrupt your work to check your ‘inboxes?’” 23% replied “Constantly, as soon as new information shows up” and 43% said “More often than I would like to.”²⁴³

More on hyper-connectivity in the workplace can be found in the subchapter *Companies & Organizations*.

²³⁹ Chen, 2014; Galla et al., 2014

²⁴⁰ Lim, 2002, p. 677

²⁴¹ Garrett & Danziger, 2008, p. 287

²⁴² Solomon & Rothblum, 1984

²⁴³ Khawand, 2010

4. Life Domain Balance

Discussions about the boundaries between work and private lives are not new. However, mobile technologies and hyper-connectivity have definitely fuelled the current debate around blurred lines between work and personal life.²⁴⁴ Individuals' role segmentation-integration preference (the desired amount of overlap between work and non-work roles) has been debated in the field of organizational psychology long before the age of hyper-connectivity, or even the Internet.²⁴⁵ In the world of work, the discussion tends to be around risks and rewards of mobile work. The individual preferences on segmentation versus integration between work and nonwork have a relevant impact on how individuals perceive blurred boundaries and are discussed in the subchapter on *personality Types*. Sabine Sonnentag's team of organizational health psychologists of the University of Konstanz showed in various studies how a lack of psychological detachment from work in the evening predicted negative activation and fatigue.²⁴⁶ The German national institute for occupational medicine supported a 2013 meta analysis of 23 studies related to life domain balance and potential health risks of increased connectivity. The results indicate that workplace connectivity beyond official office hours statistically correlate with lower job satisfaction (feelings of stress and guilt) and health risks (burnout).²⁴⁷

“Bleisure” and the Workplace Connectivity Dilemma

A 1982 report commissioned by the U.S. National Science Foundation presented the findings of a technology assessment of teletext and videotext in the U.S. The authors predicted a “blurring of lines separating work and home.” The authors stated that, “the person who works at home via an electronic system is not bound by the eight-to-five schedule.”²⁴⁸

Probably the first scholarly source questioning the value of constant connectivity is from psychologist Craig Brod in the early 1980s: “Sam Armacost, the 44-year-old chief executive of the Bank of America, stays in touch with a dozen other top executives of the bank. At Armacost's suggestion, the other senior executives have been trained to run their systems at the office and home. They can ‘talk’ to one another at any time, day or night. Do these executives really find that being constantly on-line has afforded them more free time?”²⁴⁹ In 2002, an experimental study found that connected mobile devices significantly blur the line between work and personal life.²⁵⁰ The authors observed “increased mobility and communication across settings, more work communication in social settings and nonwork hours, and more social communication in work settings and work hours.” Another experimental field study produced similar findings. They tracked twenty-five novice users of a new mobile communication device for a period of three months. The authors discovered that the boundaries between work and personal life have slowly been disappearing, as the participants were able to more easily use mobile communication technology simultaneously for personal and business purposes in both private and work-related con-

²⁴⁴ Middleton, 2007; Gant & Kiesler, 2002

²⁴⁵ Nippert-Eng, 1996; Edwards & Rothbard, 2000; Clark, 2000; Olson-Buchanan & Boswell, 2006

²⁴⁶ Sonnentag & Bayer, 2005; Sonnentag, Binnewies, & Mojza, 2008

²⁴⁷ Pangert & Schüpbach, 2013

²⁴⁸ Desilver, 2014b; Tydeman, Lipinski, Adler, Nyhan, & Zwimpfer, 1982

²⁴⁹ Brod 1984, p. 7

²⁵⁰ Gant & Kiesler, 2002

texts.²⁵¹ A year later, a group of MIT researchers published a study on Blackberry users.²⁵² They found that the possibility of frequently monitoring and responding to email encourages compulsive checking of email and an inability to disengage from work across all users. During the period of observation, implicit expectations of availability and responsiveness emerged among the users. The authors found that wireless email devices provided users with a sense of control, but were likely to increase long-term stress levels. Another study on workplace connectivity found that mobile connected devices used while commuting or traveling bring up the question whether the commute should be considered work and non-work time.²⁵³

“Bleisure”—combining business with leisure—is a term that appeared in business magazines and trend reports when broadband connectivity became available to business travellers.²⁵⁴ In recent years, companies like Microsoft have been pushing these ideas forward because it helps their business. The tagline for their Microsoft Office 365 advertising campaign was “show the world that you can work anywhere.” In 2014, an unusual travel guide was published in Switzerland. It was called “Today’s Office Looks Like This.”²⁵⁵ The guide offers 60 suggestions of non-traditional offices, some moving and some stationary, including trains, beautiful cafés, and cozy libraries all over Switzerland. The book praises modern telecommunications as a means to get things done during normal working hours and still be on the road. A similar initiative is “PopUpOffice,” flexible workplaces to work in different locations across Swiss cities including Wi-Fi, outlets, and inspiration for “digital nomads, road warriors, freelancers, and startups.” For those tired of working out of the same office everyday, it gets even better: “coworkation” is about combining work and a vacation. An alternative travel organization builds communities in exotic locations such as Fiji or Bali to avoid European and American winters.²⁵⁶ In 2014, Microsoft Germany published a “Manifesto for flexible work.”²⁵⁷ The manifesto has striking similarities with a book about “digital bohemians” that was all the rage in 2006. The Berlin-based authors of the intensely debated book, Sascha Lobo and Holm Friebe, belonged to a young creative class in a global city, and praised the lifestyle of intellectuals and artists working wherever they could find a Wi-Fi. They made it clear that they do not dream of a permanent position and 9 to 5 jobs.²⁵⁸ A few years later, the debate in Germany was less about the potential to be free to work anywhere than the risks involved with mobile connected devices as digital leashes that lead to more stress-related diseases in the world of work.²⁵⁹

Nonetheless—and contrary to popular belief—respondents of a large 2014 survey in Germany (N=1,000) reported feeling less pressure to be constantly connected to their workplace than they did to be constantly connected to friends and family (Figure 29).

²⁵¹ Peters & Allouch, 2005

²⁵² Mazmanian, Yates, & Orlikowski, 2006

²⁵³ Richardson, 2009, p. 89

²⁵⁴ Stiftung Produktive Schweiz, 2010

²⁵⁵ Gygax, 2014

²⁵⁶ Jansen, 2015

²⁵⁷ Krempl, 2014

²⁵⁸ Friebe & Lobo, 2006

²⁵⁹ Baumann & Schlandt, 2012

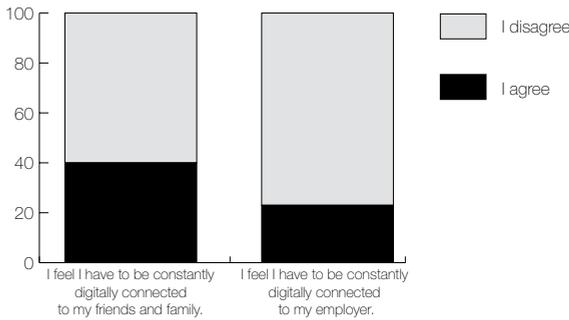


Figure 29 —Need to feel connected to friends and family versus employer²⁶⁰

While in 2014 four in one felt the pressure to be available for friends and family (40%), only about two in ten (23%) say they feel they have to be available for their employer.²⁶¹ Interestingly, the same survey (N=1,050) in 2015 revealed that the numbers of respondents who feel the pressure to be digitally connected had risen—both in terms of friends and family (51%) and employers (29%).²⁶²

Freedom or Leash?

A 2015 survey in the United States about the dilemma of connectivity via smartphones showed that more than two thirds of the respondents perceive the possibility to be connected as freedom while about a third perceives it as leash (Figure 30). About half of the respondents said they could not live without their smartphone while the other half reported that their connected device is not always needed.

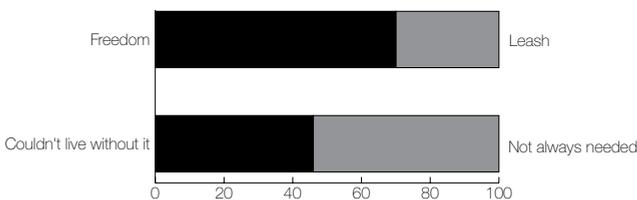


Figure 30 — Dilemma of connectedness – but benefits clearly outweigh disadvantages²⁶³

Interestingly, 82% of smartphone-owning seniors described their phone as freeing, compared with 64% of those ages 18 to 29.²⁶⁴

Hyper-connectivity is a major advantage for many businesses in terms of finding relevant information, getting back to customers, and increasing flexibility for employees. The major Swiss

²⁶⁰ Schwenninger Krankenkasse, 2014, p. 8
²⁶¹ Schwenninger Krankenkasse, 2014, p. 8
²⁶² Schwenninger Krankenkasse, 2015, p. 12–13
²⁶³ Smith, 2015
²⁶⁴ Smith 2015

telecommunications company embodies the dilemma with hyper-connectivity in the world of work (Figure 31). In 2007, Swisscom launched a campaign for “the mobile office.” Part of their business and advertising strategy is to enable customers to be able to complete parental duties while still being available for clients and co-workers. Seven years later, in 2014, the company launched a free app for smartphones (My Time App), which tracks individual detailed information about how frequently the phone is used and how long specific apps such as social media or mobile Internet are used in order to get a better understanding of personal habits. The app also allows users to schedule a period of time during which they do not want to be able to be contacted. During these periods of downtime, calls from specific people still get through.²⁶⁵ This app and similar technological constraints as a response to risks of hyper-connectivity are discussed in the chapter *Responses and Responsibilities*.

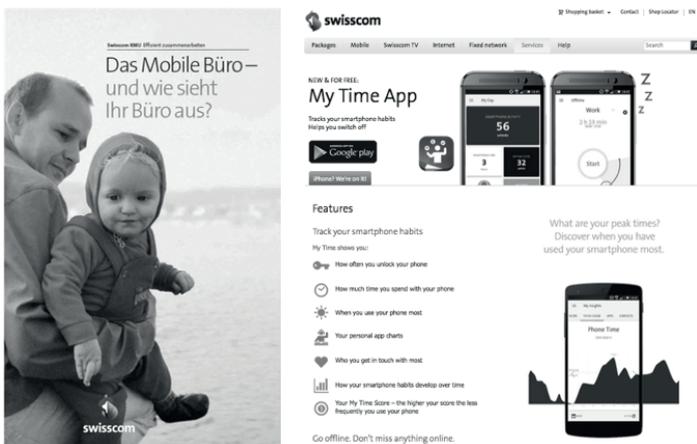


Figure 31 — In 2007, Swisscom advertised the mobile office, in 2014, the company launches an app that helps balance individual connectivity

Balancing Work Hours and Free Time

Work-life balance is a frequently used term in the debate around risks of hyper-connectivity, but at the same time many debate whether the term even makes sense. Those who oppose the term claim that work is very much part of life and positioning work and life as opposites is very problematic. In order to avoid this issue, alternate terms *life balance* and *life domain balance* have been put forward.

A large 2013 survey among employees of Swiss telecommunications companies (telcos) found that 31% reported that they were expected to be contactable even off-duty. 45% said they were rarely or hardly ever expected to be contactable outside of working hours. 21% reported they were never expected to be contactable via email, texts, or phone calls off-duty. The findings demonstrate that for a third of telco employees, being connected to the workplace in their spare

²⁶⁵ The My Time App is powered by the Berlin startup company Offtime whose CEO I interviewed for the ON/OFF study. Also, I was involved in a strategy meeting at Swisscom about being “always on” in summer 2014.

time is common.²⁶⁶ It was not reported how much these employees mind expectations of being contactable. Nevertheless, a representative youth survey in four countries around the world—United States, Brazil, Singapore, and Switzerland—clearly indicate that more than three quarters of 16 to 25 year-olds say in choosing a career or a job they care about balancing working hours and free time (73% in the U.S., 83% in Brazil, 73% in Singapore, and 84% in Switzerland). In fact, according to this large survey (N=4,030), life domain balance was reported to be the most important goal for the future among all respondents—more important than getting a high educational degree, having a successful career, or making a lot of money.²⁶⁷

5. Blurred Lines Between Online & Offline

A number of reports on Internet use find that young users especially do not distinguish between online and offline anymore.²⁶⁸ Still, a small majority of ON/OFF students reported that it is important for them to be offline for a day once in a while (Figure 32). Interestingly, there is a statistically significant correlation between caring about being offline for a day once in a while and caring about clear boundaries between school and leisure.²⁶⁹

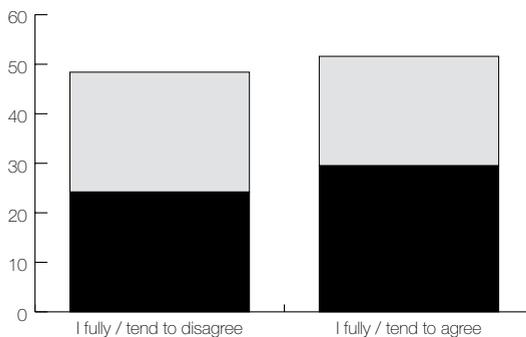


Figure 32 — “It is important for me to be offline for a day once in a while.” (N = 149) — ON/OFF Student Survey

Given rapid technological developments, including the Internet of Things and ever more connected devices and sensors (which tend to be always on), the distinction between being online and offline becomes at least questionable. At the World Economic Forum 2015 in Switzerland, Google’s Eric Schmidt²⁷⁰ predicted the future of the Web, “The Internet will disappear. There will be so many IP addresses, so many devices, sensors, things that you are wearing, things that you are interacting with that you won’t even sense it. It will be part of your presence all the time.” The blurred lines between online and offline are thoroughly discussed in chapter *Beyond Digital Dualism*.

²⁶⁶ Syndicom, 2015, p. 31

²⁶⁷ Golder et al., 2014

²⁶⁸ For example DIVSI & SINUS-Institut, 2013, p. 4–5

²⁶⁹ The original survey item in the ON/OFF Student Survey was “It is important for me to have clear boundaries between school and leisure.”

²⁷⁰ As of 2016, Schmidt is Executive Chairman of Alphabet Inc., Google’s new parent company.

Social Relationships

Mediatization theories claim that the possibility of being always on leads to significant cultural and social changes. A major concern regarding hyper-connectivity is the impact on social relationships.²⁷¹ Are these concerns—also expressed by a number of ON/OFF experts—exaggerated considering the social benefits to be gained? Some of the first technological always-on experiments in the 1990s revealed new ways of social interactions with so-called “cyborgs.”

1. Connected But Lonely Cyborgs?

In the current age, it is not hard to find a group of people silently standing or sitting together, each of them staring at their mobile device. Traditionally, cyborgs blend biology with technology in order to enhance human capabilities.²⁷² “Some people connected to their mobile devices may come closer to the definition of a cyborg than some patients with an implanted prosthesis,” says Enno Park, ON/OFF expert and president of the German Cyborg Association.²⁷³ Going by the definition of the German cyborg association, we have become cyborgs as soon as we extensively use external devices such as smartphones.²⁷⁴ The term cyborg, coined in the 1960s, is experiencing a revival in the smartphone age, while researchers and artists proclaim a new era for humanity: the era of the “homo digitalis.”²⁷⁵

²⁷¹ Turkle, 2011; Turkle, 2015; Vorderer, 2015

²⁷² In 1960, the scientists Manfred Clynes and Nathan Kline coined the term cyborg (Clynes & Kline, 1960).

²⁷³ ON/OFF expert interview with Enno Park in November 2014, Cambridge, MA, USA – Berlin, Germany

²⁷⁴ FAQ | Cyborgs e.V., www.cyborgs.cc, n.d.

²⁷⁵ Markowetz, 2015; Saxberg, 2015; Walser, 2016

For the past three decades, the MIT Media Lab²⁷⁶ has been a major global hub for technological inventions and hacker culture. In the mid-1990s, a group of young researchers at MIT Media Lab had digital displays clipped onto eyeglass frames and they carried computers and radio transmitters in their backpacks and keyboards in their pockets. They were wirelessly connected to the Internet, always online, and they called themselves cyborgs.²⁷⁷ This was some twenty years before the hype around Google Glass and virtual reality. The experience of these early cyborgs involved a “sense of enhancement” (they could look up anything they wanted on the go and felt better prepared for social encounters), and at the same time feelings of diffusion emerged (“they could be with you, but they were always somewhere else as well”).²⁷⁸

In her early work on human interaction with computers in the 1980s and 90s, MIT professor Sherry Turkle published digital-positive analyses in *The Second Self* and *Life on a Screen*. She described how technology is part of our selves and part of the external world, and how the Internet allows us to come in contact with people from across the world and develop virtual relationships. She portrayed a world that is more connected thanks to technology. The global village—a term famously coined by media theorist Marshall McLuhan in the 1960s—has become more real than ever. Turkle offered a positive view of new opportunities exploring identity online.

In her 2011 book *Alone Together* however, Turkle is much more skeptical about the effects of online society than in the first two decades of her research on computer culture. As a psychoanalytically trained psychologist, she is worried about the place of technology in our lives, especially in human relationships. She says, “Technology is seductive when what it offers meets our human vulnerabilities. And as it turns out, we are very vulnerable indeed. We are lonely but fearful of intimacy. Digital connections offer the illusion of companionship without the demands of friendship.”²⁷⁹

A group of German media and communication scholars have collected additional hypotheses of how hyper-connectivity (mainly through messengers and social media) is about to change social relationships:²⁸⁰

- Connectivity replaces spatial proximity
- Superficial instead of deep conversations
- Networks replace friends
- Decreasing willingness to commit
- Social control instead of trust
- Attention replaces appreciation
- Live-coverage instead of narration

Turkle’s book *Alone Together* has sparked a public debate about connectivity and loneliness in many countries.²⁸¹ An Australian study found complicated, but interesting results regarding Facebook use and loneliness: Facebook users had lower levels of “social loneliness” (the sense of not feeling bonded with friends) but significantly higher levels of “family loneliness” (the sense of

²⁷⁶ The MIT Media Lab is an interdisciplinary research laboratory at the Massachusetts Institute of Technology in Cambridge, MA, USA.

²⁷⁷ Turkle, 2011, p. 151

²⁷⁸ Turkle, 2011, p. 152

²⁷⁹ Turkle, 2011, p. 1

²⁸⁰ Vorderer, 2015, p. 5–8

²⁸¹ An enormous amount of magazine and press articles about *Alone Together* were published in Europe and North America and Turkle’s TED talk “Connected, but alone?” from 2012 has been viewed more than 3 million times.

not feeling bonded with family).²⁸² An experimental study asked, “Does posting Facebook status updates increase or decrease loneliness?” The researchers found that experimentally induced increase in status updating activity reduced loneliness due to participants feeling more connected to their friends on a daily basis.²⁸³ Conclusively, the relationship between hyper-connectivity and loneliness is complicated: that the way we connect online has to do with our previous experience of connecting with family members. If we felt lonely within our families, we are more likely to experience an increased sense of loneliness online. But, actively reaching out on social media reduces loneliness.

Need to Be Alone in Order to Be Together

Pictures from decades ago of people in the subway being absorbed by newspapers much in the same way people now are absorbed by their phones are being widely shared on social media in an attempt to combat negative predictions about hyper-connected individuals becoming ever more socially awkward.

In 2012, an Internet phenomenon occurred. A campaign called “Stop Phubbing” went viral. *Phubbing* (*phone + snubbing*) means “the act of snubbing someone in a social situation by looking at a phone instead of paying attention.” Social media users around the globe spread the message to stop looking at your phone instead of paying attention to the person next to you (Figure 33). The term phubbing appeared in mass media around the world. It later turned out that the term was coined for an Australian advertising campaign.

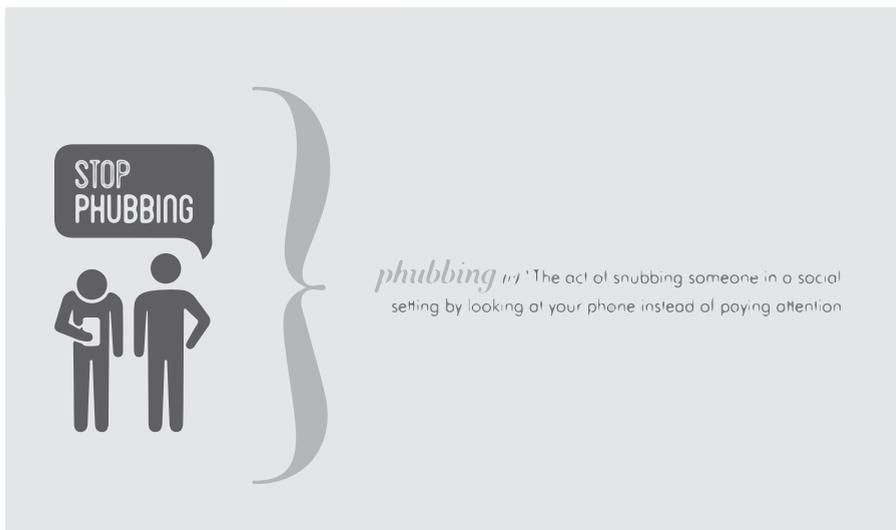


Figure 33 — Element of the Stop Phubbing campaign — <http://stopphubbing.com>

²⁸² Ryan & Xenos, 2011

²⁸³ Deters & Mehl, 2012

There is evidence that the campaign hit a nerve and that it was no coincidence that the “stop phubbing” message was shared millions of times online. A large number of smartphone users in the U.S. report using their phones to avoid others around them. The younger the more likely users tend to “phub” (47% of smartphone-owning 18 to 29-year-olds, 32% of 30 to 49-year-olds, and 15% of smartphone owners older than 50).²⁸⁴ According to a report by the USC Annenberg School, 48% of U.S. Internet users said they feel sometimes or often ignored because another member of the household spends too much time online, and a similar percentage feel ignored due to others watching television. With mobile devices, a much higher percentage (92%) said they have been ignored because a household member spends too much time on a mobile device (Figure 34).²⁸⁵

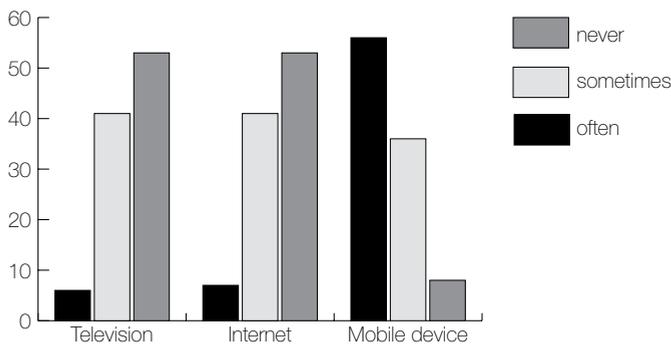


Figure 34 — Do you feel that you are ignored because a household member spends too much time watching television / using the Internet / on a mobile device?²⁸⁶

The same study shows that very large percentages of users said that Internet use has either no effect or a positive effect on their contact with key people in their lives, such as family, friends, and people who share their interests. Only about 5% of users said Internet use somewhat decreased or greatly decreased contact with their family; the same percentage said that Internet use somewhat decreased or greatly decreased their contact with friends.²⁸⁷ A major paradox arises about digitally mediated social connection: we need solitude in order to connect, or we need to (temporarily) neglect those physically around us to offer our attention to those absent. Turkle notes that, “being alone can start to seem like a precondition for being together because it is easier to communicate if you can focus, without interruption, on your screen.”²⁸⁸ She asks, “What is a place if those who are physically present have their attention on the absent?”²⁸⁹

²⁸⁴ Smith, 2015

²⁸⁵ Lebo, 2013, p. 111

²⁸⁶ Lebo, 2013, p. 111

²⁸⁷ Lebo, 2013, p. 112

²⁸⁸ Turkle, 2011, p. 155

²⁸⁹ Turkle, 2011, p. 155–156

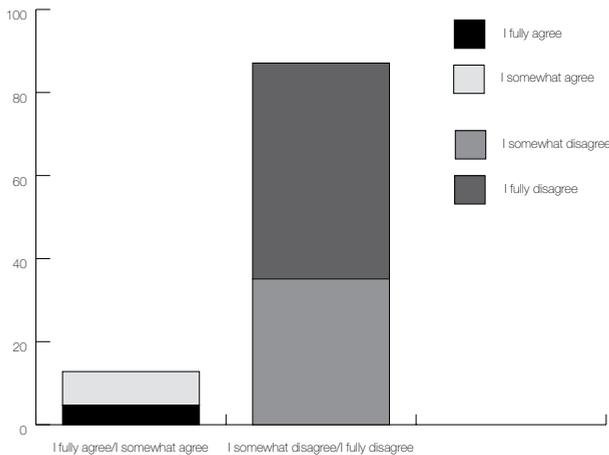


Figure 35 — “I think it is appropriate to go online during a conversation.” — ON/OFF Student Survey (N=148)

However, a large majority of young people seems to recognize that in a social situation like a conversation, actively using the Internet is not appropriate. According to the ON/OFF Student Survey, 87% reported thinking it was inappropriate “to go online during a conversation.” (Figure 35).

2. What Do We Get Out of Digital Social Connections?

Questions about why users turn to media, and what kind of media fulfills what type of need, have been at the center of media research applying the *Uses and Gratifications Approach*. According to this approach, users actively turn to media in order to satisfy their needs such as enhancing knowledge, mood management, relaxation, social interactions, or escape. ON/OFF expert and pediatrician Claire McCarthy says regarding the social rewards of connectivity, “For a lot of youth, the possibility of connection with community, especially for youth who are otherwise isolated for physical or social reasons, that can be a great thing.”²⁹⁰

A multi-method study showed that, “Facebook is about having fun and knowing about the social activities occurring in one’s social network, whereas instant messaging [for example, WhatsApp] is geared more toward relationship maintenance and development.”²⁹¹ Louis Leung’s study examined the roles played by seeking gratifications in content generation on social media. He found that generating content on social media was satisfying five psychosocial needs: showing affection, venting negative feelings, gaining recognition, getting entertainment, and fulfilling cognitive needs. The study revealed that depending on expected gratifications, users turn to various kinds of digital media for content creation online: people who used social media to meet their social needs and their need for affection tend to use Facebook and blogs, users wanting to air out

²⁹⁰ ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

²⁹¹ Quan-Haase & Young, 2010

discontent often turn to online forums. No generational differences were found in using Facebook and blogs as a means to satisfy social needs or the need for affection.²⁹²

In order to understand hyper-connectivity behavior, it seems important to note that sharing content such as pictures or status updates in online communities or via messengers actually fulfills social, affection, and reputation-building needs. Neuroscientific research has been able to show that individual sensitivity to receiving gains in reputation is linked to social media behavior. During a Berlin-based study, participants received gains in reputation, observed the gains in reputation of another person, or received monetary reward while the research team recorded functional neuroimaging data. Later on, Facebook behavior was compared to this data and it was found that sensitivity to receiving gains in reputation can predict Facebook activity: The more participants were sensitive to gain reputation in general, the more they turned out to be active on Facebook.²⁹³

Social Comparison

Much has been written about how social media platforms (such as Facebook, Twitter, or Instagram) may cause feelings of envy or even depression because when browsing social media newsfeeds, we tend to compare our life with other people's posts.²⁹⁴ Probably the best theory to explain this social and psychological phenomenon is Leon Festinger's *Social Comparison Theory*. It describes "the process through which people come to know themselves by evaluating their own attitudes, abilities and beliefs in comparison with others."²⁹⁵ A recent German study based on a sample of American students (N=207) and a sample of German students (N=194) revealed that while browsing Facebook, positive emotions are more prevalent than negative emotions. Also, the researchers analyzed the role of strong and weak ties as an intervening variable. They found that users tend to be happier when a positive post is from another user with whom they have a strong tie rather than a weak tie. Likewise, users experience more benign envy when seeing posts from strong ties. However, the experience of malicious envy was found to be independent of tie strength.

Should Facebook be renamed Fakebook? The recent debate pointed out that posts on social media have a strong positive bias and misrepresent users' authentic selves. People post about their happy rather than their unhappy moments in a strategic act of self-representation, a study shows.²⁹⁶ Among teen social media users in the U.S., four in ten report feeling pressure to post only content that makes them look good to others.²⁹⁷

There is speculation on how this increases pressure on young people's psychological health and body image. A 2015 Swiss study (N=371) shows that more than half of the surveyed 13- to 18-year olds say their body image is not affected by social media. About 40%—more girls than boys—say pictures on social media have an impact on them. The less teens are affected by media influences, the healthier their body image and the better their psychological health.²⁹⁸

²⁹² Leung, 2013

²⁹³ Meshi et al., 2013

²⁹⁴ For example Konnikova, 2013; O'Keeffe & Clarke-Pearson, 2011

²⁹⁵ Festinger, 1954

²⁹⁶ Uski & Lampinen, 2014

²⁹⁷ Lenhart, 2015b

²⁹⁸ Schär & Weber, 2015

Parent-Children Relationships

Rather emotional debates have been sparked around connected devices, families, and parenting in a number of countries. There is no conclusive evidence that screens and connected devices are harmful. But the concerns are diverse: from a transformation of family relationships to a reduced attention span, screen addiction, an early exposure to adult material to a rise in ADHD in children.²⁹⁹

Renowned French psychiatrist Serge Tisseron published an influential piece that states that kids should not be exposed to screens before the age of three. When Tisseron first developed this rule of thumb, he was talking about TV screens. An experimental study was able to show that fast-paced cartoons (like *Sponge Bob*) significantly impaired children's executive function (for example cognitive skills, memory, problem solving) compared with children who were assigned a drawing task and those who watched educational television.³⁰⁰ Currently, it is being debated if touchscreens should be included in Tisseron's rule, or whether it is mainly about fast-moving images from TV content (no matter on which device). Internet addiction expert Kimberly Young also recommends no screens before age three. Researchers at Boston University School of Medicine warned that using mobile devices such as smartphones or tablets "to divert a child's attention could be detrimental to their social-emotional development." The scientists asked, "If these devices become the predominant method to calm and distract young children, will they be able to develop their own internal mechanisms of self-regulation?"³⁰¹

The American Academy of Pediatrics (AAP) has a policy statement saying that children younger than two years old should not be exposed to screens at all. ON/OFF expert and pediatrician Claire McCarthy says, "The AAP 2-year-rule is controversial. We need to rethink the rule because it was developed before iPads. While the best activity for a preschooler is to interact with a person, some things you can do on an iPad are probably preferable to other toys. If you have an interactive game on a tablet and you have an adult do it with them, then that is probably preferable to some of the non-screen things you might do."³⁰² Another similar rule, the 3-6-9-12 rule, claims toddlers before age three should not be exposed to screens, especially TV screens. This rule of thumb, promoted by the Swiss government program Youth and Media, has been controversial even among experts.³⁰³ So, why have these rules at all? Does it not always depend on the specific child and the context? McCarthy says, "It makes things simpler to have hard and fast rules. And simplicity is highly appealing but when it comes to the digital space and the devices if you're going to do it well, you really need to individualize the situation and to the child. Content and context are so much more important than having a device or not having a device and those are tougher conversations to have."³⁰⁴ An ON/OFF supervised study about the practicability of these various rules of thumb showed that more than half of the 20 parents of 40 children who were interviewed said the rules were a useful parenting guideline. However, the study recommended after interviewing psychiatrist Tisseron that "no screens before age three" should be updated to "no TV before age three."³⁰⁵

²⁹⁹ Brody, 2015; Ruston, 2016; Steiner-Adair & Barker, 2013

³⁰⁰ Christakis, 2011

³⁰¹ Walters, 2015

³⁰² ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

³⁰³ Schärer, 2013

³⁰⁴ ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

³⁰⁵ Meister & Stocker Nebel, 2014

Hyper-connected devices are of less concern for the development of young children than fast-paced images on TV (although of course a lot of TV content is being consumed on mobile devices). However, there may be other issues with hyper-connected devices; for example, the U.S. Federal Trade Commission addressed privacy issues with mobile apps for children. A large number of apps disclosed data without parents knowing about it³⁰⁶ (see chapter *Privacy*).

Contrary to popular belief, it is often not the children who urge their parents to get them a mobile device. According to the representative KIM study 2014, about one in three German children age 6 to 7 reported they got a cellphone because it was their wish. Another third said their parents wanted them to get a cellphone, and the rest report it was a common decision. The most common motive for parents to want their kids to own a mobile device is so they can locate kids in case of emergency. A majority of parents cares about transparent costs, simple usability, low radiation, and parental restrictions. The older the kids, the more they personally wanted to possess a mobile device. By age 12 and 13, 83% own a cellphone (55% own a smartphone).³⁰⁷ In adolescence, mobile devices seem to complicate parent-children relationships. “Parents want their children to answer their phones, but adolescents need to separate,” says MIT psychologist Turkle.³⁰⁸ “Teenagers argue that they should be allowed time when they are not ‘on call’. Parents say that they, too, feel trapped. If you know your child is carrying a cell phone, it is frightening to call or text and get no response.”³⁰⁹ Then again, a survey showed that one in three parents admits that their children have complained to them about their own excessive smartphone use, and one in five parents have lost sight of their child because they, the parents, were busy with a smartphone.³¹⁰

The debate around the Internet and parenting tends to be about how parenting can help teens avoid risks online, and specifically on social media platforms. But interestingly, a 2015 survey showed that 75% of parents on Facebook log on daily, that 59% of social-media-using parents say that they have come across useful information specifically about parenting.³¹¹ Social media use is not just a concern for parents of teenagers, but also obviously a resource for parenting advice.

Fear of Missing Out (FoMO)

In developmental psychology, identity building and becoming autonomous are considered of significant importance during the adolescent period. Identity building is highly connected to a sense of belonging to social groups, which generally leads to a strong peer orientation in adolescence. According to Turkle, adolescent autonomy is not just about separation from parents. Adolescents also need to separate from each other. She argues that hyper-connectivity does not exactly make this easier. Turkle says, regarding adolescents, autonomy, and hyper-connectivity, “They experience friendships as both sustaining and constraining. Connectivity brings complications. Online life provides plenty of room for individual experimentation, but it can be hard to escape from new group demands. It is common for friends to expect that their friends will stay availa-

³⁰⁶ Federal Trade Commission, 2012

³⁰⁷ Feierabend, Plankenhorn, & Rathgeb, 2014b, p. 45–46

³⁰⁸ Turkle, 2011, p. 137

³⁰⁹ Turkle, 2011, p. 174

³¹⁰ Orange, 2013

³¹¹ Duggan, Lenhart, Lampe, & Ellison, 2015

ble—a technology-enabled social contract demands continual peer presence. And the tethered self becomes accustomed to its support.”³¹²

Roman, 18 years old, admits that he uses his phone while driving because, “If I get a Facebook message or something posted on my wall ... I have to see it. I have to.”³¹³ What Roman experiences has been named “fear of missing out” (FoMO). Psychologists have defined it as the “pervasive apprehension that others might be having rewarding experiences from which one is absent, FoMO is characterized by the desire to stay continually connected with what others are doing.”³¹⁴ FoMO probably is an important driver for hyper-connectivity behavior: a desire to be connected with what friends are doing, and ultimately the very human wish to belong.

In the ON/OFF student survey, I used two FoMO items: “I get nervous if I don’t know what my friends are up to.” / “Sometimes I wonder if I spend too much time thinking about what is going on.” I hypothesized that there may be a link between FoMO and social insecurities such as finding it hard to say no. The findings in the ON/OFF data: 38% among the students find it hard to say no. 7% say they tend to get nervous if they don’t know what their friends are up to. 40% sometimes wonder if they spend too much time thinking about what is going on (females are significantly more likely to wonder: 49% females versus 28% males). Interestingly, previous FoMO research found that young males with high levels of social media usage and low levels of general life satisfaction were more likely to experience FoMO.³¹⁵ In the ON/OFF data there was indeed a significant correlation between experiencing social pressure (finding it hard to say no) and experiencing FoMO.

Additional findings based on the ON/OFF data indicate that those experiencing FoMO are significantly (correlation is significant at the 0.01 level) more likely to:

- feel distracted by hyper-connectivity,
- use a cellphone messenger,
- find it hard to resist temptations,
- worry about information overload.

In the ON/OFF adult sample, 30% reported that they sometimes wonder if they spend too much time thinking about what is going on (versus 40% in the student sample). Only 5% say they get nervous if they don’t know what their friends are up to (versus 7% in the student sample). There are no substantial generational differences in the ON/OFF data regarding FoMO.

Conclusively, the ON/OFF data indicates that individual resilience to social pressure and temptations decreases the feelings of distraction and overload caused by hyper-connectivity. Also, using a cellphone messenger like WhatsApp increases the level of FoMO.

Social Pressure and Phantom Ringing

It is a paradox that the more connected we are, the more social pressure arises from being connected. In a representative survey for the Swiss population older than 16 years (N=1,000), 85% agreed with the statement, “Mobile communication technology leads to the expectation that eve-

³¹² Turkle, 2011, p. 174–175

³¹³ Turkle, 2011, p. 171

³¹⁴ Przybylski, Murayama, DeHaan, & Gladwell, 2013

³¹⁵ Przybylski et al., 2013

ryone has to be always connected.”³¹⁶ The simple fact, that it is possible to be always on, makes it a lot harder to disconnect. What would we say to a loved one who could not to reach us in case of emergency?

“Phantom ringing” or “phantom vibration” is a phenomenon related to one’s mobile device ringing or vibrating when in fact it is not. Among the ON/OFF students (N=151), 22% report that they experience phantom ringing often or quite often. In the ON/OFF Adult Survey (N=148), 21% reported experiencing phantom ringing often or quite often. Consequently, the ON/OFF data does not indicate a generational divide. There may be a large difference between phantom ringing and phantom vibration. A U.S. study found a much higher percentage in their sample experiencing phantom vibrations regularly: 89% among American college students (N=290) had experienced phantom vibrations, on average about once every two weeks.³¹⁷

The ON/OFF survey data shows that the experience of “phantom ringing” is statistically linked to a tendency towards compulsive cellphone checking. Statistical correlations have been found between phantom ringing and looking at the mobile device in class (despite a ban on cellphone use in class) and checking messages immediately. There are no significant gender differences in experiencing “phantom ringing.”

The ON/OFF findings suggest there is a link between individual resilience towards social pressure and hyper-connectivity. Individuals who are more susceptible to social pressure (those who experience elevated levels of FoMO and find it hard to say no) also tend to have a more compulsive connectivity behavior (checking messages immediately or in situations they are not supposed to do so). As a consequence they tend to feel more distracted and worry more about information overload.

3. Mobile Devices in Social Settings

Hyper-connectivity leads to mobile devices being present in many social situations such as conversations, meals, or meetings. Whether or not mobile devices are socially acceptable in social situations depends on context (e.g. work or private setting, someone expecting an urgent message), culture (corporate, organizational, or family culture), or even national or regional culture; and as it turns out, also on generations and personality. In short, there are important intersections with the aspects described in chapter *Digital Connections & Digital Divides*.

In a large study about mobile devices conducted by the USC Annenberg School for Communication and Journalism found that many Americans say that using a cellphone—or even its presence—in a social situation like a meal, a meeting, or in the classroom is not appropriate. 52% of the respondents said putting a cellphone on the table during a meeting is inappropriate, 76% said it was not appropriate during a meeting to check email, send texts (79%), browse the web (81%). Younger respondents were more tolerant of cellphones at a meal, during a meeting, and in class. A large generational gap was found: 50% of the respondents born after 1982 said they think it is appropriate to text during a meal, compared to only 15% of those 30 and older in 2012.³¹⁸

³¹⁶ Bieri et al., 2015, p. 27

³¹⁷ Drouin, Kaiser, & Miller, 2012

³¹⁸ Center for the Digital Future, 2013

Comparing these numbers to the smaller sample in the ON/OFF Student Survey, Swiss students were equally divided when it comes to putting a mobile device on the table during a meal. A small majority of Swiss students (53%) reported not thinking a cellphone on the table during a meal was appropriate. Similarly, among their American counterparts about half (52%) felt it was appropriate and half found it inappropriate.

Roughly three quarters of Americans say it is not okay to text or surf during a meal, but only 50% of Americans born after 1982 said it was inappropriate. Interestingly, among Swiss Millennials³¹⁹ the percentage saying it is inappropriate is 75% (Figure 36). American Millennials seem to be a lot more tolerant of others actively using a connected device during a meal with others than Swiss Millennials. Among the ON/OFF students, there were no statistically significant differences in school type or gender. Remarkably, in the ON/OFF adult sample, 77% said using the Internet during a meal was inappropriate, which is an almost identical number as among the younger sample. Consequently, there is no generational divide in the Swiss data—unlike in the American data, which seems to indicate a significant cultural divide.

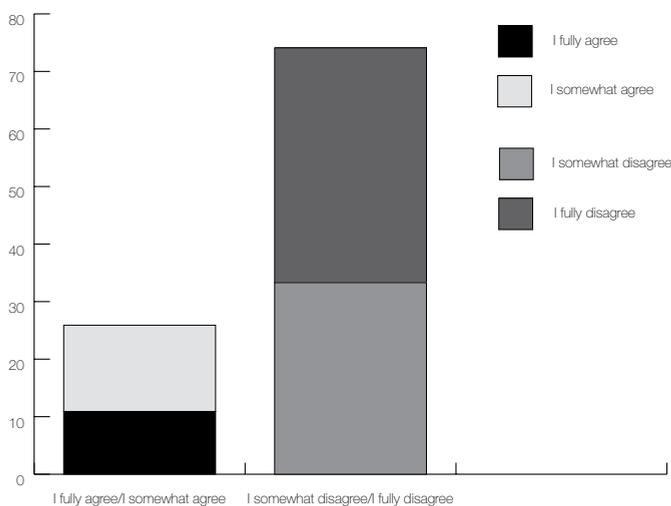


Figure 36 — “I think texting or surfing during a meal is appropriate.” — ON/OFF Student Survey (N=147)

The ON/OFF Global Expert Survey revealed the clear pattern that on an international level, having a device on the table during a meal is much more appropriate than using it to browse the Internet or text.

More than half of the experts agreed that having a device on the table during a meal is appropriate in their country, while only about a third said texting or surfing during a meal was appropriate in their respective countries. However, among ON/OFF experts from the same country, there were some contradictory estimates of social norms and values.

³¹⁹ Millennial is not a precise term. It usually applies to the generation born between 1980 and 2000.

In summary, about three quarters of both ON/OFF surveyed students and adults in Switzerland say it is not appropriate to actively use a mobile device during a meal. In the U.S., among adults it is roughly the same percentage, but among millennials it is only about half. A clear majority among the ON/OFF global experts said it was inappropriate in their respective countries. Focusing on generational and cultural divides and using larger international samples than currently available, further research is likely to find interesting results about social norms and values around hyper-connectivity in social settings such as meals.

4. Disconnected Subcultures: The Amish & Mennonites

In the context of hyper-connectivity and social relationships, the American Amish and Mennonites—the two most prominent groups within the Anabaptist movement—offer an interesting and rather extreme example of a group that is still largely offline for cultural and religious reasons in a country that is the leader in Internet innovation. The Amish, more than any other conservative group in the Western world, have tried to domesticate technology so that it does not overwhelm their culture. They also offer an example of one group’s deliberate attempts to modulate the pervasive power of technology to shape the character of individual and communal life.

Although the Amish are a small group of contemporary American society, they are among its most recognized groups.³²⁰ American popular culture refers to the Amish in cartoons and late-night talk shows. In the 1950s, a popular Broadway musical helped generate Amish tourism and in 1985, Paramount Pictures’ film “Witness” boosted popular interest in the Amish.³²¹ In the present day, television shows like “Breaking Amish”—a reality TV show about four young Amish people and one Mennonite who move to New York City—air in the U.S. and in European countries like Germany.

Today, the largest groups of Mennonites are found in the United States and Canada. Mennonites are Protestants and descendants of the evangelical Anabaptists of the 16th century. The founder of the Anabaptists was Konrad Grebel, who was a disciple of the Swiss reformer Ulrich Zwingli. Grebel gradually withdrew from Zwingli. In 1525, he formally launched the Anabaptist movement in Zurich, Switzerland, and taught that Christians must abstain from military, the constabulary, and magistracy. The Swiss authorities regarded the Anabaptist movement as a heresy and severely prosecuted Anabaptists (Figure 37). Several thousand Swiss and Dutch Mennonites, wishing to escape persecution and poverty in Europe, went to eastern Pennsylvania before the Revolutionary War.³²²

³²⁰ Kraybill, Johnson-Weiner, & Nolt, 2013, pp. ix

³²¹ Kraybill, Johnson-Weiner, & Nolt, 2013, pp. 424

³²² Wenger, 2004, Vol. 18, pp. 695

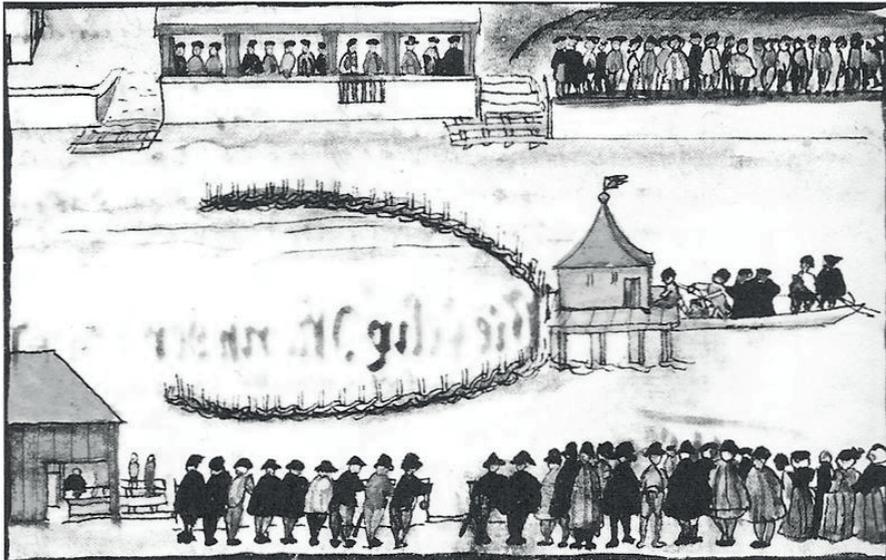


Figure 37 — Anabaptist Felix Manz is drowned in Zurich's river Limmat in 1527. (Picture from the 17th century, Wikimedia)

The Amish were founded under the leadership of Jakob Ammann, a Swiss Mennonite bishop who broke away from the less conservative Mennonites at the end of the 17th century. As a result of the general persecution of the Mennonites, most Amish people fled from Europe to North America. There are now virtually no Amish communities in Europe. In the United States there are records of the Amish in Pennsylvania as early as 1727, and the largest concentrations today are in Lancaster County, PA. They are the most recognized anti-modern Anabaptist group, and number about 250,000. The Amish people are noted for their uniformity of dress and for the self-sufficiency of their communities. The women wear simple dresses, bonnets, and shawls, and the men wear traditionally cut pants and hats and do not shave their beards. The Amish live chiefly by farming. The most conservative, called the Old Order Amish, avoid any use of electricity or automobiles. The Amish church districts are self-contained and self-governing. Although they pay taxes, they do not participate in federal social security programs. Amish children attend public elementary schools but no high schools.³²³

Royden Loewen, ON/OFF expert and professor of Mennonite Studies at the Canadian University of Winnipeg, says many Mennonites and Amish people do without the conveniences of modern technology because they're trying to adhere to a strict code of simplicity that is based on original biblical teachings. Their basic principles are simplicity, humility, and community.³²⁴ Professor Loewen underlines that "Mennonite" can be defined in a very wide variety of ways. "To begin with, in Canada, we have 5,000 horse-and-buggy Mennonites, but we have 3,000 members of the Mennonite gay community. And they recite the same scripture passages about not being conformist to the ways of this world. There are a thousand shades of grey."³²⁵ Mennonites organize from the bottom up, which is why there has always been debate around tech-

³²³ Encyclopedia Americana, 2004, Vol. 1, pp. 744

³²⁴ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

³²⁵ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

nology adoption. In the United States and in Canada, there is a group called Old-Order Mennonites. They are separated internally, but from the outside they are very much like the Amish. When asked if these Mennonites use the Internet, Roy Loewen says, “No. What has become problematic here is that there has been probation against the telephone, which is easy to enforce until the cellphone comes along. You are not supposed to use the cellphone but there is no way of enforcing it. So there is lots of ‘don’t ask, don’t tell’ here. If you use it surreptitiously, nobody is going to bother you (do it behind the barn or do it in the city and so on). An unwritten rule is, if you try to hide it if somebody finds out, it is okay.”³²⁶

When I ask professor Loewen about an Amish man who sells computers he says, “it has been determined by his particular brotherhood that the computers that he sells will benefit the community and not the individual.” We talk about less strict Mennonite communities and a Mennonite girl I met in Harvard Square who said she uses the Internet but not Facebook. Loewen says these communities are “in between,” they drive cars and think certain things online are okay and others are not. “Facebook is too narcissistic, it is showing off and it is not about humility. Humility is a big thing there too. So it is gossipy and you shouldn’t gossip. They are really concerned about leisure and entertainment. Some of these in-between communities will not own a television or will not go to the movies but they might use the Internet for work. They will say if you are an accountant, you need the Internet to check on government regulations or if you own a business you will need the Internet to order parts. The in-between groups have these conditional uses for computers.”³²⁷ For his research, Loewen is in touch with Old-Order Mennonites in Bolivia—via email. He says, “They have an email account but they do not have Internet in their colony. It is okay to go to town for business, and town is often two or three hours away. So my contact right next to the Argentine border, he goes to the city and he goes to a café. So he uses email once a month. If he doesn’t talk about it, he won’t get in trouble for it.”³²⁸

The common assumption that the Amish and Mennonites generally reject technology and are completely offline is not true. Many groups of traditional Mennonites drive cars and use electricity but restrict television and online access. Two Anabaptist Brethren groups—which are easily confused with the Amish because of similar clothing and beards—drive cars, use electricity, and permit higher education and use of the Internet.³²⁹ The Amish have a culture of separation from the world, which is challenged by the Internet and mobile devices. The authors of the scholarly book *The Amish* ask, “What does separation from the world look like when you can hold the world in your pocket?”³³⁰ For the Amish, technology is not sinful or immoral per se (unlike a knife, which can cut a beard or kill someone). Their fear is that a particular technology will alter bonds of community over time, and they fear that possessions will become the master and humans the servants.³³¹ The analogy of master and servant indeed gets used outside of these particular communities for mobile devices. For example, the headline of an article about hyper-connected individuals in the *New York Times* asks, “Who is the boss, you or your gadget?”³³²

What the popular news articles on the Amish, Mennonites, and other Anabaptist groups and the Internet seem to get wrong is that it is not so much about technology itself than about

³²⁶ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

³²⁷ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

³²⁸ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

³²⁹ Kraybill et al., 2013, p. 421

³³⁰ Kraybill et al., 2013, p. 409

³³¹ Kraybill et al., 2013, p. 314

³³² Meece, 2011

the community. Also, the popular portrait of the Anabaptist movement today largely focuses on the Amish, who are just the most famous and most recognizable group within a large community that has many different approaches to communication technologies—as long as the community benefits. Loewen summarizes, “All of these groups would essentially agree on this: if there is a technological innovation that you would make and allow for, it must be demonstrated to benefit the group rather than the individual.”³³³

ON/OFF expert and American high-school teacher Steve Jordan, who regularly organizes a technology week with his students, says about the Amish, “Everyone thinks that they are opposed to technology but they are not. They just take every new element of technology, figure out, is it going to make our lives better or not, and then make a decision. We never do that. So we just plunge headlong into whatever this brave new world is.”³³⁴ While most of us in the Western world would not want to limit ourselves regarding online connectivity and technology, the Amish and Mennonites at least may inspire and raise interesting questions about assuring technology serves people’s larger goals.

³³³ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA–Winnipeg, Canada

³³⁴ ON/OFF expert interview with Steve Jordan in January 2015 in Somerville, MA, USA

Health

The effects of hyper-connectivity on health are a major topic of this study. Research on mobile communication and health tends to focus on a single aspect and is either risk- or reward-oriented but seldom both. This chapter tackles the effects of hyper-connectivity on health while taking into account both risks and rewards. Surveys show that for a majority of people, the benefits largely outweigh the potential risks.³³⁵ However, the public debate tends to focus on risks like Internet addiction and burnout. This is largely due to the fact that for mass media—according to the theory of news values—negativity is one of the driving factors of “newsworthiness” (bad news is more newsworthy than good news).³³⁶ Some of the most discussed health considerations regarding constant connectivity are medical benefits from using sensors to collect data on body functioning and either sending the information to doctors or incorporating it into Big Data sets that give insight on illnesses and medical prevention strategies.³³⁷ On the risk side, the debate focuses on Internet addiction and information overload, which can lead to stress symptoms such as high blood pressure, or as some argue, even burnout. Some concerns are related to traffic accidents, sleep, or radiation. This chapter starts with health benefits and resilience and continues with health risks of hyper-connectivity related among others to sleep, traffic accidents, burnout, information overload, and addiction.

1. Health Benefits & Resilience

A substantial increase in health benefits is expected to stem from Big Data analysis (see subchapter *Big Data and Internet of Things*). The quantified-self movement especially has been pointing out various benefits of using wearable devices for health purposes. Wearables—for example wrist-

³³⁵ Schwenninger Krankenkasse, 2014, p. 10; Schwenninger Krankenkasse, 2015, p. 18

³³⁶ Golding & Elliot, 2000, p. 636f

³³⁷ Mayer-Schönberger & Cukier, 2013; Shah & Pathak, 2014

bands, smart watches, smart glasses—can be used to collect data about one's body functions or its surroundings. While most of them are not directly connected to the web, they tend to be always on. They contain sensors or chips, which in combination with a smartphone or another connected device, share the collected data with a specific software. Medical doctors, personal trainers, or other health professionals may access some of the collected data online in order to monitor the users' health. Many users of the popular wearable fitness tracking devices like wristbands use their data in order to increase their performance for marathons or similar physical challenges. Typical data acquired through wearable devices include heart rate, calories burned, steps taken, sleep quality, eating habits, and body temperature. Because researchers see big applications for that type of data in public health, a research institute in California launched a Health Data Exploration project in 2013.³³⁸ After an earthquake hit California in summer 2014, a fitness tracker company released very specific data about when and where people wearing a wristband woke up and how many stayed up all night versus those who went back to sleep. Aggregated health data about eating and exercise habits for public health purposes are an exciting perspective for many researchers and health professionals. However, wearable devices have already been called “a privacy nightmare”³³⁹ (see chapter *Privacy*).

Hospitals are starting to combine various data sources such as laboratory results, nursing notes, patient family history, diagnoses, and possibly data collected by always-on wearable health trackers. Efficient assessment of patients at risk could mean the difference between timely intervention and a missed window for treatment.³⁴⁰ Furthermore, hyper-connectivity through mobile devices enables therapists to help mentally ill patients using apps or therapy sessions on the go. Especially for remote areas, telepsychiatry has been praised as having the potential to alleviate the shortage in psychiatric care for children and adolescents.³⁴¹ Another opportunity for hyper-connected technologies in healthcare is giving reminders to take certain pills that especially older patients may be likely to forget. Given that 82% of smartphone-owning seniors described their phone as freeing³⁴² (many more than the younger generations), it is safe to assume that for older people being hyper-connected makes them feel safer on the go because they may get help faster and more easily in case of a medical emergency, for example. Connectivity reduces anxiety in potentially dangerous situations like walking home in the dark or finding help quickly in an emergency.³⁴³ Similarly, nonassertive personality types seem to feel safer being connected because they feel they could get support anytime.³⁴⁴

Resilience

Research suggests that psychological resilience is key to mental health in general, and to a healthy media usage behavior in particular.³⁴⁵ Instead of focusing on negative effects of Internet use, the resilience approach is about fostering positive psychological qualities. But what is resilience anyway? Internal and external protective factors are associated with resilience. Internal factors are

³³⁸ Health Data Exploration project, 2014

³³⁹ Dewey, 2014

³⁴⁰ Shah & Pathak, 2014

³⁴¹ Paing et al., 2009

³⁴² Smith, 2015

³⁴³ Döring, 2008, p. 228f

³⁴⁴ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

³⁴⁵ Süß, 2012; Genner, 2014

those within the individual (e.g. impulse control, social problem solving, ability to form positive relationships with others). External factors include families, schools, or corporate culture and how they set clear boundaries, encourage supportive and caring relationships with others, and foster values of altruism and cooperation.³⁴⁶ Resilient individuals:

- are optimistic, have high self-esteem, are aware that they are important
- build on their success and maintain a constructive attitude towards mistakes; consider them challenges
- have a good problem-solving ability and experience
- focus on what they can change in their own lives and not on what is immutable
- know their strengths and their weaknesses
- have confidence in their own abilities
- can set realistic and achievable goals
- are able to empathize with other people
- know effective ways to resolve conflicts
- have good communication skills
- feel responsible for their actions
- can assess the impact of their behavior on others.³⁴⁷

Healthy Balance

A modern approach to media psychology is based on the findings of positive psychology—a field that focuses on what makes humans mentally fit instead of focusing on pathologies. From this perspective, media literacy is about using media for the purpose of information, communication, and entertainment while avoiding negative side effects. It refers to the abilities to actively choose media content, use it creatively, and examine it critically. According to media psychologist Daniel Süß, there is even more to media literacy: Under what circumstances can we be thrilled about media use without developing a behavioral addiction? What moral values do we need to be resilient with regard to violent or pornographic material? Are we able to transfer our communicative skills from face-to-face communication to digital communication such as social media?³⁴⁸ Regarding social media use, communications researcher Eliane Bucher suggests that we reevaluate what it means to be truly literate. According to her research, literacy is both about being “able to actively engage in the conversation with various audiences and at the same time be[ing] able to mentally and physiologically cope with the stressors inherent in this fast changing, information rich and ever-busy communication environment in a sustainable manner.”³⁴⁹

Life balance in a media-saturated society according to Süß is about finding an equilibrium between enjoying media activities and critically examining them, but also about between face-to-face and mediated communication. He argues that it is helpful to answer the following questions about our media use:

- What kind of media content do we choose?
- What are our motives to use specific media?
- Who do we share these (media) experiences with?

³⁴⁶ Taub & Pearrow, 2012, p. 372

³⁴⁷ Brooks & Goldstein, 2001; Goldstein & Brooks, 2012

³⁴⁸ Süß, 2012, p. 220

³⁴⁹ Bucher, 2013, p. 199

- How do we process experiences with media?
- Why do we favor certain media activities over other activities?³⁵⁰

For a healthy balance, the questions of *why* we use media and *what kind of media activities* we engage in seems to matter even more than the amount of time spent with media.

2. Sleep

Are connected devices causing us to sleep less? How important is sleeping? “We don’t really know what sleep does,” says Steven W. Lockley who specializes in sleep research at Harvard Medical School in the ON/OFF interview. “But we know that if you don’t sleep you become both physically and mentally ill quickly, and animals will die of sleep deprivation at about the same rate as starvation. We should be having young adults trying to get 8 to 9 hours’ sleep a night, older people probably 7 to 8 hours.”³⁵¹ Sleep plays an important role in forming and storing memory, in immune function, metabolism, and other vital functions. Lack of sleep affects mood, motivation, judgment, and perception.³⁵² How and when we sleep is controlled in part by the 24-hour circadian clock, generated by cells in the suprachiasmatic nuclei of the hypothalamus. Its natural rhythm is slightly longer than 24 hours, on average, and so its timing is reset each day by environmental cues, primarily the 24-hour dark/light cycle. Changes in dark-light exposure can disrupt the clock and the rhythms it controls, such as sleep, performance and mood, as is the case with, for example, jet lag and shiftwork.³⁵³

Various studies estimate that 30, 50, or 100 years ago, we got more sleep than nowadays. U.S. Gallup polls show, Americans currently average 7 hours of sleep at night, down more than an hour from 70 years ago.³⁵⁴ A recent representative Swiss survey revealed an average sleep duration of 7.5 hours on workdays, more than half an hour less than 30 years ago.³⁵⁵ Lockley confirms, “It is probably true that we are sleeping less than 30 years ago, but probably still better than we did 200 years ago. The idea that we somehow slept better a century or more ago is difficult [to defend]. The conditions for sleeping were very different—many people slept in the same bed or room, sanitary conditions were not the same, they did not have mattress toppers, special pillows, cool sheets and seasonal comforters, it was often too hot or cold etc.” According to Lockley, research doesn’t have any answers yet about what is causing the current downward trend in sleep time. He suspects that factors include the workload from school and work, easy access to electric light in the evening, the proliferation to electronic devices, and 24-hour services that we didn’t have until recently.

³⁵⁰ Süß, 2012, p. 225

³⁵¹ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

³⁵² Harvard Medical School, 2014

³⁵³ The Editors of Encyclopædia Britannica, 2008

³⁵⁴ Jones, 2013

³⁵⁵ Tinguely, Landolt, & Cajochen, 2014

Many Don't Disconnect at Night

A 2013 representative U.S. research report found that 44% of smartphone owners use it as an alarm clock, in the subsample of 18 to 24 year olds even 54%.³⁵⁶ Many sleep with their smartphones in the bedroom. “A lot of the teenagers in my practice—and this is a real issue—are up texting. And they are very honest about the fact that their devices get in the way with their sleep”, says ON/OFF expert Claire McCarthy, a pediatrician at Boston Children’s Hospital and an assistant professor at Harvard Medical School. McCarthy says that she talks to parents about charging teens’ devices outside of their bedrooms.³⁵⁷ ON/OFF expert Jason Washburn shares McCarthy’s concerns about mobile devices and sleep, “What I see clinically in adolescents and adults is that it can definitely interrupt their sleep because they keep the devices right by their bedside.” Washburn, an assistant professor for clinical psychology at Northwestern University’s Feinberg School of Medicine in Chicago, tells anybody who has sleep issues to keep their phone out of the room. He worries about “the highly reinforcing effects on sleep wakefulness and sleep interruption. If you wake up at night and you turn around, you go like, let me just check my email, let me check my messages or let me see what’s on Facebook. That immediately wakes you up a little. And it is also reinforcing for sleep interruption.”³⁵⁸

More than a third of the ON/OFF students surveyed for this study say they don’t disconnect at night (Figure 38). Male students (44%) are significantly more likely not to disconnect at night than female students (28%). 44% of female students turn their mobile devices off at night (or in flight mode) versus 23% male students.

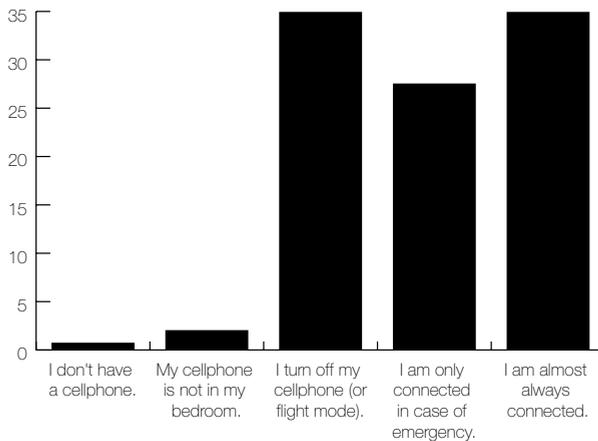


Figure 38 — “Do you disconnect at night?” (N=149) — ON/OFF Student Survey

Surprisingly, 16% of students who say they do mind constant connectivity are almost always connected at night. 29% of those experiencing mild “fear of missing out” (FoMO) stay connected at night.³⁵⁹ While overall more than a third of the students say they don’t disconnect at night,

³⁵⁶ International Data Corporation, 2013

³⁵⁷ ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

³⁵⁸ ON/OFF expert interview with Jason Washburn in September 2014 in Chicago, IL, USA

³⁵⁹ ON/OFF Student Survey 2014

only 10% of the adults surveyed for this study (N=148) stay connected at night. The surveyed adults turn their cellphones off, put them in flight mode, or keep them outside in their bedroom significantly more frequently than the students.³⁶⁰

Research shows that if we expect to be woken (as occurs with fire fighters or doctors on call), we have a less good quality of sleep.³⁶¹ A recent University of Basel study on more than 300 student reports that teenager's digital media use during the night is associated with an increased risk of sleep problems and depressive symptoms.³⁶² But it is not only texting at night that keeps us up.

Blue Light from Screens Keeps You Awake

For many decades, scientists believed that the rod and cone cells of the human eye were responsible for all of our ocular reactions to light. The recent discovery of the novel opsin, melanopsin, in the mammalian retinae changed that. Melanopsin is a light-sensitive protein (not to be confused with the similar sounding hormone melatonin) and was originally discovered in the light sensitive cells of frog skin in 1998. Melanopsin was later found in frog and mouse retinas, and eventually in the human eye. Melanopsin is a light-sensitive photopigment that doesn't contribute to vision, and it responds maximally to a different wavelength of light, short-wavelength blue light (λ_{max} 480 nm) than rod and cone cells do although the sensitivity range is still broad.³⁶³ In recent years, research has confirmed that melanopsin indeed transmits light information from the eye to the part of the brain that controls the internal clock. Melanopsin is maximally sensitive to blue light, which happens to be very close to the blue peak in many LEDs.³⁶⁴ LEDs, short for Light Emitting Diodes, are more energy-efficient light sources than old-fashioned lightbulbs, but they also tend to produce more blue light.³⁶⁵ Exposure to blue light of LED screens affects melanopsin, which leads to a suppression of melatonin, resetting of the circadian clock and directly alerting the brain, affecting our ability to fall asleep.³⁶⁶ This process is why you have been reading about sleep and frog skin: it is vital to know about the impact of light in order to talk about sleep, mobile devices, and being always on. The experimental research suggests that reading on a tablet or working on a laptop for a couple hours before bed may delay sleep by about an hour. The blue light effect persists even after the light is turned off.³⁶⁷ Staying off screens emitting blue light before going to bed or at night helps prevent circadian rhythm sleep disorders. In 2012, the American Medical Association's Council on Science and Public Health recognized that "exposure to excessive light at night, including extended use of various electronic media, can disrupt sleep or exacerbate sleep disorders, especially in children and adolescents."³⁶⁸

Does it matter if we read a book on paper with an electric light versus on a smartphone or a tablet in bed? Sleep researcher Lockley says it is different, but it is not inherent to the device.

³⁶⁰ ON/OFF Offline Day Adult Survey 2013

³⁶¹ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

³⁶² Lemola, Perkinson-Gloor, Brand, Dewald-Kaufmann, & Grob, 2014

³⁶³ According to Steven Lockley, it is important to note that it is not only blue light that will stimulate melanopsin, but blue light does it most efficiently.

³⁶⁴ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

³⁶⁵ Harvard Health Publications, 2012

³⁶⁶ Chang, Aeschbach, Duffy, & Czeisler, 2015; Cajochen et al., 2011; Wood, Rea, Plitnick, & Figueiro, 2013

³⁶⁷ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

³⁶⁸ American Medical Association, 2012

He states, “Photons are photons. The eye doesn’t care where they come from or what is emitting the photon. But books and mobile devices have a different quality of light, are positioned differently to the eye. And so, the electronic devices will likely put more blue photons in the eye. If I read a normal book with a bright bedside lamp that would still be bad. The key thing is to think about the light you expose yourself to before bed and try and make it as dim and blue-depleted as possible, for a long as possible, to minimize the negative effects on sleep and circadian rhythms.”

Personal Problems, ADHD, Electromagnetic Fields, and Drowsy Driving

While blue-enriched or high intensity light is a major cause for melatonin suppression, other factors play into bad sleep quality. The most commonly cited causes for sleep disorders are personal problems and strains at the workplace.³⁶⁹ ON/OFF expert Barbara Josef mentions that in the business world, nightly emails on a regular basis indicate that a conversation with an employee or co-worker can be necessary. However, she underlines, there is no reason for superiors to interfere with individual work schedules including nightly emails in case the employee generally seems content and balanced.³⁷⁰

A common assumption when it comes to adolescents is that digital media is related to the increasing number of ADHD diagnoses. According to the U.S. Centers for Disease Control and Prevention, the percentage of children and adolescents 4 to 17 years of age taking medication for ADHD, as reported by parents, increased by 28% between 2007 and 2011 in the United States.³⁷¹ Claire McCarthy of the Boston Children’s Hospital said in the ON/OFF interview, “I have a lot more ADHD patients than I used to but I don’t know what is causing it. I do think that media has something to do with it—whether it is connectivity or fast-paced media like television or video-games is hard to know.”³⁷² A psychiatry professor suggests, that many cases of ADHD in children are, in fact, sleep disorders. Sleep-deprived children become hyperactive.³⁷³ Rather than digital devices directly causing ADHD as has been assumed, it may be that these devices have exacerbated sleep deprivation (along with overscheduled lives), and sleep deprivation causes the hyperactivity of ADHD.

Research indicates that electromagnetic fields from mobile telecommunications influence brain activity during sleep but don’t affect the quality of sleep. However, knowing about the presence of a transmitter can promote psychological concerns or fears that do influence sleep quality.³⁷⁴ The ON/OFF Student Survey shows that about 25% of students worry about cell-phone or Wi-Fi radiation. The data suggests that IT students worry less about the effects of cell-phone or Wi-Fi radiation than regular students, and males tend to worry a little less than females.

The spring shift to daylight savings time and resulting loss of one hour of sleep leads to a measurable increase in traffic accidents on the Monday after the shift.³⁷⁵ According to sleep expert Lockley, distraction and drowsy driving are very closely connected. If we are sleepy while

³⁶⁹ Tinguely et al., 2014

³⁷⁰ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

³⁷¹ Centers for Disease Control and Prevention, 2014

³⁷² ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

³⁷³ Thakkar, 2013

³⁷⁴ Swiss Research Foundation for Electricity and Mobile Communication, 2013

³⁷⁵ Coren, 1996

driving, we do things to keep us awake like using a cellphone or putting some music on. “When you look at different kinds of driver hazards, you’ll find that the so called distractions are following the same patterns as the sleep loss. If you are sleep-deprived you tend to take more risks, and tend to miss more signals.”³⁷⁶ If devices are contributing to sleep deprivation, driving may be becoming even more dangerous.

3. Traffic

Various studies indicate that cellphones are a major cause of distracted driving and that using them while driving increases the risk of an accident.³⁷⁷ In terms of physical health, the risks involved in using phones while driving are obvious and non-controversial. Research suggests that using a smartphone behind the wheel is not the greatest threat but very prevalent and it increases the accident likelihood by about four times.³⁷⁸

Road traffic campaigns in many countries have focused on raising awareness after cellphone-related accidents became more common (Figure 39). According to the French road safety authorities, about one in ten road accidents can be connected to cellphone use while driving.³⁷⁹ In the largest federal state of Germany, Nordrhein-Westfalen, a total of 520 people died in 2014 in road accidents. The four major causes were speeding, cellphones, not using a seatbelt, and alcohol.³⁸⁰ In 2015, a court in the United States sentenced a man to a year in jail after the pickup he was driving killed a mother of two. She had been riding her bicycle, towing her daughters behind her. The driver had been processing a bank transaction on his cellphone.³⁸¹



Figure 39 — Campaigns to prevent road traffic accidents related to phone use in the United States, Germany, Switzerland, France, and Colombia

³⁷⁶ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

³⁷⁷ e.g. Wilson & Stimpson, 2010; Dingus et al., 2016

³⁷⁸ Dingus et al., 2016

³⁷⁹ Sécurité routière, 2011

³⁸⁰ Westdeutsche Zeitung, 2015

³⁸¹ Powell, 2015

A recent large U.S. survey (N=4,964) found that distracted driving is highly prevalent among young drivers. 91% of the surveyed drivers (average age: 22 years) reported phoning or texting while driving. 25% reported using a hands-free device “most of the time.” When asked about their capability to drive distracted, 46% said they were capable or very capable of talking on a cell phone and driving, but they felt that only 9% of other drivers were capable. Most surveyed drivers felt that policies, such as laws impacting driving privilege and insurance rate increases, would influence their behavior.³⁸²

For safety reasons, making calls in a moving car is only permitted with the aid of a hands-free device in Germany, Switzerland, and many other countries. 40 U.S. states have a ban on texting while driving, 14 also have a ban on handheld devices. Technically, looking up a phone number while driving is not illegal in many U.S. states. These sorts of behaviors are tough to regulate because of the rapid change in technology.³⁸³ Is the Apple watch a handheld device? What about cyclists using a phone? Chicago and New York City are passing laws prohibiting handheld cellphone use while cycling in the city. Like vehicle drivers, they would be permitted to use hands-free devices to make phone calls.³⁸⁴ In 2016, a New York City senator proposed a law that would let police use “textalyser” devices to see if a driver was using their smartphone behind the wheel similar to roadside alcohol tests.³⁸⁵

Not Only Drivers Are at Risk, So Are Pedestrians

According to an Ohio State University study,³⁸⁶ the increase for cellphone-related pedestrian injuries parallels that for vehicle drivers.

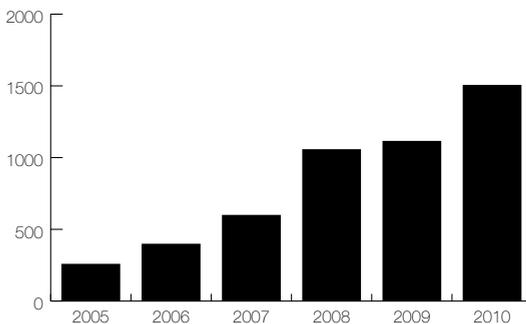


Figure 40 — Estimated rise in numbers of emergency room visits in the U.S. due to pedestrians who were injured while talking with cellphones³⁸⁷

The study found a dramatic increase in pedestrian accidents with cellphones (Figure 40). Men and younger pedestrians are more likely to get injured than women and older pedestrians. The researchers used data from the National Electronic Injury Surveillance System that includes about

³⁸² Hill et al., 2015

³⁸³ Powell, 2015

³⁸⁴ CBS New York, 2014

³⁸⁵ Bolton, 2016

³⁸⁶ Nasar & Troyer, 2013

³⁸⁷ Nasar & Troyer, 2013

100 hospitals in the U.S. The author believes emergency room numbers underestimate actual injuries because not every person who is injured goes to an emergency room, uninsured people might not go at all, and it is likely that not everyone who goes to an emergency room would admit that their injury was cellphone-related.³⁸⁸ Pedestrians using smartphones while walking or even crossing a street have been called “smartphone zombies” or “smombies”.³⁸⁹

While government sponsored prevention campaigns focus on distracted driving, art projects have tried to appeal to pedestrians. The following examples made international headlines and went viral on social media. The first is a sign (Figure 41) about paying attention while walking. It is part of a series of signs that seek to improve life in New York City, according to artist Jay Shells. He created them in an official-looking design and a logo saying “Metropolitan Etiquette Authority,” which is a spoof (a parody by imitation) of New York City’s “Metropolitan Transportation Authority.” The series of signs were peppered around New York City starting in 2012.³⁹⁰ Some news coverage about Jay Shells’ signs showed pictures of people passing it unawares while looking at their phones. These images both reinforced the point of the sign, but simultaneously questioned whether those who would have benefitted from the sign would ever notice it.



Figure 41 — Sign in New York City by artist Jay Shells

The second always-on-related pedestrian story that made global headlines was from a municipality called Chongqing in southwest China, where a separate cellphone sidewalk was installed (Figure 42). The left lane allows you to walk while looking down at a smartphone while the right lane is for pedestrians not using a device while walking. The lanes are meant to prevent unnecessary collisions of elderly people, children, and pedestrians walking with their phones, and also to remind people of potential dangers of looking down while walking in a satirical way. While Chongqing claims to have installed “the first cell phone sidewalk in China,” the inspiration for the dual sidewalk originally came from National Geographic, which created a similar looking sidewalk for a TV behavior experiment in Washington, D.C. in the United States.³⁹¹

³⁸⁸ Grabmeier, 2013

³⁸⁹ Wikipedia, 2015; The Local, 2015

³⁹⁰ Daily Mail, 2012

³⁹¹ Iyengar, 2014



Figure 42 — Sidewalk for pedestrians with or without mobile phones in China in 2014³⁹²

The third example is the German city of Augsburg that puts traffic lights on the ground for distracted smartphone users.³⁹³

4. Burnout & Information Overload

One of the most discussed concerns about being always on, at least in Europe, is the risk of burnout, which is why I dedicate an entire and extensive subchapter to the topic. Digital information overload has been debated for more than thirty years. As early as 1984, psychologist Craig Brod described an increase in mental fatigue that he attributed to the introduction of the computer in the world of work: “The electronic workplace appears calm. [...] But a significant change has taken place: mental workloads and mental fatigue are greater than they have ever been before.”³⁹⁴

Although medical doctor and ON/OFF expert Philip Strasser underlines the enormous opportunities of anytime-anyplace communication, he also worries, as “[t]he constant or extended connectivity beyond normal working hours is a challenge and can lead to a mental strain.” He says there is some evidence that ruminating about work tasks or problems in your leisure time can be hazardous to health, and that we need to unwind from work in order to regenerate. In other words, “It can severely challenge my aspiration to spend my leisure time with friends and family if I am always connected to my workplace.”³⁹⁵ Indeed, psychological research has shown the importance of “switching off” mentally from work. A study by the University of Konstanz in Germany found that psychological detachment from work was associated with positive mood and low fatigue, as well as a negative relationship between psychological detachment and fatigue that was particularly strong on days with high time pressure.³⁹⁶

³⁹² Illustration based on a widely distributed press photo.

³⁹³ Metcalfe, 2016

³⁹⁴ Brod, 1984, p. 39–40

³⁹⁵ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

³⁹⁶ Sonntag & Bayer, 2005

Public Debates about Burnout in Europe

In 2011, the German federal government, through then-German Secretary of Labor Ursula von der Leyen, announced that stress at the workplace needs to be reduced. Von der Leyen explained that sick days in Germany had almost doubled in the past 15 years and the official cost estimate of mental illnesses in the workplace was 27 billion Euros. Referring to the cause of the increased stress level, von der Leyen indicated the acceleration of the workflow, information overload, and constant connectivity via cellphones and email.³⁹⁷ In 2014, the new German Secretary of Labor, Andrea Nahles, even called for an “anti-stress law” in Germany explaining, “There is no doubt that there is a link between constant connectivity and the rise in mental illnesses.”³⁹⁸ This suggested link is controversial, as is creating laws to protect employees from constant connectivity.

However, in a large stress-related survey (Figure 43), 33% of the German working population reported “information overload and constant connectivity (cellphone, email etc.)” as their second largest cause of stress. Controlling for education, the authors of the study found a significantly higher percentage of the better-educated labor force (41%) feels stressed because of “information overload and constant connectivity (cellphone, email etc.)”.

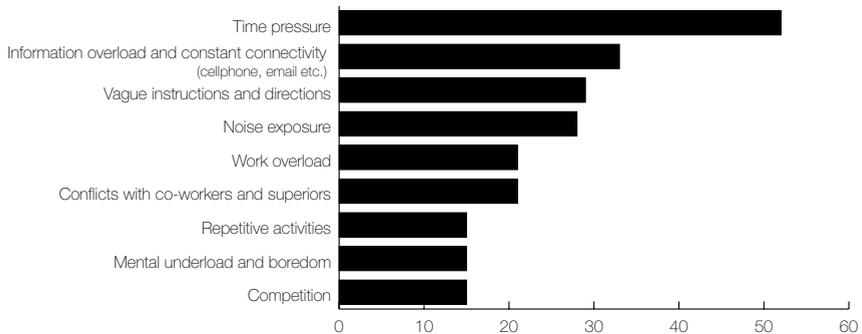


Figure 43 — Stress in the workplace according to a representative German survey from 2009³⁹⁹

A more recent German study demonstrates that even if burnout is not generally recognized as a medical condition, there has been a major rise in burnout diagnoses in recent years. In 2004, for every thousand medically insured employees, 8.1 days were spent at home with a burnout diagnosis. 11 years later in 2013, the sick days multiplied and reached an average of 67.6 days with a peak in 2011 with 96.9 sick days per thousand (Figure 44).

The authors of the most widely accepted German report on absenteeism extrapolated these numbers from 2013 for the German working population.⁴⁰⁰ Out of the 34 millions of medically insured employees, about 125,000 were absent from work with a burnout diagnosis in 2013 for a total of about 2.6 million days. Furthermore, they found that women with a burnout diagnosis tend to be absent from work about double the amount of days than men, and burnout risk increases with age (both genders got their diagnosis on average between ages 60 and 64). “Help-

³⁹⁷ Gersemann, Borstel, & Wisdorff, 2011

³⁹⁸ Lehmann & Quadbeck, 2014

³⁹⁹ Gangl & Birkner, 2009

⁴⁰⁰ Badura, Ducki, Schröder, Klose, & Meyer, 2014, p. 368

ing” professionals (such as nurses), executives, and architects were absent significantly longer from their jobs than other professionals.

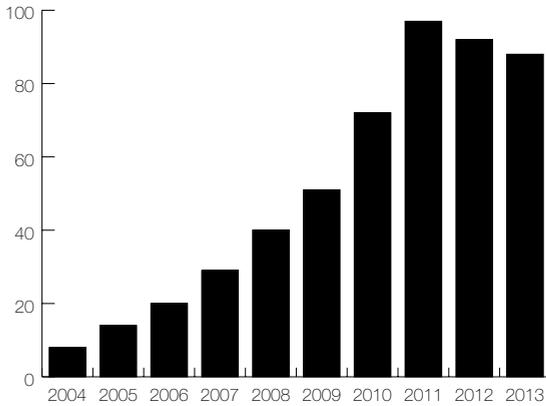


Figure 44 — Absent days per 1,000 medically insured employees with a burnout diagnosis from 2004 to 2013 according to a major German health insurance⁴⁰¹

The drastically rising numbers of sick days and cost of mental illnesses in Germany caused a national debate about burnout and constant connectivity. Celebrities such as German politician Matthias Platzeck, TV chef and restaurant owner Tim Mälzer, musician Peter Plate, and Miriam Meckel, who at age 31 had been Germany’s youngest tenured university professor, came out publicly with their own burnout diagnosis fuelling the public debate about burnout in German-speaking Europe. In Switzerland, member of the National Council Nathalie Rickli retired from politics for a few months after suffering from burnout. Rickli commented on her time off, saying she had been constantly connected to the Internet, especially Facebook and Twitter, and she needed a break. She published her statement on Facebook.⁴⁰² A German health insurance company launched a debate with key words such as “Social Müdia” (a pun on “müde,” German for tired) and “Social Media Burnout.”⁴⁰³

The information and communication technology sector is considered to be at a higher risk for burnout than other sectors.⁴⁰⁴ In France, a 2014 agreement between employers and unions ensures employees in the technology sector the right to disconnect and unplug at the end of the day. In France, the famous 35-hour workweek is in effect, and it was a debate about burnout and constant access to emails and work materials that led to the deal.⁴⁰⁵

In the United States, the term burnout is not in vogue anymore, but was used more frequently 15 years ago according to a major U.S. business magazine.⁴⁰⁶ A number of ON/OFF experts in the U.S. confirmed in interviews that unlike in European countries, there currently is no public debate in North America about burnout and technology. Silicon Valley-based Swiss technology expert Ursula Oesterle says that burnout is a rich society problem. She thinks it is typical for countries and companies that are rich enough to be able to afford burnouts. “If you

⁴⁰¹ Badura et al., 2014

⁴⁰² Schweizer Illustrierte, 2012

⁴⁰³ Kollhorst, 2012; Welt Online, 2012

⁴⁰⁴ Gerlmaier & Latniak, 2010

⁴⁰⁵ Taylor, 2014

⁴⁰⁶ Stern, 2012

fight for your existence, you can't afford to think about being burned out, because you are focused on the goal of survival."⁴⁰⁷ International Internet addiction expert Kimberly Young says there is a debate about "technostress" but not about burnout and being always on in the U.S.⁴⁰⁸ Canadian professor Roy Loewen thinks, "Europeans may talk about it more openly but in fact they may be well ahead of North-Americans in terms of lifestyle."⁴⁰⁹ Similarly, "Europeans seem to care a lot more about life balance than Americans," says Chicago-based clinical psychology professor Jason Washburn. He adds, "My experience with business is that you're expected to be 24/7— and I think that is the general rule in the U.S. to a large degree."⁴¹⁰

The ON/OFF experts' statements are supported by a 2014 U.S. study published by the National Bureau of Economic Research. The researchers found that on a typical weeknight, about 25% of American workers did some kind of work between 10 p.m. and 6 a.m. (compared with about 7% in France and the Netherlands). On the weekends, one in three workers in the U.S. were on the job, compared to one in five in France, Germany, and the Netherlands.⁴¹¹

How to explain these significant transatlantic cultural differences regarding the perception of stress-related health risks, work culture, and hyper-connectivity? The United States is considered to be one of the most technology-enthusiastic cultures. As early as 1984, psychologist Craig Brod wrote in the introduction of his book *Technostress*, "American Society is in love with the computer. As a companion in our daily lives, it is rapidly becoming ubiquitous. [...] The American people have embraced the computer revolution with unquestioning confidence."⁴¹² Compared to Europeans, people in the U.S. do not only seem to meet technology with much less skepticism, but are also more used to the 24/7 lifestyle. When British Guardian correspondent Martin Kettle left Washington, D.C. to go back to Europe, he wrote about "the one thing he won't miss— America's love affair with 24/7." Kettle made it clear how different cultures on both sides of the Atlantic are, observing "When Americans say that they're available 24/7, they say it with pride and with a breezy confidence that it's exactly the sort of thing that you ought to be glad to hear. [...] To me, 24/7 is a shorthand way of describing a living hell."⁴¹³

Information Overload and Health

As common motives to temporarily go offline in their country, ON/OFF global Internet and Society experts cite "information overload," "to decrease stress," "exhaustion," "email overload," and "occasional burnout." 11 out of 22 Internet experts report that "information overload/burnout" is part of the debate about being always on in their country.⁴¹⁴

How much do people actually worry about negative consequences for their health? A total of 39% of the ON/OFF surveyed students say they worry that being always on may have negative consequences for their health (Figure 45).

⁴⁰⁷ ON/OFF expert interview with Ursula Oesterle in December 2014 in Palo Alto, California, USA

⁴⁰⁸ ON/OFF expert interview with Kimberly Young in November 2014, Cambridge, MA—Bradford, PA, USA

⁴⁰⁹ ON/OFF expert interview with Roy Loewen in November 2014, Cambridge, MA, USA—Winnipeg, Canada

⁴¹⁰ ON/OFF expert interview with Jason Washburn in September 2014 in Chicago, IL, USA

⁴¹¹ Hamermesh & Stancanelli, 2014

⁴¹² Brod, 1984, p. 2

⁴¹³ Kettle, 2001

⁴¹⁴ ON/OFF Global Internet Expert Survey 2015

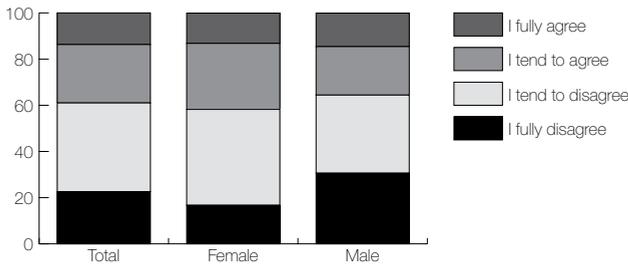


Figure 45 — “I worry about negative consequences for my health by being always on (e.g. information overload).” By gender (N=145) — ON/OFF Student Survey

Females (42%) are more likely to worry than males (36%). The differences among school types are a lot more significant. Only about a fifth of IT students tend to worry about information overload and other negative consequences for their health, while about a third of commercial and high school students have concerns. In the ON/OFF student sample, a statistically highly significant correlation was found between setting personal boundaries and worries about negative consequences of hyper-connectivity such as information overload. A total of 35% of the ON/OFF surveyed adults tend to worry that being always on may have negative consequences for their health (Figure 46). This is roughly the same percentage as was found with the students (no significant generational differences). No major gender differences could be found among adults.

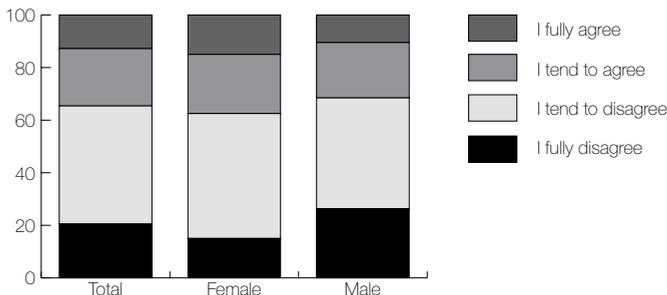


Figure 46 — “I worry about negative consequences for my health by being always on (e.g. information overload).” (N=148) — ON/OFF Offline Day Adult Survey

Overall, more than a third of both ON/OFF surveyed students and adults worry about potential health issues related to hyper-connectivity. The data does not reveal what specific health consequences are of concern (although the example given in the questionnaire was information overload). Males tend to worry less than females, and there is a significant correlation between worrying about health and personal boundaries.

Technostress and Digital Overload

Many parallels can be found between the current debate about hyper-connectivity and the “technostress” debate in the early 1980s. Technostress is defined as the negative effects of new technology on psychological well-being. In his book, published in 1984, U.S. psychotherapist Craig

Brod describes technostress as “a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner. It manifests itself in two distinct but related ways: in the struggle to accept computer technology, and in the more specialized form of overidentification with computer technology.”⁴¹⁵ The book describes some rather surprising (to a present-day perspective) reactions to the popularization of computer technology. The author portrays both computer enthusiasm and nightmares. One of his patients had recurrent dreams about being swallowed by a machine. The executive Tom complained that all his correspondence, reports, and other paperwork are increasingly computer-generated, and that they seemed so impersonal. Although he realized it was a rather extreme and expensive measure, he insisted that his secretary retype all his electronic mail before he read it. On the other hand, Brod describes “technocentered people” who were highly motivated and eager to adapt to the new technologies. Brod warns that “unwittingly, they begin to adopt a mindset that mirrors the computer itself” and may lose access to feelings, insist on efficiency and speed, and lack empathy for others.⁴¹⁶

An example of a modern version of technostress is email overload. “Email bankruptcy” is a term that has been attributed to both Cambridge, MA-based professors Sherry Turkle and Lawrence Lessig.⁴¹⁷ Email bankruptcy refers to the decision to delete all emails older than a certain date due to an overwhelming volume of messages. Yet digital overload is not only about email. A 15-year old American student describes what happened to the pictures she took in Hawaii both on an iPhone and a Polaroid camera: “I can name every single picture I took on my Polaroid for you right now, where I was and what we were doing. Meanwhile, there are more than a thousand pictures on my camera roll on my iPhone, and though the quality of these pictures might be better, every time I try to go and look through them, I get overwhelmed with the fact I took 30 pictures of the same waterfall and I can’t decide which is my favorite, so I end up just shutting off my phone and doing something else.”⁴¹⁸ The anecdote also illustrates that digital overload does not necessarily only impact older generations that are less used to digital technologies.

In the subchapter *Companies and Organizations*, technostress in the workplace is explored.

Is Burnout Another Word for Neurasthenia?

Although it is a common term, there is no clinical definition of the burnout syndrome. Herbert Freudenberger, a German-American psychologist, coined the term burnout in the 1970s. Initially, “burnout” was used mainly for people working in “helping” professions like doctors and nurses before it became a more popular term to describe anyone affected by work-related exhaustion.⁴¹⁹ For research purposes, the scientific community mainly uses the widely accepted Maslach Burnout Inventory (MBI) developed by social psychologist Christina Maslach in the early 1980s.⁴²⁰

⁴¹⁵ Brod, 1984, p. 16

⁴¹⁶ Brod, 1984, p. 17

⁴¹⁷ Samuel, 2015, p. 59

⁴¹⁸ Weill, 2015

⁴¹⁹ U.S. National Library of Medicine, 2013

⁴²⁰ Schaufeli, Leiter, & Maslach, 2009

It is striking what historical parallels can be drawn with the debate about “neurasthenia” more than a century ago. In the industrial era, there was rapid technological change, which is in many ways comparable to the current pace of technological inventions.

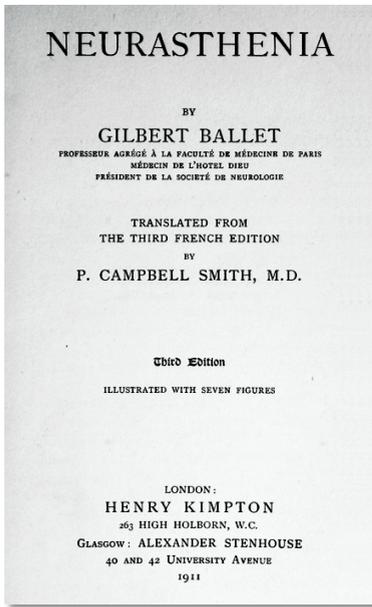


Figure 47 — Century-old book about neurasthenia at Harvard Medical School⁴²¹

In 1881, neurologist George Miller Beard first described the clinical and diagnostic profile for nervous exhaustion (neurasthenia). Beard saw neurasthenia as caused by the hectic, fast-paced life in American cities. He called it “American nervousness,” but the concept of neurasthenia soon became part of standard medicine in Western Europe, and eventually in China and Japan. Beard’s suggested cure was withdrawal from urban life, rest, and a simpler, healthy lifestyle.⁴²² Neurasthenia experts at the time listed the following causes for the medical condition: hereditary defects, education, excess of intellectual work, moral over-pressure, life in high society (“none are more busy than those who do nothing”), muscular over-pressure, intoxications (alcohol, tobacco, morphine, and cocaine), organic diseases, frights and traumatism, and genital disorders.⁴²³

Interestingly, neurasthenia is incorporated into the ICD-10 diagnosis system as a form of “neurotic disorder.” ICD stands for International Classification of Diseases and is maintained by the World Health Organization. In the description of neurasthenia in the ICD-10 manual it says that in many countries it is not generally used as diagnostic category. Many of the cases described would meet current criteria for depressive disorder or anxiety disorder. Burnout, meanwhile, is not recognized as a distinct disorder but is listed under “problems related to life-management

⁴²¹ Ballet, 1911

⁴²² Beard, 1880; Lutz, 1991

⁴²³ Ballet, 1911

difficulty.⁴²⁴ Dutch researchers used the ICD definition of neurasthenia as equivalent of severe burnout:

- persistent and increased fatigue or weakness after minimal (mental) effort;
- at least two out of seven distress symptoms such as irritability and inability to relax;
- the absence of other disorders such as mood disorder or anxiety disorder.⁴²⁵

The German association for psychiatry, psychotherapy, and neurology (DGPPN) published a position paper in 2012 to address the recent intense public debate about burnout. The paper lists three major dimensions of burnout symptoms:

- *Emotional exhaustion*: fatigue, nervous tension, sleep disorders, and physical symptoms such as head aches, and gastrointestinal complaints;
- *Cynicism/ depersonalization*: frustration and bitterness related to the world of work;
- *Reduced job performance*: feelings of a decrease in performance, competence, and creativity due to lack of concentration and dissatisfaction.⁴²⁶

The DGPPN position paper clarifies that burnout has not been classified officially in Germany. Also, burnout symptoms should be understood as long-term (at least a few weeks) and multi-dimensional: caused by *workplace-related circumstances* (e.g. unmanageable workload, lack of recognition, lack of separation between professional and private lives) and *individual reasons* (e.g. excessive aspirations, lack of recovery and relaxation, perfectionism, lack of qualifications). The authors of the DGPPN paper state that burnout symptoms are not necessarily accompanied by a mental illness but can be a trigger to psychiatric disorders and somatic diseases. The paper states various contributing factors to changed conditions in the world of work, such as an increase in global competition, computers, and hyper-connectivity (blurred lines between work and private life due to mobile phones and email limiting workplace recovery), performance control and IT-based controlling tools, and increasingly performance-oriented work environments.⁴²⁷

Sweden has added burnout to their national versions of ICD-10. In Asia, the name burnout is not familiar, however neurasthenia is considered a cultural manifestation of burnout in Japan and China.⁴²⁸ Burnout seems to be a global phenomenon, but the concept differs according to culture. In some countries burnout is used as a medical diagnosis, whereas in other countries it is a non-medical, socially accepted label that carries a minimum stigma in terms of a psychiatric diagnosis. Causes for burnout are attributed to the rapid and profound transformation from an industrial society into a service economy and its psychological pressures.⁴²⁹ The working environment has indeed undergone major changes in the past century. Renowned Swiss psychiatrist Daniel Hell commented about the fact that several studies find that a rising number of people who see a psychiatrist. In his explanation, he points to major changes in the working environment in the past century. Around the 1950s, 75% of Swiss employees had physical jobs, whereas today 75% have cerebral jobs. Therefore, there are more cognitive and emotional challenges and we have to adapt faster—which can also be mentally challenging. Hell refers the “multi-options

⁴²⁴ World Health Organization, 1992

⁴²⁵ Schaufeli, Bakker, Hoogduin, Schaap, & Kladler, 2001

⁴²⁶ Deutsche Gesellschaft für Psychiatrie, Psychotherapie und Nervenheilkunde, 2012, p. 2f

⁴²⁷ Deutsche Gesellschaft für Psychiatrie, Psychotherapie und Nervenheilkunde, 2012, p. 4f

⁴²⁸ Nuallaong, 2013

⁴²⁹ Schaufeli et al., 2009

society,” which allows us to choose more freely what we want to do, who we want to live with, and so on. It means more freedom but simultaneously a higher pressure to succeed, and it is bound to require many more decisions, which can be difficult if you have a number of options. Hell also points to other aspects, like a more global economy, individualism, digitalization, and economization.⁴³⁰

Burnout and Depression

The ICD-10 specifies that research has demonstrated a significant proportion of cases diagnosed as neurasthenia can also be classified under depression or anxiety. A recent study surveyed more than 5,000 schoolteachers using the Maslach Burnout Inventory—still the gold standard for burnout research⁴³¹—and the depression scale of the Patient Health Questionnaire (PHQ-9). The researchers compared the data and found that about 90% of the burned out workers simultaneously met diagnostic criteria for depression. Their study suggests that the burnout–depression overlap has been largely underestimated.⁴³² Stress-related disorders have increased drastically, as statistics show, and disability benefits due to psychological diseases have become most common in the world of work. According to ON/OFF expert and medical doctor Philip Strasser, experts argue about whether the increase is a relative increase or an increase in absolute numbers. He says, “There is controversy among medical specialists whether there is an actual increase in burnout cases in the corporate world—where the topic is currently ubiquitous—or if there is heightened awareness and talking about burnout has become less of a taboo.”⁴³³ He says that back pains and other bodily discomforts are often actually related to stress.

Strasser mentions findings of a study done with general practitioners (GPs) which found that in one consultation out of three, GPs observe depressive symptoms, but they only address their observation in 3% of the consultations. About 50% of depressive disorders are not diagnosed, and only about 50% of the diagnosed cases get adequate therapy. “So there are a lot of people present in the workplace every day who suffer from depression but nobody knows about it,” Strasser says. He adds that the time between first experiencing symptoms of depression and the initial treatment of a depressive disorder is about 10 years, and the average age this process begins at is 30. Strasser says, “These are facts with which you can argue that there is relative increase in mental disorders, but I personally believe that there is an absolute increase as well. Digital connectivity with constant personal availability and an increased rate of unplanned interruptions may play a certain role among others.”⁴³⁴ Strasser is not the only MD claiming there may be a connection between connectivity and more stress-related diseases. Joachim Bauer, a German neurobiologist and MD, says digital communication and constant connectivity cause a new form of stress as the blurring boundaries between work and leisure, time pressure and multi-tasking activate the brain’s stress system. Bauer states, “Chronic stress affects the immune system and increases the risk of disease. If there is additionally a lack of acknowledgement, this can cause burnout and depression.”⁴³⁵

⁴³⁰ Hunziker, 2015

⁴³¹ Schaufeli et al., 2009

⁴³² Bianchi, Schonfeld, & Laurent, 2014

⁴³³ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁴³⁴ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁴³⁵ Metzler, 2014; Bauer, 2013

A study by communication scholar Luis Leung based in Hong Kong (N=612) suggests that connectivity is not the main issue for negative spillovers from work including burnout but rather individual control over what passes through the boundaries between work and other life domains.⁴³⁶

Although the expert community is divided and there is no generally accepted definition of burnout, the term has attracted particular attention in the public debate—at least in European countries such as Germany, France, the UK, and Switzerland.⁴³⁷ Some argue that the term burnout is popular because it is less stigmatized than depression, although there seems to be a significant overlap. Nevertheless, treating burnout is a lucrative business. For instance, the first clinic specifically for burnout patients in Switzerland is a success story.

At the Burnout Clinic in the Swiss Alps

High up in the Swiss mountains, in the famous valley Engadine, the first clinic for burnout patients opened its doors in 2010: the Clinica Holistica Engiadina. Walking into the clinic on a sunny winter day feels like checking into a spa hotel. The front desk staff is very friendly and has me wait for my interview partner, clinical psychologist and burnout specialist Mathias Egger in the lobby. While I wait, patients talk to me and ask me how long my stay at the clinic is going to be. In the ON/OFF interview, psychologist Egger says, “at least a third, maybe half of our patients have issues related to digital media.”⁴³⁸ But he is quick to point out that he doesn’t think constant online connectivity is the cause for a burnout syndrome. In the clinic’s house rules (Figure 48), which 6 pages long and must be signed by patients when they check-in, it is recommended for regeneration purposes to not use electronic media during the stay at the clinic. The rooms come without TV and the Internet must be activated by the front desk and costs roughly 3 USD per hour or 10 USD per day. The house rules state that from a therapeutic perspective, the Internet should be used consciously.

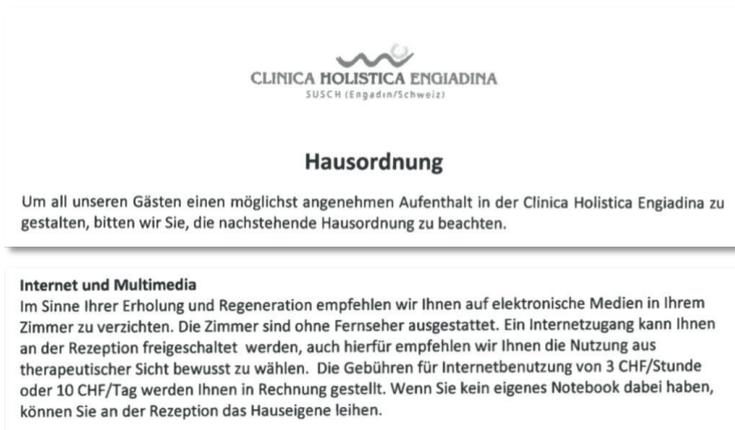


Figure 48 — House rules of the first Swiss burnout clinic

⁴³⁶ Leung, 2011

⁴³⁷ Rössler et al., 2013; Wheeler Johnson, 2013

⁴³⁸ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

Burnout therapist Egger emphasizes that it is not forbidden to go online at the clinic but the restriction is intentional. Many patients at the clinic find it particularly hard to relax. Many are scared of the two hours in their days at the clinic when there is nothing they have to do—no individual therapy session, no group therapy, no massage. “We are trained to be busy. And, of course, these devices are very alluring because you can take them anywhere and they are always on-hand.”⁴³⁹

Depending on patients’ media use, connectivity can be subject to therapy. The therapeutic perspective is that integrating media use when working with the patients underlying problems is most effective. Mr. Egger explains, “We don’t specifically look into Internet use with all of our patients, but it might show up in therapy or when we interact with them anyway.” From a clinical perspective, Egger says, it is a problem of self-regulation. Usually, there are several aspects of life in which people need to find a reasonable balance. According to the therapist, a problematic Internet use with burnout patients is generally related to boundary issues and not being able to say no. Another aspect of being always on in a clinical setting is avoidance behavior in the form of subconscious distraction. According to burnout expert Egger, “checking your email can be used to avoid to really get in touch with yourself because you fear to be overwhelmed with depressive feelings and not being able to cope with them.”⁴⁴⁰ Being constantly connected in this sense is yet another strategy to avoid dealing with personal problems. Egger compares these patients to people who use a lot of exercise or marathons as another form of avoidance behavior.

In fact, trying to avoid one’s own thoughts and boredom has been key to human activities, according clinical psychologist Agnes von Wyl. In the ON/OFF interview, she lists examples of humans trying to find a remedy for boredom. She is convinced that individuals with high scores in “sensation seeking”⁴⁴¹ enjoy playing around with digital devices. If they didn’t have the devices they would do something else to alleviate their boredom. Von Wyl mentions a 2014 experimental study published in *Science* that confirms the unpleasant experience for many to be left alone with their thoughts.⁴⁴² The experiment revealed that many of the participants did not enjoy spending 6 to 15 minutes in a room by themselves and, especially men, preferred to give themselves a mild electric shock rather than be deprived of external sensory stimuli.⁴⁴³

Burnout and Personality

There are roughly five types of burnout patients, which can be distinguished by various ways of interacting with digital connectivity. Of course, many patients show traits from multiple of the following personality types:

- The *obsessive-compulsive personality type* generally distances themselves and has difficulty not feeling they have to be always connected wherever they are. They tend to work at home after leaving the office.
- The *narcissistic personality type* finds very rewarding aspects in constant online connectivity in that being in contact with many people makes them feel important and beneficial. These rewards make it even harder to healthily self-regulate.

⁴³⁹ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

⁴⁴⁰ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

⁴⁴¹ Zuckerman, Eysenck, & Eysenck, 1978

⁴⁴² ON/OFF expert interview Agnes von Wyl, August 2014 in Zurich, Switzerland

⁴⁴³ Wilson et al., 2014

- The *nonassertive personality type* finds it very hard to set clear boundaries, to say no, and to decide that they are going to disconnect for a while for two reasons. First, they don't want to disappoint people. Second, being connected makes them feel safe, as they feel they can easily get support. They can always send a message if they are not sure.
- The *conscientious personality type* finds it challenging to disconnect because they don't want to neglect their duties and responsibilities. They find it hard to frustrate other people's wishes and requests.
- The *dependent personality type* has a hard time letting go. In these cases, connectivity restrictions are helpful. For example, a mother at the clinic found it hard to disconnect because she felt she had to be there for her kids and their homework. She was reluctant to make her kids feel they were neglected the way she had been neglected by her own parents.⁴⁴⁴

According to therapist Egger, at the burnout clinic, many patients tend to have narcissistic personalities. He cringes at the thought of the common narrative of the extremely busy CEO who had to be always connected and therefore got burned out. According to the burnout expert, this is a one-sided and narrow perspective. He mentions the clinic's understanding of burnout as a multifactorial model, which includes personality and stress factors as well as personal resources and coping strategies, and personal and family stress factors, which have an impact on the work context. Egger confirms research demonstrating that burnout is independent of class and socioeconomic status if you consider it as a stress-induced illness, stating, "It is not only about managers," though he admits that burnout can be related to a lot of responsibility, which tends to come with a high salary. But then, he says, people have personal motives to work hard in order to get a highly paid position with a lot of responsibility. "People don't get forced to become the CEO of a global company."⁴⁴⁵

Although there is not much research on personality traits and burnout, a longitudinal study published in 2013 produced some interesting results that support Egger's clinical experience. The longitudinal "Zürich study" started in 1978 with a representative sample of the general population (N = 4,547 Swiss residents of about 20 years of age). Data was collected in many follow-up examinations until the participants turned 50. In the last examination in 2008, the Maslach Burnout Inventory was used in combination with a personality test, so the researchers were able to test the association between burnout and personality with a rare longitudinal dataset. The results indeed show various associations and a complex interaction between a dysfunctional, maladaptive personality and burnout was identified. The researchers conclude that burnout is substantially influenced by personality, but in many cases environmental factors such as the workplace situation play a crucial role.⁴⁴⁶

Research published in 2016 suggests that both high engagement with cellphones and Internet and using devices for emotional coping are associated with anxiety and depression. The University of Illinois researchers found mobile phones have a "security blanked effect" in anxiety-inducing situations.⁴⁴⁷ Personal motivations such as avoidance behavior (for example in case of

⁴⁴⁴ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

⁴⁴⁵ ON/OFF expert interview with Mathias Egger in March 2014 in Susch, Engadine, Switzerland

⁴⁴⁶ Rössler, Hengartner, Ajdacic-Gross, & Angst, 2013

⁴⁴⁷ Panova & Lleras, 2016

anxiety or depression) play an important role in negative mental health outcomes with use of ICT technologies.

Self-Endangering Work Behavior & the No Muscle

A useful concept to explain part of why the possibility of constant connectivity is intertwined with work-related exhaustion is *self-endangering work behavior*.⁴⁴⁸ The originators of the concept are a philosopher and occupational psychologists in Switzerland and Germany who define it as a behavior that we know to be unhealthy but won't stop, because we wish to attain success in our jobs. For example, going to work even if we are sick, not taking breaks, working on weekends and on holidays, working more than 10 hours a day, or working a lot of unpaid overtime hours. The authors state that mobile and flexible work increases the need for self-management strategies, and they view self-endangering work behavior as an indicator for health-related shortcomings in the design of mobile and flexible work.⁴⁴⁹ The concept is similar to self-exploitation described in previous literature as typical for the creative industry, competitive athletes, or self-employed workers.⁴⁵⁰

ON/OFF expert Kathlen Eggerling of the German labor union ver.di has been witnessing a rise in burnout cases over the past years. More and more people have contacted her saying, "I am burned out and I cannot go back to my old job because there has been a work intensification that I cannot deal with any longer." Eggerling observed that most employers don't necessarily put pressure on employees about being digitally connected, rather, "Most employees are naturally always connected and work from home even if they are sick. The limits between work and private life don't really exist anymore and people take that for granted. That is why some people don't even think it is a problem until they crash completely."⁴⁵¹ Strasser—who is a medical doctor at the global insurance company SwissLife—showed in an internal survey that many executives don't have a single sick day during their year. He, like labor union representative Eggerling, points out that many employees are present at their workplace or work from home even if they are sick. Strasser calls it a new form of "presenteeism."⁴⁵² He says, "The possibility of being always on may further push presenteeism, which we know comes with a higher risk for negative consequences for health."⁴⁵³

Is there a link between health-related worries and being resilient under pressure? Eggerling describes the importance of saying no in order to stay healthy in the work place while admitting that in some industries it is harder to protect your life domain balance: "Saying 'no' is like a muscle. You have to train the muscle. And it can indeed be harder if there are rumors, for instance in the special effects industry, that if you say 'no' too many times, they put you on a black list and then you wouldn't get your next job."⁴⁵⁴

The data in the ON/OFF Student Survey supports Eggerling's comment on the "no muscle" as well as burnout therapist Egger's statement about problematic Internet use as a gen-

⁴⁴⁸ Translation from German: interessierte Selbstgefährdung

⁴⁴⁹ Krause, Dorsemagen, Stadlinger, & Baeriswyl, 2012; Krause, Dorsemagen, & Peters, 2011

⁴⁵⁰ Han, 2010

⁴⁵¹ ON/OFF expert interview with Kathlen Eggerling in May 2014 in Berlin, Germany

⁴⁵² Presenteeism is defined as being present in the workplace despite health problems or other impairments that would justify absence.

⁴⁵³ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁴⁵⁴ ON/OFF expert interview with Kathlen Eggerling in May 2014 in Berlin, Germany

eral boundary issue. The data demonstrates that finding it hard to say no is highly correlated with worries about negative health consequences from being always on, such as information overload. There is another positive correlation with the item “I wish I had more self-discipline”. Unsurprisingly, there is a high auto-correlation between the two items, both of which are related to personal boundary management. Similarly, significant links in the ON/OFF data on adults could be found: those who worry tend to strive for clearer boundaries between their private and professional lives.

Personal Batteries, Expectations, & Being Acknowledged

It is a paradox: the more powerful tools we have, tools that might decrease time needed to complete task and therefore give us more freedom, the higher and more strenuous expectations become. As psychiatrist Hell says, the more options and expectations, the higher the pressure to succeed.⁴⁵⁵ None of the ON/OFF experts claimed hyper-connectivity to be the cause of burnout. Several experts maintain that preventing burning out in the workplace is less about technology and more about focusing on doing something we like, being able to control our work schedule, and being acknowledged for what we do. Microsoft’s Barbara Josef agrees. She says that burnout is more likely to result if we are not able to work according to our personal predisposition (like mobile flexible work versus a typical 9 to 5 job) and when the gap between our expectations and actual acknowledgement is too large.⁴⁵⁶ ON/OFF expert and MIT lecturer Chris Peterson is convinced that it is not technology that drives us into burnout. He argues that there is a fine line between doing something for fun and doing something for a job, and failing to walk the line in the best way for ourselves is what probably contributes to the burnout.⁴⁵⁷

Social media specialist Bruno Kollhorst, who popularized the term “social media burnout,” says in the ON/OFF interview that social media burnout doesn’t really exist. “Information overload and constant connectivity combined with other factors can indeed lead to an extreme level of stress, but it is not the critical factor. A main reason is that different people react differently to the new challenges.”⁴⁵⁸ Similarly, “It doesn’t make sense to say that mobile devices cause burnout,” states principal Monika Bär during the ON/OFF interview. “If I’ll ever suffer from burnout, it is because of all this paper,” she says, pointing to large piles of paper in her office. She maintains that devices have on and off buttons for a reason, and that it is up to us to use those buttons in a smart way.⁴⁵⁹ Alexander Steinhart, a trained psychologist and CEO of Offtime, is convinced that we need to get off our devices regularly. In the ON/OFF interview, he compares being always on to the standby mode of devices such as TVs or hi-fi system. Standby power is a significant contributor to electricity usage. “If we are always on standby, that is not good for our personal batteries.” He adds that most of us need some solitude in order to reconnect with ourselves. If we don’t disconnect from our devices, we risk losing the connection to our own thoughts and feelings.⁴⁶⁰

In conclusion, hyper-connectivity is at the center of European debates and is often held responsible for rising numbers in burnout diagnoses. Though it is still not listed in the DSM (Di-

⁴⁵⁵ Hunziker, 2015

⁴⁵⁶ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

⁴⁵⁷ ON/OFF expert interview with Chris Peterson in October 2014 in Cambridge, MA, USA

⁴⁵⁸ ON/OFF expert interview with Bruno Kollhorst in January 2014, Zurich, Switzerland – Hamburg, Germany

⁴⁵⁹ ON/OFF expert interview with Monika Bär in August 2014 in Zurich, Switzerland

⁴⁶⁰ ON/OFF expert interview with Alexander Steinhart in May 2014 in Berlin, Germany

agnostic and Statistical Manual of Mental Disorders) burnout is de facto accepted by major health insurances and employers as a legitimate cause of absenteeism. Nevertheless, there is no scientific evidence that hyper-connectivity can cause the condition, but according to experts, a significant number of burnout patients experience hyper-connectivity as an exacerbating factor of exhaustion. Research found a substantial overlap between depression and burnout. ON/OFF interview and survey data indicate that there is a significant relationship between weak personal boundaries, narcissistic personality types, and burnout. However, the corporate culture (e.g. fostering a cycle of responsiveness⁴⁶¹), the industry (e.g. helping professions, IT industry, executives), and ever-increasing options, which put pressure to succeed on the individual, are important context factors, which may substantially increase the risk of exhaustion. There currently is not enough scientific evidence to estimate to what extent hyper-connectivity is part of the increasing exhaustion in the workplace. The fact that many stay connected to the workplace in their free time although nobody has asked them to do so confirms expert assumptions that excessive connectivity can be a form of avoidance behavior or lack of communication. To a certain extent digital media seems to be blamed for underlying issues like major changes in the workplace from physical to mental labor, higher acceptance of mental illness in general, and a rise of a new naming (burnout) of an age old diagnosis: exhaustion or neurasthenia.

5. Addiction

What if self-regulation regarding Internet use fails completely? What if we can't find the off button anymore even if we want to? Probably the most common concern regarding hyper-connectivity is addiction. 17 out of 22 ON/OFF global Internet experts say that Internet addiction is discussed in their country as a potential risk of constant connectivity. In fact, these experts report Internet addiction more often than any other potential risk of being always on.⁴⁶² The perception of Internet addiction as the major risk might be fuelled by the inclination of mass media to report on negative, or even dramatic aspects regardless of actual prevalence.⁴⁶³

Internet addiction is not an official diagnosis in the most common manual used by psychiatrists, which is the current version of the Diagnostic and Statistical Manual of Mental Disorders, also known as the DSM-5, published in 2013. So far, gambling disorder is the only non-substance related addiction included in DSM-5. China and South Korea have declared Internet addiction as a major public health threat and officially support education, research and treatment.⁴⁶⁴ Although 86% of subjects in an Internet addiction study exhibited other diagnosable mental health disorders,⁴⁶⁵ which is a high comorbidity rate, many experts advocate for Internet addiction to be officially recognized as a disorder.⁴⁶⁶ In 1996, clinical psychologist Kimberly Young's seminal paper first proposed that problematic Internet use should be included in the DSM.⁴⁶⁷ In 2013, Internet gaming disorder was listed under "Conditions for Further Study" in the DSM-5. In the ON/OFF interview, Internet addiction research pioneer Young said she was

⁴⁶¹ Perlow, 2012

⁴⁶² ON/OFF Global Expert Survey 2015

⁴⁶³ Golding & Elliot, 2000

⁴⁶⁴ Block, 2008

⁴⁶⁵ Block, 2008

⁴⁶⁶ Baumann & Staufer, 2013

⁴⁶⁷ Young, 1996; Weinstein & Lejoyeux, 2010

not disappointed that Internet addiction was not fully included into the DSM: “I thought it was a great success because it’s something very new. In less than 20 years you have something like gaming disorder that is in there, that has been recognized as a condition of further study. Whereas you have something like sex addiction that has been studied for about 60 years and there is nothing in there about it. So the people from the other addictions sometimes are jealous as far as we did and as quickly as we did.” She still maintains that it would be useful to have Internet addiction in the DSM.⁴⁶⁸

Some online activities have been rated more addictive than others, namely online role-plays (MMORPG), online communities, online gambling, and online pornography.⁴⁶⁹ Young speaks about “digital potency.” She says, “I am not going to get addicted to do PowerPoint or something like that, but I might be getting addicted to pornography or gambling online or some of the fun activities like gaming or the social media. There are certainly some things that have more potency.”⁴⁷⁰

Because there is no official consensus on the criteria of Internet addiction disorder, surveys have indicated that prevalence rates in Europe and the United States range between 1.5 and 8.2%.⁴⁷¹ The most frequently mentioned diagnostic criteria in scientific literature on digital media addiction and applied by practitioners (digital media addiction specialists) are the following according to an ON/OFF supervised study (in order):⁴⁷²

- *Social withdrawal and negative social consequences*: more time spent alone in order to spend more time online; conflict with family, friends, employer, and teachers due to Internet use and resulting neglect of tasks and duties
- *Performance drop*: decreasing performance at work or at school
- *Loss of control*: more and more time spent online, loss of control over time of use, unsuccessful attempts to limit time spent online
- *Development of tolerance*: more frequent or intense use necessary to get the same rewards
- *Physical consequences*: lack of sleep, malnutrition, loss in weight or overweight, posture
- *Withdrawal symptoms*: restlessness, tension, craving
- *Limitations in behavior and thinking*: larger part of the day spent using the Internet at the expense of other activities, cognitive obsession with online activities even when not online
- *Lies*: real amount of time spent online obscured in front of family and friends.

For their representative study on adolescents and cellphone use (N=1,223), media psychologists Gregor Waller and Daniel Süß used Brown’s model to define addictive behavior based on the following dimensions: *salience, conflicts with other activities, euphoria/relief, development of tolerance, withdrawal symptoms, and relapse symptoms*. The study found important links between addictive cellphone behavior and specific personality traits such as impulsivity, as well as family relationship issues (problematic child-parent relationships).⁴⁷³ The link between addictive connectivity behavior and family relationships found in the study confirms clinical experience. According to pioneering

⁴⁶⁸ ON/OFF expert interview with Kimberly Young in November 2014, Cambridge, MA–Bradford, PA, USA

⁴⁶⁹ Based on a presentation by psychologist Dominik Batthyány about Internet addiction in Zurich, Switzerland in November 2011.

⁴⁷⁰ ON/OFF expert interview with Kimberly Young in November 2014, Cambridge, MA–Bradford, PA, USA

⁴⁷¹ Weinstein & Lejoyeux, 2010

⁴⁷² Baumann & Stauffer, 2013, p. 25, 56

⁴⁷³ Waller & Süß, 2012

Swiss Internet addiction specialist Franz Eidenbenz, pathological Internet use correlates with family conflicts and is a reactive attachment disorder.⁴⁷⁴ ON/OFF expert and clinical psychologist Diane Schiano confirms that the bottom line is the relationship between parents and children: “In my experience, with a kid who is really into the Internet to the exclusion of the family, there is something else going on.”⁴⁷⁵ At the time of the ON/OFF interview, Schiano worked as a clinical psychologist at the renowned Mental Research Institute (MRI) in Palo Alto, CA, in walking distance to the Stanford University campus and in the heart of Silicon Valley. Schiano is a PhD-trained experimental psychologist who did pioneering studies of online user behavior in the 1990s for IT and telecommunications companies in the Bay Area. About research back then, she says, “In the Silicon Valley, we were all paid to find ways to enhance the world of online technology. We were paid to find the advantages.”⁴⁷⁶ At the MRI roughly twenty years later, she has been conducting a study on Internet addiction in the family context. About the area she lives and works in, she says: “Here in the Silicon Valley, parents work incredible hours and they may well love it. But hyper-connectivity generates all kinds of issues in the families. One mother decided she can’t do it any more and lets her kids use whenever and whatever they want. But the technologies are designed to be addictive. I know psychologists who are working on these things. They are designed to give you the dopamine rush. So it is kind of unfair. Kids need some kind of scaffolding and help. Their frontal lobes are not developed yet, so they are having troubles with self-control.”⁴⁷⁷ Her paper about parenting digital youth shows addiction is the predominant parental concern overall and the important contribution of parenting in moderating digital media use across childhood.⁴⁷⁸

While many studies use self-reporting in order to measure actual usage, technological tools are more accurate. To measure how long participants used their phones, a group of researchers worked with an app called “Menthal,” which tracks which apps are used on a smartphone for how long and how many times a day.⁴⁷⁹ Roughly 200,000 users downloaded the app voluntarily offering the computer scientists and psychologists at the University of Bonn a large data set. They found that participants used their smartphones for three hours a day on average: 34 minutes for WhatsApp; 25 minutes for Facebook, Twitter, or Instagram; 25 minutes for games. On average, participants unlocked their smartphones 55 times a day. 12% even unlocked their phones 96 times a day, which is about every ten minutes.⁴⁸⁰ Following the press release of the study in 2014, a lot of press articles were published with titles such as “Menthal shows how smartphone addicted you are.” It is important to note that from a clinical standpoint, the amount of time spent online or the number of times a smartphone gets unlocked is far from enough to diagnose a problematic Internet use.⁴⁸¹

There are a number of factors relevant for a risk assessment of Internet addiction: a high correlation of addictive connectivity behavior and negative family relationships, a high comorbidity with other mental disorders (such as depression or anxiety disorders), adolescents brain development concerns and whether families support them in limiting their use (the frontal lobe—the

⁴⁷⁴ Eidenbenz, 2013

⁴⁷⁵ ON/OFF expert interview with Diane Schiano in December 2014 in Palo Alto, CA, USA

⁴⁷⁶ ON/OFF expert interview with Diane Schiano in December 2014 in Palo Alto, CA, USA

⁴⁷⁷ ON/OFF expert interview with Diane Schiano in December 2014 in Palo Alto, CA, USA

⁴⁷⁸ Schiano, Burg, Smith, & Moore, 2016

⁴⁷⁹ Montag, Błazzkiewicz, et al., 2015; Montag, Reuter, & Markowitz, 2015

⁴⁸⁰ Hubik, 2014

⁴⁸¹ Young, 2014

relevant part of the brain for self-control—reaches full maturity in the 20s), and last but not least, technology companies deliberately designing software to be addictive. Additionally and importantly, frequent use does not necessarily indicate addiction. The German government funded EXIF study on Internet use in families found that despite excessive usage in 9% of families, no indicators of addiction were found.⁴⁸² Experts maintain that social withdrawal and decreasing performance at school or in the workplace are the most common indicators of pathological Internet use, not necessarily the time spent actively using it.

Neuroscience & Addiction by Design

While digital media-related addictions are on the rise, alcohol is still on top of the list for problematic use, says addiction prevention specialist Silvia Kölliker in her ON/OFF interview. Cannabis/tobacco and digital media come in second and third respectively.⁴⁸³ Generally, addictions can be divided into two major categories: substance addictions and process addictions. Examples from the pre-Internet era by addiction expert Anne Wilson Schaeff include for *substance addictions*, alcohol, drugs, nicotine and caffeine, and food; and for *process addictions*, accumulating money, gambling, sex, work, religion, worry, and relationships.⁴⁸⁴ Internet addiction has been described as a process addiction, behavioral addiction, or non-substance addiction. According to Wilson Schaeff, both categories function in essentially the same way and produce the same results. While addictions are very common, not all of them are of equal severity.⁴⁸⁵ Wilson Schaeff points out that “almost anything, substance or process, *can* become addictive. Television or running also can be addictions. On the other hand, it is equally true, that there is nothing that *must* become addictive.”⁴⁸⁶ Clinically trained psychologist and meditation teacher Jack Kornfield frames addictions as avoidance behavior, saying, “Our addictions are the compulsively repetitive attachments we use to avoid feeling and to deny the difficulties of our lives.”⁴⁸⁷

Most addictions can be traced back to underlying personal struggles, but technology is not neutral. Research on compulsive gambling in Las Vegas has been getting a lot more attention recently regarding social media algorithms. In MIT professor Natasha Dow Schüll’s book *Addiction by Design*, Schüll describes the strategic calculations behind game algorithms specifically designed to maximize the gambler’s “time on device.” She found that intensifying traffic between people and machines of chance blurs the lines between design and experience, control and compulsion. ON/OFF expert Chris Peterson says, “It is not to say that the technology of these machines is causing compulsive gambling. They hire PhD trained psychologists to maximize engagement on Facebook. Because they want to maximize how much time you spend on Facebook. Because that is where their revenue comes from. There is an interesting middle space between technological determinism and social construction.”⁴⁸⁸ Candy Crush, one of the most popular mobile games, has been subject to controversy due to its addictive qualities. The game mechanics have been criticized for being exploitative with regards to in-app purchases and the software en-

⁴⁸² Kammerl et al., 2012

⁴⁸³ ON/OFF expert interview with Silvia Kölliker in November 2013 in Zurich, Switzerland

⁴⁸⁴ Schaeff, 1987, p. 20f

⁴⁸⁵ Schaeff, 1987, p. 19

⁴⁸⁶ Schaeff, 1987, p. 24

⁴⁸⁷ Kornfield, 1993, p. 23–24

⁴⁸⁸ ON/OFF expert interview with Chris Peterson in October 2014 in Cambridge, MA, USA

gineers cooperating with psychologists have been called “ruthless” and “Candy Crush’s Architects of Addiction.”⁴⁸⁹

ON/OFF expert Marcel Bernet talked about instant gratification on social media. When he went off social media for four months after selling his communications company, he realized in a deeper way that he had felt somewhat addicted to publishing online. It had been part of his job to publish for international clients such as Google or the State Street Bank in Boston, but he understood in a deeper way that part of publishing in social media was a way to make him feel noticed. Being acknowledged instantly by other web users through likes, shares, and comments is a powerful driver for people to come back to social media platforms. This is confirmed by neuroscientific research, which demonstrated that the motivation of gains in reputation—positive social feedback concerning one’s character—could predict social media behavior such as a more intense use of Facebook.⁴⁹⁰ Psychologist and connectivity researcher Turkle explains the psychological benefits of digital gratifications: “It is not exact to think of people as tethered to their devices. People are tethered to the gratifications offered by their online selves. These include the promise of affection, conversation, a sense of new beginnings.”⁴⁹¹ Behavioral psychologist Jason Washburn explains that reward centers in the brain are firing with that immediate reward of constant stimulation: “To be constantly connected is highly reinforcing. When you train kids young to be reinforced to it, it takes on a process addiction, a quality to it, in the sense that we are training our brains for this constant stimulation. And we are training our brains to have instant access. It hits the reward systems in the brain.”⁴⁹² If people are constantly checking work-related emails and documents, are they addicted to their devices or are they simply connected workaholics? ON/OFF expert Kölliker answers, “Yes, they can be workaholics, but it is mainly an addiction to be on top of the news, to be part of what is going on. It is important for many to immediately get the news from the management. It is hard to draw a line between workaholics and information junkies.”⁴⁹³

A historical perspective shows that public discourse about new media has time and again been about fears of overuse and addiction. In Germany in the 16th and 17th century, the popularity of tabloid newspapers created a stir (“unzeitige Neue-Zeitungs-Sucht”). In the 1800s, there was a debate about the “reading mania” and its unhealthy consequences (“ungesunde Lese-wuth”), and later “TV fever” (“Fernsehfiieber”).⁴⁹⁴ It is interesting to consider reading a lot has become something that is encouraged when it was not a few centuries ago.

In summary, it is far too simple to blame the Internet as something that “creates” addictive behavior. At the basis of problematic Internet use, there generally are underlying issues such as difficult family relationships or attachment disorders, and compulsive online connectivity behavior is a potential coping strategy among many others. However, technology companies are working hard to make their products more addictive, because a maximum amount of “time on device” is what drives their business model. Finally, hyper-connectivity may exacerbate previous addictions such as gambling addiction, work addiction, or pornography addiction, simply by making everything available at the users’ fingertips.

⁴⁸⁹ Dockterman, 2013

⁴⁹⁰ Meshi et al., 2013

⁴⁹¹ Turkle, 2008, p. 125

⁴⁹² ON/OFF expert interview with Jason Washburn in September 2014 in Chicago, IL, USA

⁴⁹³ ON/OFF expert interview with Silvia Kölliker in November 2013 in Zurich, Switzerland

⁴⁹⁴ Bartsch, 2009

6. Other Physical Health Effects

The literature review revealed additional less discussed effects of hyper-connectivity or extensive use of mobile devices on physical health.

Radiation. The city of Berkeley near San Francisco, one of the most progressive city in the United States, passed a legal measure in 2015 called “right to know” ordinance. The ordinance would require that retailers warn cellphone customers that they “may exceed the federal guidelines for exposure” to radio frequency radiation by carrying a cellphone close to the body. The warning includes that the potential risk “is greater for children.”⁴⁹⁵ There is no definitive scientific evidence between connecting cellphone radiation and cancer. However, in her book about cellphone radiation, U.S. epidemiologist Devra Davis attacks the industry for downplaying possibly major health issues, such as damaging DNA, breaking down the brain’s defenses, reducing sperm count, and increasing memory loss and the risk of Alzheimer’s disease and cancer.⁴⁹⁶ ON/OFF expert and pediatrician Claire McCarthy points out how hard it is to scientifically prove negative health risks of cellphone radiation: “The tumors that we are concerned about are slow-growing tumors. To be fair, most of what the kids do is not holding the phones to their ears. They don’t talk on their phones so much. We need to look more closely what kids are doing with their devices. We are going to need at least a decade more of population-based data. But even if we start seeing more of these tumors, it’s hard to say it’s correlated to cell phones. These days, the number of toxins in the environment, even just like flame-retardant pajamas or the stuff that’s in your car or the plastics, how are you going to know?”⁴⁹⁷ The cellphone industry is currently taking legal action against the city of Berkeley claiming that there is no scientific evidence of health risks due to cellphone radiation. A related topic is electromagnetic hypersensitivity (EHS), which seems to affect a very small minority, but to date the condition has not been recognized by medical nor scientific communities. A systematic review by the World Health Organization (WHO) in 2005 concluded that, “EHS has no clear diagnostic criteria and there is no scientific basis to link EHS symptoms to EMF⁴⁹⁸ exposure. Further, EHS is not a medical diagnosis, nor is it clear that it represents a single medical problem.”⁴⁹⁹ A more recent WHO assessment from 2014 states that “[t]he electromagnetic fields produced by mobile phones are classified by the International Agency for Research on Cancer as possibly carcinogenic to humans.”⁵⁰⁰ Additionally, studies are ongoing to assess the potential long-term effects of mobile phone use on health, for example sleep quality and brain tumor risks.⁵⁰¹

Eyesight. British researchers claim that the 35% increase in near sightedness between 1997 and 2011 is largely due to the launch of mobile phones. The term “screen sightedness” was coined to express the assumption that hyper-connectivity may cause vision problems. One of the main concerns relates to a study that found that average smartphone users hold their device about 30 cm from their face while newspapers and books are kept at least 40 cm from the eyes.⁵⁰² Compared to possible eyesight problems, less attention is being paid on the potentials of

⁴⁹⁵ Pogash, 2015

⁴⁹⁶ Davis, 2010

⁴⁹⁷ ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

⁴⁹⁸ EMF = electromagnetic field

⁴⁹⁹ WHO World Health Organization, 2005

⁵⁰⁰ WHO World Health Organization, 2014

⁵⁰¹ FSM - Swiss Research Foundation for Electricity and Mobile Communication, n.d.

⁵⁰² Rosenfield, 2011

smartphones for blind users or people with visual impairments. Researchers at the MIT Media Laboratory and the University of California at Berkeley are working on a display that can correct near sightedness and far sightedness and other visual defects.⁵⁰³

Neck and spine problems. The fact that people hold mobile devices considerably closer to their eyes may explain some of the neck problems described in a study by the New York-based cervical spine surgeon Kenneth Hansraj that gained major attention in late 2014. He claims that millions of people spend hours daily on their mobile devices in a poor posture, which may lead to early degeneration and possibly require surgery. If the head is tilted forward, it dramatically increases the weight seen by the spine depending on the angle.⁵⁰⁴ Popular magazines have referred to these issues as “tech neck” or “text neck.”⁵⁰⁵

Smartphone thumb or pinky. The smartphone thumb or BlackBerry thumb is a popular expression for repetitive strain injuries due to frequent use of mobile devices. A German surgeon warns that extensive smartphone use can cause chronic infection because of constant strain of the thumb.⁵⁰⁶ A rheumatology research team tested the effects of smartphone overuse on hand function and concluded that frequent use enlarges the median nerve, which may cause pain in the thumb and reduce hand functions.⁵⁰⁷ Popular science outlets reported problems with the pinky left deformed by the way users hold their gadgets. However, there is no evidence to support these claims yet.⁵⁰⁸ On the other hand,⁵⁰⁹ smartphones can serve as appropriate therapy intervention to address hand injuries through home exercise programs and gaming apps that encourage motion and muscular control required for joint stability.⁵¹⁰

Germ. As de facto cyborgs, smartphone users bring their devices anywhere: the bathroom, the restaurant table, on the pillow in their bed. There is hardly any research on germs and touchscreens, but microbiology and immunology experts have publicly expressed concerns over hygiene and smartphones. For an article in the Wall Street Journal, a lab tested eight randomly selected phones from a Chicago office. All phones showed abnormally high numbers of coliforms, a bacteria indicating fecal contamination. A representative of the American Academy of Family Physicians commented the test results: “People are just as likely to get sick from their phones as from handles of the bathroom.”⁵¹¹

CO₂ emissions. As of 2016, roughly 3,000,000 tons of CO₂ emissions per year stem from the Internet.⁵¹² The Internet’s energy and carbon footprint is estimated to rival those of aviation (manufacturing and shipping of hardware, powering and cooling devices, networks, and data centers).⁵¹³ Geophysical research has linked carbon dioxide emissions to increased human mortality.⁵¹⁴

⁵⁰³ Hardesty, 2014

⁵⁰⁴ Hansraj, 2014

⁵⁰⁵ For example: Lund, 2016; Rodulfo, 2016

⁵⁰⁶ Ortenau Klinikum, 2013

⁵⁰⁷ INal, Demirci, Çetintürk, Akgönül, & Savaş, 2015

⁵⁰⁸ Ossola, 2016

⁵⁰⁹ No pun intended.

⁵¹⁰ Algar & Valdes, 2014

⁵¹¹ Porter, 2012

⁵¹² Internet Live Stats, 2016

⁵¹³ Vaughan, 2015

⁵¹⁴ Jacobson, 2008

Privacy & Data Security

Digital technologies enable an unprecedented and very efficient distribution of information and collection of data. The digital age is characterized by a unique technological capacity to compute, store, and transmit information. The introduction of the World Wide Web in 1991 has accelerated the flow of information on a global scale and led to an explosion of data. As of 2016, the global Internet traffic is about 3,000,000,000 gigabytes per day. There are more than 1,000,000,000 websites, and approximately 60,000 of them get hacked per day. Every day, more than 600,000 computers, 6,000,000 smartphones, and 1,000,000 tablets are sold worldwide, connecting ever more devices and individuals.⁵¹⁵ The amount of digital data doubles around every three years.

Highly interconnected and interoperable systems like the Internet enable the successful flow of information on a global scale, which is crucial for global challenges such as the quest for sustainable energy and the development and refinement of international disaster response systems, as Internet scholars John Palfrey and Urs Gasser note. On the other hand, the main risks of highly interoperable systems involve privacy and security issues.⁵¹⁶ Gasser notes that in the post-Snowden era, with companies such as Google and Facebook, whose business models are based on advertisements, privacy is in critical condition—we are experiencing a “digital privacy crisis.”⁵¹⁷

American computer scientist Lorrie Faith Cranor explains the situation similarly. She says that, “a meaningful sense of digital privacy is beyond our control, because privacy policies today

⁵¹⁵ Internet Live Stats, 2016

⁵¹⁶ Palfrey & Gasser, 2012

⁵¹⁷ Gasser, 2015, p. 339

are mostly developed by data-hoarding companies that lack business incentives to make them user-friendly.” Cranor and a colleague found in 2012 that it would take 76 workdays to read all of the privacy policies they encounter in a year.⁵¹⁸

Google has turned into a giant data company; the new parent company Alphabet launched in 2015 and makes use of Google’s modern art of data collection in the digital age for other ventures like Wi-Fi-enabled thermostats, connected military robots, and self-driving cars. Facebook has been criticized for years regarding privacy. Collecting personal information and selling it is at the core of their business model, and they have changed privacy settings and policies often and in confusing ways. A study even found that between 2009 and 2015, Facebook’s privacy standards dropped while the company has grown dramatically in size and market power.⁵¹⁹

We are currently experiencing a gold rush in data mining and simultaneously hypes around Big Data, wearable user interfaces, and the Internet of Things.⁵²⁰ Main characteristics of these technologies are firstly, that potentially large amounts of data are generated with or without deliberate actions by users, and secondly, that they usually do not have an off button—which makes them particularly relevant for the ON/OFF study. Privacy is a major source of tension and anxiety around Big Data and the Internet of Things, even if the definition of privacy is not universal and is regularly redefined by individual and cultural expectations (for example, is the content of a conversation with a journalist on or off the record, is a woman’s ankle a private matter in a particular culture, is sexual orientation private?).⁵²¹

1. Tensions Between Privacy & Utility

What do we mean when we talk about data privacy? Different aspects and notions of privacy cause different tensions with respective utilities. Governments argue that surveillance is necessary to identify terrorists and criminals while privacy activists note that in a democracy, there should be freedom from being watched. Big Data offers tremendous opportunities, mainly for the study of human health, but there is tremendous tension and anxiety around issues of Big Data and the right to use and disclose personal data.⁵²²

“Online, our interactions become public by default, private by effort,” says Internet researcher danah boyd.⁵²³ Personalized services can be very useful but often create privacy issues because they use algorithms to decide autonomously what users are looking for based on previous behavior. In the context of digital communication and social media, we largely benefit from social interactions, which are possible to have in real-time despite physical distance, but the wish to socially interact via digital media may be in conflict with a wish for privacy in the sense of non-interference with private affairs.

⁵¹⁸ McNeal, 2015

⁵¹⁹ Farrell, 2015

⁵²⁰ Gartner Hype Cycle Report, 2014

⁵²¹ Hardy, 2012

⁵²² Mayer-Schönberger & Cukier, 2013

⁵²³ Hardy, 2012

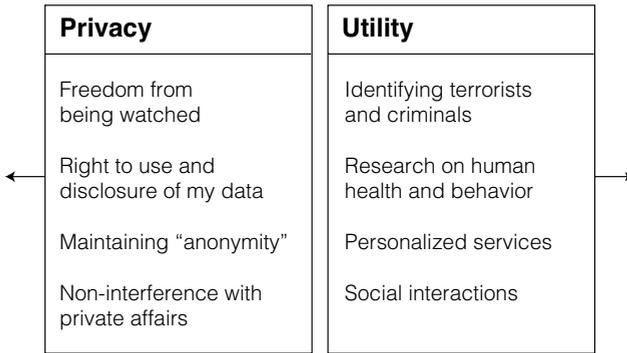


Figure 49 — Tensions between various aspects of privacy and respective utilities⁵²⁴

In authoritarian regimes, government surveillance has been used for censorship and to identify and prosecute dissidents. There is a broad understanding that terrorist attacks in the Western world, namely 9/11 in 2001 (but also Madrid in 2004, London in 2005, Boston in 2013, and Paris in 2015) have led to an increase in surveillance on information and communication in an attempt to foster public safety.⁵²⁵

2. Big Data & The Internet of Things

Big Data analyses tend to be based on a large body of information collected online. Big Data can be characterized “by the ability to render into data many aspects of the world that have never been quantified before; call it datafication.”⁵²⁶ As examples, Kenneth Cukier and Viktor Mayer-Schönberger list the datafication of location via GPS satellite systems, words by mining centuries’ worth of books, and also friendships and likes via Facebook. Large datasets are then processed using smart algorithms, clever software, and statistics with the assistance of computer memory and powerful processors.⁵²⁷

Especially in the field of medicine, many hope that Big Data analyses based for example on genetic information or a searchable health records could provide answers to medical questions, such as whether certain drugs have side effects. Google searches predicted the spread of the H1N1 flu outbreak. The application Google Flu Trends is often held up as an exemplary use of Big Data.⁵²⁸ However, researchers reported in 2013 that Google Flu Trends predicted more than double the proportion of doctors’ visits for influenza-like illness than Centers for Disease Control and Prevention. The quantity of data alone does not mean that fundamental issues around validity and reliability can be ignored, warn Lazer et al. using the Flu Trends as an example for more general “traps in Big Data analysis.”⁵²⁹ Big Data also poses new threats to privacy

⁵²⁴ Vadhan, 2015

⁵²⁵ Schneier, 2015b

⁵²⁶ Cukier & Mayer-Schönberger, 2013

⁵²⁷ Cukier & Mayer-Schönberger, 2013; Mayer-Schönberger & Cukier, 2013

⁵²⁸ McAfee & Brynjolfsson, 2012

⁵²⁹ Lazer, Kennedy, King, & Vespignani, 2014

such as the prospect of being penalized for something we may not have done yet (and may never do) based on Big Data's ability to predict future behavior. The movie *Minority Report* from 2002 shows a dystopian version of this and—a decade later—has been cited in the current context of Big Data and law enforcement.⁵³⁰ Predictive analytics can lead to profiling and discriminatory effects.⁵³¹

With the advent of the so-called Internet of Things, as the trend towards connected physical objects is often called, even more data is generated via chips, sensors, implants and gets eventually shared. In 2008, the number of “things” connected to the Internet exceeded the number of people on earth and a Cisco prediction says, that by 2020, more 50 billion “things” will be connected.⁵³² “Things” include connected vehicles, houses, cattle, devices recording our body functions, and many more. With the Internet of Things more boundaries get blurred, including those between an individual using the Internet with a specific device, between data generated actively by a person and data collected through sensors, and between data shared either intentionally (like the new Swiss public transport pass containing an RFID chip with travel information) or unintentionally (location or other personal data shared due to an increasing number of devices, sensors, and applications tracking and potentially sharing location). The Internet of Things presents a variety of consumer benefits and many privacy challenges as any Internet of Things solution will capture a large amount of data because its objective is to learn more and better serve the system users. A major problem is user consent of data sharing, but users have limited time and technical knowledge prohibiting full understanding of these concerns for each specific device, and what's more, some devices may not even have a built-in option to change privacy settings.⁵³³

According to Internet scholar Gasser, the Internet of Things and Big Data are connected. “Both the Big Data phenomenon and the Internet of Things are evolutionary products of the new digitally networked environment, fueled by the Internet and the trend towards digitization. Together, they are changing the ways in which information—including personal data—is created, disseminated, accessed, used, and reused by individuals and businesses, as well as at whose discretion and at what cost these actions take place.”⁵³⁴ Gasser describes the emergence of various privacy challenges and concerns as a result of the amount of data, an increasing number of actors engaged in the data ecosystem, and society's growing interdependence on data.⁵³⁵

Big Data is being used for public good in areas such as urban planning, transportation, neighborhood development, environmental issues, and medical data. In 2015, the San Francisco-based software company Uber, which specializes in private taxi services, shared ride data with the City of Boston in an unprecedented cooperation. Through its smartphone app, Uber collects large amounts of information about how people travel through cities. Boston's chief information officer Jascha Franklin-Hodge approached Uber, but initially the company was reluctant to hand over data. They finally agreed to share ride data that would be stripped of identifying information and exact locations. The mayor's office of Boston said the data could help officials plan roadway and traffic signal projects or better understand travel patterns as the city seeks new housing.⁵³⁶

⁵³⁰ Gibbs, 2014

⁵³¹ Gasser, 2015, p. 353

⁵³² Evans, 2011

⁵³³ Perera, Ranjan, Wang, Khan, & Zomaya, 2014

⁵³⁴ Gasser, 2015, p. 348

⁵³⁵ Gasser, 2015, p. 348

⁵³⁶ Dungca, 2015

However, anonymized datasets like the one Uber shared with the City of Boston are not really anonymous. Gasser notes that with Big Data, there are “too many data points to unlink identities from each piece of data.”⁵³⁷ In an experiment, MIT scientist Yves-Alexandre de Montjoye and his team attempted to reverse engineer anonymous credit card data, and 90% of the time they managed to identify individuals in the dataset using the date and location of just four of their transactions.⁵³⁸ Similarly, a New York City taxi data set was used to predict whether cab drivers were devout Muslims by looking at regular breaks during their days for prayers. This brings up legal challenges depending on the legal situation in specific countries or regions. Researcher Anna Berlee pointed out that under the EU Data Protection Directive, processing of personal data is restricted, especially sensitive data “revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade-union membership, and the processing of data concerning health or sex life.”⁵³⁹

In the United States, leading technology experts—cybersecurity specialist Bruce Schneier, Harvard computer science professor Margo Seltzer, and others—argue that legal regulations are ultimately the only way to deal with the risks around data privacy. The market currently rewards cheap technology with poor data security standards. Rather than banning specific technologies, regulating data and data usage, according to these experts, is crucial to address current and upcoming privacy challenges.⁵⁴⁰ But lawmakers face a crucial challenge in Internet jurisdiction: trying to reconcile a global network with local law,⁵⁴¹ as current transatlantic debates about privacy law show.⁵⁴² To ensure the future of privacy in the digitally networked environment, Gasser suggests a combination of various approaches. Legal approaches include privacy law, consumer protection law, and competition law. Additionally, raising awareness, education, and digital literacy are another important approach to protect individual users. On the technological level, Gasser advocates for a “privacy by design” approach.⁵⁴³

3. Location & Data Privacy

Location tracking is considered a major privacy threat of mobile connected devices. There are four ways any mobile phone user’s location can be tracked:

- Cell towers via mobile signal tracking
- IMSI catcher via mobile signal tracking
- Wi-Fi and Bluetooth tracking
- Location information leaks from apps and web browsing⁵⁴⁴

⁵³⁷ Gasser, 2015, p. 351

⁵³⁸ de Montjoye, Radaelli, Singh, & Pentland, 2015

⁵³⁹ Berlee, 2015

⁵⁴⁰ Schneier, 2015a; Lomas, 2015

⁵⁴¹ Zittrain, 2003; Jones, 2013

⁵⁴² The Safe Harbor Privacy Principles were declared invalid in 2015. A new agreement, the EU-U.S. Privacy Shield, includes stronger obligations on U.S. companies to protect Europeans’ personal data (European Commission, 2016).

⁵⁴³ Gasser, 2015, p. 347–348

⁵⁴⁴ Electronic Frontier Foundation, 2015c

For the past five years, Malte Spitz has been a nationwide privacy activist in Germany and has been able to impact global privacy debates. The young politician is a member of the Chaos Computer Club (CCC). In 2009, he took legal action against the Deutsche Telekom in order to obtain all the data they had saved about him. A year later, the biggest German telecommunications company agreed to hand over his data, which turned out to be 35,830 lines long. Partnering up with the publisher ZEIT Online and Open Data City, Spitz uploaded the data as an interactive map and made it accessible for download (Figure 50). The location data and other information reveal very precisely, where he slept and where he stayed over the course of several months, 24 hours a day. The interactive map allows users to zoom in and out. The white spots in his days indicate he was in one way or another “off the grid.” He might have turned off his phone at night, might have lost connection due to traveling or leaving the country.

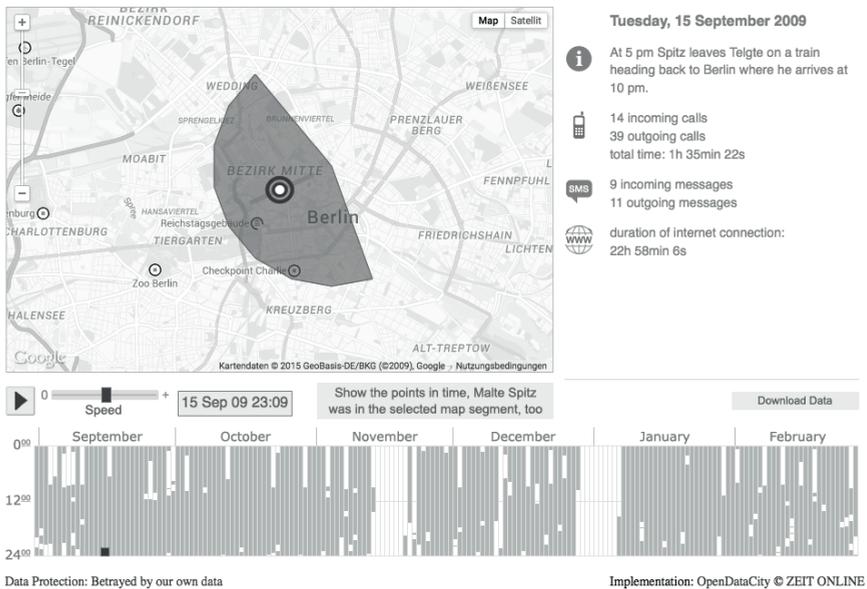


Figure 50 — Telecommunications and Internet data of German politician Malte Spitz

The publication of Malte Spitz’s data caught international attention and made it on the cover of The New York Times. He gave a TED Global talk presenting the data above and calling for a “self-determined use of one’s own data.” In 2014, he published a book called *“What are you doing with my data?”*⁵⁴⁵ In 2014, Swiss politician Balthasar Glättli, based on Spitz’s pioneering actions, published his own telecommunication when the Swiss data retention law was being discussed in national parliament.⁵⁴⁶

⁵⁴⁵ Spitz, 2014

⁵⁴⁶ Digitale Gesellschaft, 2014

It is hardly a coincidence that the highly publicized release of personal data was undertaken by Spitz, both a German and a member of the CCC. What is it about Germany and data privacy? Berlin is currently the capital of global data privacy activism; Germany has some of the strictest privacy laws when it comes to surveillance.⁵⁴⁷ Laura Poitras, the American filmmaker who was at the heart of the Snowden revelations, moved to Berlin long before Snowden even contacted her after she made two films on the U.S. war on terror and found she was under surveillance herself. Like many others, such as U.S. privacy activist and journalist Jacob Appelbaum, she hoped to escape the security services by being based in Berlin. Only after winning an Oscar for her critically acclaimed documentary *Citizenfour* in 2015 did she move back to the United States after many years in German exile.⁵⁴⁸

The CCC, one of the most influential digital organizations world-wide, is based in Berlin, and their annual congress, which started in 1990, is now attended by more than 10,000 people who travel from near and far to attend one of the largest hacker events on the planet. Why is Germany more focused on data privacy than most other countries? The history of surveillance during two authoritarian regimes in the 20th century, Nazi Germany and the GDR (German Democratic Republic, the official name of East Germany during the era of the Berlin Wall), is still very present. The Stasi, the secret police in the GDR, are often cited often in discussions about NSA surveillance.⁵⁴⁹

4. Privacy in the Post-Snowden Era

As reported in the documentary *Citizenfour*, Edward Snowden contacted filmmaker Laura Poitras anonymously by sending her encrypted messages such as this: “For now, know that every border you cross, every purchase you make, every call you dial, every cellphone tower you pass, friend you keep, sight you visit, any subject line you type, is in the hands of a system whose reach is unlimited, but whose safeguards are not.”⁵⁵⁰ The notion of privacy in the digital age has changed for many people after the Snowden revelations. When Snowden, an ex-contractor for the American National Security Agency (NSA), started leaking classified NSA documents in June 2013, numerous global surveillance programs were revealed to a worldwide audience. The United States prosecutors charged Snowden with espionage and theft of government property. While his role as “hero” or “traitor” (or both) is widely disputed, the Snowden revelations have sparked a global debate over mass surveillance and privacy in the digital age. The major debate that has emerged is about balancing national security interests with data privacy.⁵⁵¹

After the Snowden revelations in 2013, Pew Research found a major public opinion shift in the U.S. in how NSA surveillance and privacy are viewed. For the first time in ten years, a majority of U.S. Americans felt that government anti-terror policies were too invasive (Figure 51).

⁵⁴⁷ Cadwalladr, 2014

⁵⁴⁸ Abedian, 2016

⁵⁴⁹ Cadwalladr, 2014

⁵⁵⁰ Poitras, 2014

⁵⁵¹ Vadhan, 2015

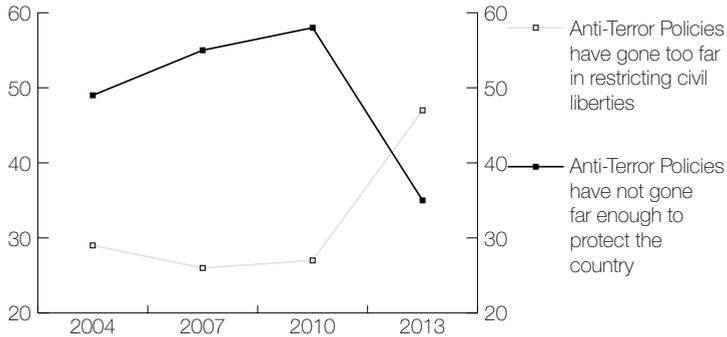


Figure 51 — Government Anti-Terror Policies in the public eye in the U.S. from 2004 to 2013, in percent of the total population⁵⁵²

Similar criticism reemerged in Europe after the Paris and Brussels 2016 attacks pushing back on mass surveillance.⁵⁵³

According to Pew Internet Research, 80% of U.S. adults agree or strongly agree that Americans should be concerned about the government’s monitoring of phone calls and Internet communications. 54% have become less confident over time that the surveillance programs are serving the public interest.⁵⁵⁴ Despite growing concern about government monitoring of online and phone communications, most Internet users say that they have tried to avoid many other categories of people—such as hackers, advertisers, or employers—more than they have attempted to avoid the government or law enforcement (Figure 52). For about a fifth of online users, some discomfort about being observed online stems from certain friends, people of their past, people who might criticize or harass them or even family members or romantic partners. Eventually, it seems that Internet users try to avoid some people they know personally (with an exception for criminals and advertisers) rather than certain companies or the government. In some cases, disclosing certain information online to specific friends, employers, or even family members or a romantic partner may be perceived as more likely to have negative impact on an individual than information disclosed to or gathered by the government. It is also likely that only about 5% of U.S. Internet users try to avoid the government from observing them at least somewhat because many others lack the technical expertise to use anti-surveillance technologies like encrypted communication. Other users may feel they have nothing to hide, or that even if they did, if the government wanted to observe them, the government would find a way no matter what preventative measures users took.

⁵⁵² Pew Research Center, 2013; More recently, the public opinion has shifted back to before the Snowden revelations.

⁵⁵³ Lobo, 2016

⁵⁵⁴ Rainie, 2015



Figure 52 — Who users try to avoid online. Percentage of Internet users who say they have used the Internet in ways to avoid being observed or seen by ... ⁵⁵⁵

Researchers have been interested in whether the Snowden revelations have impacted people’s behavior online in terms of better protecting their personal data. A Pew Research survey after the revelations found that there is little confidence in the security of common communication channels in the United States, and those who have heard about government surveillance programs are the least confident. Among the 87% of U.S. adults who are aware of the government surveillance program, 25% say they have changed their own patterns of use on various platforms (Figure 53).⁵⁵⁶

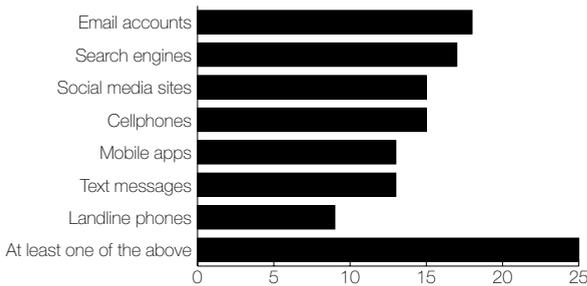


Figure 53 — Among the 87% of U.S. adults who have heard of the government surveillance programs, the percentage who have changed their use of the listed technological platforms⁵⁵⁷

According to another publication by the Pew Research Center, 54% of U.S. adults believe it would be somewhat or very difficult to use tools and strategies to be more private online. About half of U.S. adults have not adopted or considered using a search engine that doesn’t keep track of their searches, email encryption, privacy-enhancing plug-ins, proxy servers or anonymity software. About a third does not know about such tools. The authors of this study state that a noteworthy number of respondents answered “not applicable to me” even though virtually all of them are Internet users.⁵⁵⁸

⁵⁵⁵ Rainie, 2015

⁵⁵⁶ Madden, 2014

⁵⁵⁷ Madden, 2014

⁵⁵⁸ Rainie & Madden, 2015

A representative Swiss survey revealed that about half (51%) of the Swiss Internet users think that corporations intrude their privacy online. Fewer Swiss users (40%) have privacy concerns regarding the government. Younger users are less concerned. The most common strategies to protect digital privacy among Swiss users are reading privacy policies (77%), blocking or deleting cookies (67%), or using a fake name (29%).⁵⁵⁹

A large global survey by the Canada-based Centre for International Governance Innovation (CIGI) found that about 60% of the respondents (N=23,376) have heard about Edward Snowden. In Germany, 94% have heard about him, and in the United States 76%. Of those aware of Edward Snowden (N=14,411), 39% have taken steps to protect their online privacy and security as a result of his revelations.⁵⁶⁰ These results are significantly higher than those by the U.S.-based Pew Research Center cited above. A plausible explanation could be that the CIGI online survey is biased towards well-informed users while Pew used a survey panel, which is representative for the U.S.

Digital privacy activist Alex Marthews and MIT professor Catherine Tucker conducted a rare and interesting non-survey-based study on the topic. They analyzed online search behavior in eleven countries after the Snowden revelations by comparing search-engine queries before and after a key date in June 2013. They rated search terms for their degree of privacy sensitivity along multiple dimensions. The study authors found chilling effects in online searches of roughly 10% driven by government-sensitive words in the United States (such as weapons or illegal substances) and personally sensitive words (such as searches on mental illnesses or gender reassignment) outside of the United States. The authors argue that the chilling effect on online search behavior from government surveillance might damage the competitiveness of U.S.-based Internet companies.⁵⁶¹

Common statements why individuals have not changed their privacy behaviors include, “I have nothing to hide,” “I don’t have time or the expertise,” “It won’t prevent monitoring anyway,” “I don’t want to raise suspicions or invite scrutiny,” and “I am comfortable with the monitoring because it makes us safer.”⁵⁶² Hernani Marques, ON/OFF expert and spokesperson of the Chaos Computer Club Switzerland says, “The argument people make about ‘I have nothing to hide’ is ridiculous. I usually tell people who say that, ‘Give me your phone and I’ll read all of your messages.’ And they don’t want to give it to me. It is better to confront people. The author Juli Zeh says, people are just incredibly overwhelmed [with current privacy challenges], and then they say they have nothing to hide.”⁵⁶³

Why “Offline” Does Not Exist for Targets of Surveillance

Powerful technologies allow secret services like the NSA to plant software on mobile devices, giving intelligence agents and law enforcement the ability to turn a smartphone into a tiny spy.⁵⁶⁴ Privacy lawyer Kurt Opsahl says in the ON/OFF interview, “A technology that I am always aware of is that they put a malware on it that makes it so that you go through the process of turn-

⁵⁵⁹ Latzer, Büchi, & Just, 2015b

⁵⁶⁰ Centre for International Governance, 2014

⁵⁶¹ Marthews & Tucker, 2015

⁵⁶² Madden, 2015

⁵⁶³ ON/OFF expert interview with Hernani Marques in November 2013 in Zurich, Switzerland

⁵⁶⁴ Fuentes, Álvarez, Ortega, González-Abril, & Velasco, 2010

ing it off and it pretends to turn off but it is not in fact turned off, and the functionality of revealing your location can still exist. Some security-conscious people might go as far as to remove the battery; unless you have an iPhone you can't do it."⁵⁶⁵ These technological capabilities of malware and "Trojan horses"⁵⁶⁶ challenge the notion of "offline." You may think you are offline because you turned off all of your connected devices, but not actually being offline because you have been targeted. Opsahl, who works with the Electronic Frontier Foundation, adds, "Most people are not secure enough to defend against a nation state. I wouldn't say that everybody is in the circumstance in which they're being tracked even if their phones are off, it is just something that can happen."⁵⁶⁷

Although the NSA and their direct collaborators like the British GCHQ are on everybody's lips since the Snowden revelations, surveillance technology is still far more common and widespread globally than is often assumed. The hack of the surveillance technology company Hacking Team in 2015 revealed that their customers include dozens of government and law enforcement agencies, including dictatorships accused of human rights violations. Some regimes, like Ethiopia's, used the software to target journalists while others, like the police of the Canton of Zurich in Switzerland, use it to fight major drug-related crimes.⁵⁶⁸ ON/OFF expert Opsahl explains what can occur if someone happens to travel at the same speed and direction as a target: "It could be that you just happen to be in the same train with that person and have no idea who they are. I would prefer that for location information that this would be done only with a warrant approved by a court with a probable cause in very limited circumstances but in general that you can feel comfortable that your information is not being tracked."⁵⁶⁹

During the Euromaiden⁵⁷⁰ protest, Opsahl says a majority of people who had their phones on received a text message that said, "We know you are at the protest, you better stop." The government used that capability to intimidate the protesters, who thought that they were participating anonymously, by tracking their location through their phones and sending them a threatening text message. Privacy expert Opsahl adds, "Many governments might be doing this to find out who is participating in protests but not revealing their hand by sending a threatening message."⁵⁷¹

Opsahl himself has participated in conversations in which they had left the phones in a different room or had gone out into a middle of a field so as to have more privacy. He advocates for legal regulations that would only allow targeting individuals using "a warrant approved by a court with a probable cause in very limited circumstances." He also promotes encryption technologies as a form of "surveillance self-defense," a project launched by his employer, the Electronic Frontier Foundation (EFF).⁵⁷² The EFF community in the United States is comparable to the German and Swiss Chaos Computer Club (CCC). In fact, many EFF employees and affiliates attend the annual CCC congress in Berlin.

⁵⁶⁵ ON/OFF expert interview with Kurt Opsahl in December 2014 in San Francisco, CA, USA

⁵⁶⁶ Trojan horses are dangerous software to attack mobile devices (Fuentes et al., 2010).

⁵⁶⁷ ON/OFF expert interview with Kurt Opsahl in December 2014 in San Francisco, CA, USA

⁵⁶⁸ Hern, 2015a; Baumann, 2015

⁵⁶⁹ ON/OFF expert interview with Kurt Opsahl in December 2014 in San Francisco, CA, USA

⁵⁷⁰ Euromaidan was a wave of anti-government demonstrations in Ukraine beginning in November 2013.

⁵⁷¹ ON/OFF expert interview with Kurt Opsahl in December 2014 in San Francisco, CA, USA

⁵⁷² ON/OFF expert interview with Kurt Opsahl in December 2014 in San Francisco, CA, USA

A crucial question regarding surveillance for CCC members is “Who watches the watch-dogs?”⁵⁷³ CCC spokesperson Hernani Marques says about digital surveillance: “In fact, a cellphone is a covert listening device. It constantly connects to cellphone towers, which makes it easy to track someone’s location. If you are sending messages, tweeting, or posting on Facebook on the go, there is lots of evidence about your location. This is a situation we didn’t even have during regimes with spies. Or during the ‘Fichenaﬀäre’⁵⁷⁴ in Switzerland. In the GDR,⁵⁷⁵ there were 100,000 spies for 10 million people. But now you can simply press a button and know where everyone is.” Moreover, Marques points out the risk of data hacks: “Who knows if substantial parts of the Facebook servers would get published? A single person is enough to expose a lot of data. It is very unpredictable.”⁵⁷⁶ In Germany, the Snowden revelations in 2013 had a substantial impact, but the debate about government mass surveillance was re-launched in August 2015, when award-winning journalists of Netzpolitik.org were oﬃcially accused of treason after publishing documents about plans to increase mass surveillance. Treason is an extreme accusation, which was last used against German journalists in the 1950s. Netzpolitik.org received international support and a high-ranking German oﬃcial had to step back.

15 out of 22 global ON/OFF experts reported that privacy issues due to tracking and surveillance are discussed in their respective country as a risk of hyper-connectivity, with privacy apparently being discussed less in Latin American countries. Additionally, the ON/OFF Global Expert Survey indicates that mobile devices and privacy issues are indeed a common concern in their countries (Figure 54).

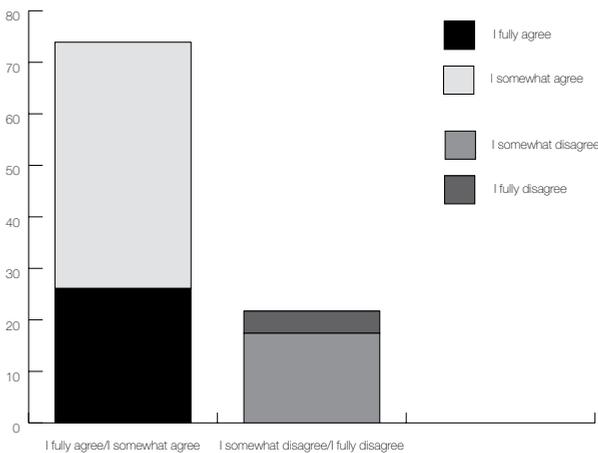


Figure 54 — “In my country, many people think mobile devices have privacy issues.” — ON/OFF Global Expert Survey

⁵⁷³ ON/OFF expert interview with Hernani Marques in November 2013 in Zurich, Switzerland

⁵⁷⁴ In 1989, the Fichenaﬀäre or Secret Files Scandal in Switzerland revealed that the Swiss authorities had created a system of mass surveillance.

⁵⁷⁵ German Democratic Republic, authoritarian regime in the 20th century

⁵⁷⁶ ON/OFF expert interview with Hernani Marques in November 2013 in Zurich, Switzerland

Within the German cyborg association Cyborgs e.V., there are two groups with different positions on data privacy, says their president and ON/OFF expert Enno Park. The larger group adheres to the idea of “post-privacy.” They believe we have to culturally get used to the idea that all of our data is more or less public, and think it is important that people can access data that gets collected about them and can move the data from Facebook to Google+, for example (data portability). He adds that within the “post-privacy” group, “Some use encryption technology to communicate, because they say, a lot of data about me is getting collected, profiles get created, there is surveillance, we will have to find ways to deal with that. But I will create some islands of privacy online, and I use PGP or an encrypted messenger like Threema.” The other group within the association is all about data protection and privacy. “Their position is closer to the members of the CCC Germany who advocate to prevent the collection of unnecessary data. They are skeptical towards quantified-self devices and advocate for data-security with cyborg technologies.”⁵⁷⁷

Psychological Effects of Surveillance

In the 18th century, British social theorist Jeremy Bentham designed the “Panopticon,” a prison building that would allow a single watchman to see into every cell and be able to observe all inmates. The crucial detail: Since it is impossible for a single person to watch all inmates at once, the inmates would not be able see the observer or tell whether or not they were currently being watched. The invisibility of the observer would mean that an individual inmate could theoretically be watched constantly, allowing the one guard effectively control all inmates’ behavior all the time. In a letter, Bentham described the Panopticon prison as “a mill for grinding rogues honest.”⁵⁷⁸ Although the idea that being observed would have a disciplinary effect is common in religion (all-seeing eye of god) or Greek mythology (Panoptes was a giant with a hundred eyes), Bentham’s Panopticon has been used as a metaphor in debates around discipline (most notably by French philosopher Michel Foucault in the 1970s), surveillance, and data privacy (most recently by renowned American cybersecurity expert Bruce Schneier).⁵⁷⁹ Dobson and Fisher distinguished three different stages of the Panopticon:⁵⁸⁰

- *Panopticism I.* Bentham’s original conceptualization of the panopticon, and the model of panopticism that Foucault responds to.
- *Panopticism II.* This concept of surveillance is based on George Orwell’s idea of the “Big Brother.”
- *Panopticism III.* Highly efficient human tracking systems which include cheap technologies such as cellphone GPS, RFID chips that formerly and mainly used for national security are now available to track ordinary people including children, employees, customers.

⁵⁷⁷ ON/OFF expert interview with Enno Park in November 2014, Cambridge, MA, USA – Berlin, Germany

⁵⁷⁸ Munday, 1994

⁵⁷⁹ Foucault, 1977; Schneier, 2015a

⁵⁸⁰ Dobson & Fisher, 2007

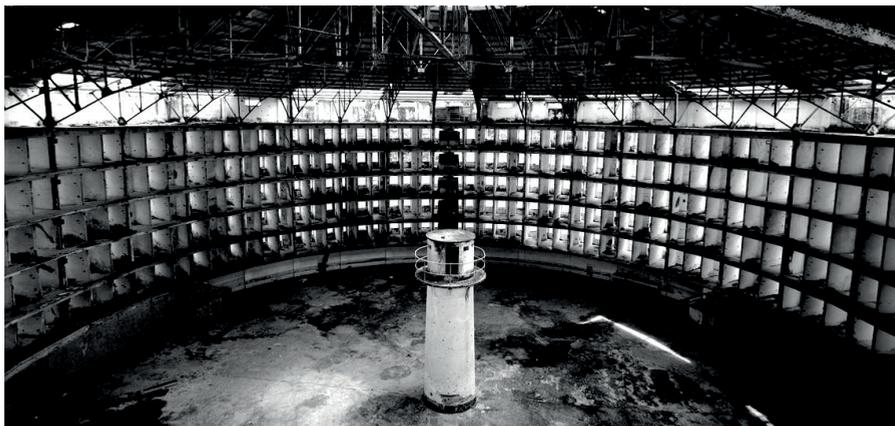


Figure 55 — In the panopticon prison, the prisoners can't see the watcher in the watchtower but know they are being watched.⁵⁸¹

Psychological effects of surveillance have been well documented in research. Psychologist Sidney Jourard described the essential need for personal privacy and private spaces in order to escape “chronic conformity with social roles” and ultimately “mental disease (the refusal or inability to continue to fulfill roles in the expected ways).”⁵⁸² Researcher Stephen Margulis explores the importance of privacy and the generally overlooked status of privacy in psychology.⁵⁸³

One of the most controversial current debates in Western societies revolves around the question of how much surveillance we need in order to ensure security. Secret services and law enforcement agencies seem to think that there is not enough yet, while large parts of Western populations are outraged about the extent of surveillance and perceived privacy invasions. A complication within the debate is often overlooked: To what extent is it possible for democratic societies to publicly debate what secret services—operating beyond the public eye—can or can't do?

Youth and Online Privacy

For young users, privacy invasions by governments are not the main concern. Parents and educators tend to worry much more about how youth put themselves at risk by publishing private data. A large U.S. study by Pew Research and the Berkman Center on teens, social media, and privacy revealed that youth are sharing more personal information than before. On Facebook, they choose private settings, but still share with a large network of friends. A majority of teens say they do not worry about third-party access to their data.⁵⁸⁴

Regarding youth protection in the digital age, data published online by children and youth poses a more direct threat to their privacy than unintentional data sharing via connected devices.⁵⁸⁵ Youth share more personal information than ever, some of which they regret later when

⁵⁸¹ Illustration based on a photo of the Presidio Modelo prison in Cuba. Photo: Wikimedia, User: Friman. Creative Commons CC-BY-SA 3.0.

⁵⁸² Jourard, 1966

⁵⁸³ Margulis, 2003

⁵⁸⁴ Madden et al., 2013

⁵⁸⁵ Genner, Süss, Waller, & Hipeli, 2013, p. 33

they are applying for college or a job and a simple Google search makes them less viable as candidates due to their online reputation. In 2000 Google processed about 18 million and in 2016 roughly 3.5 billion queries per day,⁵⁸⁶ and it is being used regularly both by college admission officers and human resources departments. Google’s search engine has become so incredibly good at processing queries and finding what users are looking for (and more), that privacy and youth advocates in Europe have long discussed a “right to be forgotten.”⁵⁸⁷ Educators and youth advocates in particular have proposed the right to be forgotten to liberate youth from their informational past. However until fairly recently, most experts agreed that the Internet couldn’t be made to “forget” data and information: “[A] purely technical and comprehensive solution to enforce the right in the open Internet is generally impossible.”⁵⁸⁸ A large debate about the right to be forgotten—not primarily focusing on youth—was sparked in 2014, when the European Court of Justice ruled against Google in a case in which a European citizen requested the removal of a link to an article published in 1998. While many Europeans liked the idea of limiting anytime-anywhere access to outdated and personal information online, U.S. Internet experts tend to argue against it, stating that despite major privacy challenges in the digital era, the European right to be forgotten is flawed.⁵⁸⁹

An international youth study comparing survey data from 16 to 25 year-olds in the United States, Brazil, Switzerland, and Singapore (N=4,030) published a ranking of who young people think are important in protecting their personal data. It is striking that a majority of the respondents in the surveyed countries seems convinced that protecting personal data is a multi-level issue and cannot be outsourced to a single player (Figure 56).

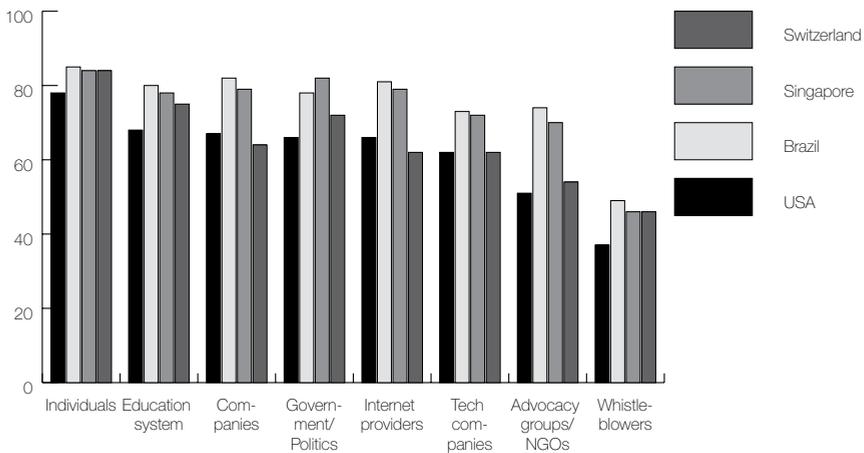


Figure 56 — “Who do you think is important to protect your personal data?” — Representative survey data, 16–25 year olds in four countries⁵⁹⁰

⁵⁸⁶ Internet Live Stats, 2016

⁵⁸⁷ Druschel, Backes, & Tirtea, 2012; Jones Ambrose & Ausloos, 2012; Mayer-Schönberger, 2009

⁵⁸⁸ Druschel, Backes, & Tirtea, 2012, p. 14

⁵⁸⁹ Pruitt, 2015; Zittrain, 2014

⁵⁹⁰ Golder et al., 2014, p. 24

In all four surveyed countries, respondents rate the individual as the most important player in protecting personal data. Schools and the education system are also rated as important, though most likely as a venue for enabling individuals to do protect their data themselves. According to the same survey, more than half of the young people surveyed in the United States, Brazil, and Singapore have stopped using specific online services and apps after the Snowden revelations. Young Swiss people have been less affected.⁵⁹¹

ON/OFF survey data shows there are differences between younger and older users and between males and females regarding data privacy. 46% of the ON/OFF surveyed students say they worry about privacy due to constant connectivity. Female students (48%) worry slightly more than males (43%). Commercial school students tend to worry a little more about privacy issues than the better-educated high school and IT students. This result is somewhat surprising because research by Pew Research in the U.S. showed that individuals who knew more about government surveillance programs tended to be more worried and take more measures to protect privacy. My hypothesis was that the higher the education, the more worried individuals would be. The hypothesis was not supported by the data. Gender differences in worrying around data privacy issues proved to be significantly larger than differences between various educational levels.

55% of the ON/OFF surveyed adults say they worry about privacy due to constant connectivity, which is significantly more than their younger counterparts. Although the ON/OFF Adult Survey was conducted about six months earlier than the ON/OFF Student Survey, both took place several months after the Snowden revelations.

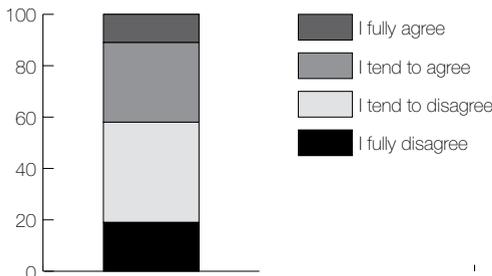


Figure 57 — “I worry about privacy regarding constant connectivity.” (N = 148) — ON/OFF Offline Day Adult Survey

To conclude, hyper-connectivity leads to an exponentially increasing amount of data production. A lot of data is produced unintentionally; some information is shared on purpose with a specific audience. Certain types of data, like personalized location or health data or specific communication or pictures, tend to be more sensitive than other data. However, even “anonymous” datasets have been shown to be vulnerable in the sense that individuals can be identified surprisingly easily only using metadata like location. Experts call for legal regulation of data collection and usage. However, the longstanding dilemma of Internet jurisdiction remains: How can we reconcile global Internet and data flow with local law?

Significant public chilling effects in online usage behavior—search engine terms, use of specific digital tools—have been found since the Snowden revelations and the trust in govern-

⁵⁹¹ Golder et al., 2014, p. 25

ment surveillance has dropped in the U.S. and other Western democracies. In the United States, Germany, and other Western democracies, balancing the benefits for national security by digital surveillance and the negative psychological effects of surveillance on individuals is subject to an ongoing and highly controversial debate. Yet interestingly, a majority of Americans is much more concerned about avoiding criminals, advertisers, and certain friends online than they are about avoiding government surveillance. Significant data breaches of companies and the release of user data have been causing increased concerns around data security.

Another aspect of data privacy in a hyper-connected public sphere with blurred boundaries between private and public, the present and the past, is outdated or potentially compromising information about individuals. Heated, transatlantic debates about the right to be forgotten online revolve around information, mainly published by youth to a specific audience at the time without realizing that it may be associated with their names for years to come, that is now accessible anytime anywhere.

Institutions

Connected individuals are at the center of the ON/OFF study. But connected individuals are part of institutions—such as companies, organizations, schools, and universities. The ways these institutions are affected by hyper-connectivity shape individual connectivity behavior, much in the same way as Giddens’ theory of structuration describes how social practices and individual behavior are indivisible from social systems.⁵⁹² Many institutional aspects of being always on have already been discussed in several chapters above. This chapter focuses on the specific role of these institutions in the debate around benefits and risks of hyper-connectivity.

1. Companies & Organizations

“I love the thing and I hate it at the same time. The reason I love it is that it *gives* me so much power. And the reason I hate it is that it *has* so much power over me,” expresses a professional his mixed feelings about his smartphone.⁵⁹³ A major benefit of hyper-connectivity for companies and organizations is productivity and flexibility. Conversely, workplace productivity can be mitigated by frequent digital interruptions and cyberloafing, and flexibility is a double-edged sword.

Mobile Flexible Work and Home Office

In the United States in 2013, one in five Americans worked from home, and the number was expected to increase by 60% in the following five years.⁵⁹⁴ Major advantages of “workshifting”⁵⁹⁵

⁵⁹² Giddens, 1984

⁵⁹³ Mazmanian, Orlikowski, & Yates, 2011

⁵⁹⁴ Rapoza, 2013

⁵⁹⁵ Workshifting is a synonym for mobile flexible work or working from home.

according to an international business report are enabling increased productivity, attracting and retaining top talent, better serving customers, defining or extending work hours, increasing worker satisfaction, and offering commuting benefits.⁵⁹⁶

In Switzerland, the “Home Office Day” initiative was launched in 2009. Initiator and ON/OFF expert Barbara Josef says that it was invented after the swine flu was announced and there was the fear that if most Swiss workers had to stay home, this would be bad for the Swiss economy as working from home is still not very common. Josef said, “Switzerland has the highest spending on IT in the workplace per capita and we tend to use them as if we were still in the industrial era. So we decided at Microsoft Switzerland to do something about it and found partners such as Swisscom and the Swiss Federal Railway SBB to launch the initiative. The SBB was interested in reducing the amount of commuters during rush hours. We looked for politicians and universities to back the initiative.”⁵⁹⁷ In the ON/OFF interview, Josef lists the risks and benefits of mobile flexible work:

- *Benefits for companies:* more productivity, higher worker satisfaction, lower absenteeism, flexibility for collaborations with people in different time zones
- *Benefits for employees:* higher flexibility, no more control based on who is at the office and who is not, higher motivation because of entrepreneurial spirit
- *Benefits for the environment:* reducing emissions without having to give up something by not commuting and also by replacing personal desks by meeting zones
- *Risks for companies:* more effort needed to coordinate teams and processes, as new rules and guidelines need to be negotiated, a lot of companies fail when they introduce flexible work models due to uncertainty, which leads to friction, if the new stability is not discussed in the team and effects are not closely monitored, potential loss of identification with the company
- *Risk for employees:* health risks such as burnout.

As enthusiastic as Josef—who also goes by the fancy title Chief Home Officer—seems about helping companies foster flexibility in the workplace using the benefits of hyper-connectivity, she is realistic about potential risks. She emphasizes the importance of leadership and a “new type of leaders who know how to distribute work and motivate their team instead of controlling them.”⁵⁹⁸ According to Nico Tschanz, leaders and executives are role models in the way they deal with hyper-connectivity. Tschanz is an executive at an IT consulting company and says, “On the weekend, I stop myself from sending emails.”⁵⁹⁹ In a similar vein, Reto Schnellmann, Managing Director of the Swiss university ZHAW talked in the ON/OFF interview about emails on Sundays: “The human resources director told me at some point, do you know what you get people into when you send emails on Sundays? I answered that I did not expect others to do the same. They told me that it would be helpful to announce it explicitly that I did not expect this from anyone else.”⁶⁰⁰ New communications technologies seem to require more communication about how to communicate.

⁵⁹⁶ Workshifting research Citrix & Vanson Bourne, 2012

⁵⁹⁷ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

⁵⁹⁸ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

⁵⁹⁹ Talk by Nico Tschanz at a public business conference in Zurich, Switzerland organized by economiesuisse and SVV in January 2014

⁶⁰⁰ ON/OFF expert interview with Reto Schnellmann in August 2014 in Zurich, Switzerland

Sociologist Richard Sennett has made substantial scholarly contributions about the modern workplace since the 1990s. He emphasizes short-term, episodic labor, projects, and flexibility as main characteristics. He states that innovations like “flextime” seem to promise more freedom to define one’s career, but in fact they create jobs in which there is less freedom to be had than ever. Sennett challenges the idea that flexibility offers a better context for personal growth. Indeed, a global increase of flexible and mobile work could be observed of late.⁶⁰¹ In contrast to Sennett’s concerns (which are probably more applicable to freelance jobs without job security and social benefits), the *Swiss Survey Home Office 2012* shows a tremendous popularity of flexible work such as working from home. The results suggest that working from home has an overall positive influence on the personal work experience. However, a subgroup of regular home office workers reported job strains and sleep problems.⁶⁰² Research of more than 20 years ago about the relationship between computer ownership and “supplemental work at home” showed that computer owners worked twice the number of hours on work at home versus non-owners.⁶⁰³ Why are some organizational members more inclined to use mobile communications technologies after hours than others? Personality traits—as discussed in the subchapter *Motivations and Personality*—are crucial in understanding individual behavior. Research shows that employees with higher ambition and job involvement are more likely to use technology after hours and their behavior is associated with greater work-to-life conflict.⁶⁰⁴

Cycle of Responsiveness

Research confirms that a large number of employees are connected and available in their free time, even though nobody expects them to be. About half of a 3,000 surveyed employees⁶⁰⁵ in 2013 in Switzerland reported replying often or very often to professional inquiries outside of business hours—although nobody expects them to explicitly.⁶⁰⁶ However, the study did not specify how much implicit social pressure these employees felt to respond. Yet, the corporate and organizational culture largely contributes how much pressure professionals feel to quickly respond to messages. Why is it so hard to break the habit of being connected to the workplace at night, on the weekend, and on vacation? Harvard Business School professor Leslie Perlow’s “cycle of communicative responsiveness” (Figure 58) illustrates that professionals are largely driven by implicit expectations within a corporate culture like “everyone is tethered to their smartphone 24/7” combined with individual assumptions like “to succeed I have to be responsive.”

⁶⁰¹ Gisin, Schulze, Knöpfli, & Degenhardt, 2013, p. 3

⁶⁰² Gisin, Schulze, Knöpfli, & Degenhardt, 2013, p. 4

⁶⁰³ Venkatesh & Vitalari, 1992

⁶⁰⁴ Olson-Buchanan & Boswell, 2006

⁶⁰⁵ The study focused on telecommunications companies. The surveyed employees’ connectivity behavior may therefore not be representative for other industries.

⁶⁰⁶ Syndicom, 2015, p. 32

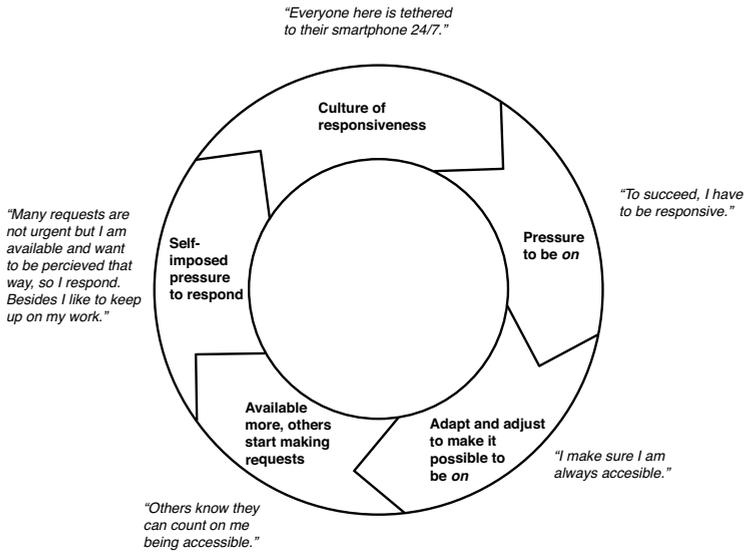


Figure 58 — Cycle of communicative responsiveness in the business world⁶⁰⁷

A 2009 study was able to show that long and frequent workplace connectivity is significantly related to the company distributing wireless connected devices.⁶⁰⁸ Thus, receiving a device from the organization seems to foster workplace connectivity.

Consequently, the way professionals manage their connectivity behavior is due to a combination of individual personality, resilience towards social pressure, and the corporate connectivity culture they are embedded in. What about private or semi-private connectivity in the workplace?

Cyberloafing and Cyberprocrastination in the Workplace

As described in the chapter *Blurring Boundaries*, connectivity in the workplace for non-job related or personal purposes has been debated for more than a decade. Does using the Web or social media for private purposes interrupt our workflow and make us less productive? Does it matter what we do online, and—perhaps most importantly—is it even acceptable to use a corporate device for private or semi-private purposes on duty? Generally, Lim & Chen's research showed that a majority of respondents (N=191) felt that some form of cyberloafing at work was acceptable. Their findings suggest that browsing activities have a positive impact on employees' emotion while emailing activities have a negative impact. Men were more likely than women to report that cyberloafing had a positive impact on work. They conclude that browsing the Internet serves an important restorative function. Contrary to expectations, they found that workers engaging in cyberloafing activities were over all more productive and motivated than non-cyberloafers.⁶⁰⁹ Lim & Teo found in a study (N=226) that various private online activities in the workplace differ in

⁶⁰⁷ Illustration by the author based on Perlow, 2012, p. 7

⁶⁰⁸ Richardson, 2009; iv

⁶⁰⁹ Lim & Chen, 2009

terms of the perceived seriousness. If an activity was perceived to be more serious it tended to be less prevalent (specifically sexually explicit content was rated by respondents as very serious).⁶¹⁰

While watching a short cat video in the workplace during a short break might not be perceived as serious, adult content certainly is. In Internet culture, the abbreviation NSFW has appeared next to online videos or online picture galleries: “Not Safe for Work is used to describe Internet content generally inappropriate for the typical workplace, i.e. would not be acceptable in the presence of your boss and colleagues.”⁶¹¹ A number of severe cases of cyberprocrastination turned into major scandals and made international headlines. For example, an Australian banker was broadcast on live TV looking at naked pictures at his desk when a TV journalist was reporting live. It was feared by commentators that he would lose his job over the events.⁶¹² In Switzerland, the migration authorities of the Canton of Zurich were at the center of a “porn in the workplace” scandal. Investigations discovered that about 7% of all registered webpage impressions at the migration authority during work hours were Facebook, a rate more than double that of other cantonal authorities.⁶¹³

Research on procrastination behavior from the early 1980s, the pre-Internet era, shows that needlessly delaying tasks to a point of experiencing subjective discomfort is highly correlated with fear of failure, depression, low self-esteem, and anxiety.⁶¹⁴ While hyper-connectivity and a constant flow of digital notifications and interruptions may add to cyberprocrastination, it is likely that technology gets blamed in some instances of low productivity or procrastinating behavior when the root cause may be too much pressure combined with an increased level of fear of failure and similar psychological factors.

Stress in the Workplace, Costs, and Labor Law

Stress in the workplace has become a major concern for health insurances, occupational psychologists, and even politicians. For developed national economies, international studies estimate the health care costs of job-related illnesses to be “at least 3% of the GDP.”⁶¹⁵ In the year 2013, for the U.S. this is about 500 billion USD, for Germany about 110 billion USD, and for Switzerland roughly 20 billion USD. The chapter *Health* shows that a third of the German working population reports “information overload and constant connectivity (cellphone, email etc.)” as their second largest cause of stress” (Figure 43).⁶¹⁶

In Germany, the debate around the effects of hyper-connectivity on the workplace reached new heights in 2015. In the process of revising labor legislation, German Labor Minister Andrea Nahles suggested an anti-stress law to protect employees from negative effects of hyper-connectivity such as burnout. In response, German employers came forward with a suggestion to get rid of the traditional 8-hour workday and to increase flexible work schedules, arguing flexibility “has become more relevant with digitization and families.” The German Ministry of Labor

⁶¹⁰ Lim & Teo, 2005

⁶¹¹ Urban Dictionary, n.d.

⁶¹² Murdoch, 2010

⁶¹³ Landolt, 2010

⁶¹⁴ Solomon & Rothblum, 1984

⁶¹⁵ Läubli, 2014

⁶¹⁶ Gangl & Birkner, 2009

launched the initiative “Arbeiten 4.0”⁶¹⁷ (Figure 59) in 2015 to encourage a public debate about the future of the workplace in the digital age, and also announced revised labor legislation in 2016.⁶¹⁸



Figure 59 — German Ministry of Labor participatory initiative “Work 4.0” in 2015

Some German companies have already implemented measures to protect employees from the strains of constant workplace connectivity (see subchapter *Corporate Responses*). In the United States, this seems unlikely. Chicago-based professor and ON/OFF expert Jason Washburn says, “The idea of regulations for companies would politically be a huge mess in the U.S.”⁶¹⁹

How do companies deal with chronic stress? The field of occupational health care or occupational psychology has become more important as psychological stress and mental illnesses have become a leading cause for medical leaves in many countries—including Germany, Switzerland, and the United States.⁶²⁰ Occupational psychology scholar Andreas Krause lists common explanations for the rise in psychological stress in the workplace:⁶²¹

- Higher acceptance in society (and therefore not an absolute rise but a higher visibility)
- Technological acceleration (hyper-connectivity, information overload, life-long learning)
- Higher demands of flexibility (blurring boundaries between private and professional lives)
- Dominance of the service sector (customer-orientation, emotionally challenges)
- International competition (globalization, shorter product cycles, higher productivity)

⁶¹⁷ “Arbeiten 4.0” is “Work 4.0” and refers to the so-called Fourth Industrial Revolution. “The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.” (Schwab, 2016).

⁶¹⁸ Bundesministerium für Arbeit und Soziales, 2015

⁶¹⁹ ON/OFF expert interview with Jason Washburn in September 2014 in Chicago, IL, USA

⁶²⁰ Badura, Ducki, Schröder, Klose, & Meyer, 2014; Forbes, 2013; ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁶²¹ Krause, 2011, p. 5

Krause concludes that innovative management techniques are a cause of the rise in psychological stress in the workplace: managers and employees risk personal health for individual success.⁶²²

Is social media used for professional purposes a relevant source of stress in the workplace? According to Eliane Bucher's research, social media for communication professionals "bring more information than can be meaningfully handled, they are an ever-present source of interruption and distraction throughout our daily routines, and they have a tendency to disrupt extant work patterns through frequent changes in our digital work environment."⁶²³ Monitoring and contributing to social media platforms can be straining for communication professionals because conversations online are not bound to business hours. Bucher found that many employees struggle in the face of the new communication paradigm as they may find it difficult to enter a conversation on Twitter and Facebook and are not comfortable switching off their smartphones after work for fear of missing important information. She suggests that being social online as a communication professional can be a substantial mental challenge (mainly due to overload and technostress), which is why some companies still lag behind in social media adoption for their businesses.⁶²⁴ Bucher's definition of technostress in the workplace is "the phenomenon that occurs when new or changing technology in the workplace creates instances of overload, invasion, uncertainty, complexity and insecurity for individual professionals."⁶²⁵ However she concludes that despite the stress, many do enjoy interacting professionally on social media. Furthermore, Bucher's research was able to show that among PR professionals, social media adoption was not related to age, gender, or salary, but is mainly determined by organizational conditions facilitating social media usage.⁶²⁶

Communication professional Bruno Kollhorst, head of the social media team with the German insurance company that popularized the term "social media burnout" says in his ON/OFF interview, "In our company, we have a culture of regulations to protect employees' rights. If employees are done with the day, they are done. Everything else needs an extra agreement." He explains that their corporate social media team is on duty until 6pm. After that, their 24 hour service center which responds to calls and emails anyway takes over. He admits that they are exceptionally well organized.

In conclusion, many companies have already introduced workshifting, and mobile flexible work is among strongly perceived benefits of hyper-connectivity for employees. However, if executives do not explicitly address their expectations of connectivity, or reassure their employees that they do not expect replies to their emails sent at night and on weekends, stress-levels are likely to increase. New communication tools seem to increase the need for explicit communication about effective ways to communicate.

2. Schools & Higher Education

A major debate at the intersection of education and technology was about how digital media affect a new generation of students (see subchapter *Generations, Gender, and Race*). The term "digital

⁶²² Krause, 2011, p. 22

⁶²³ Bucher, 2013, p. 170

⁶²⁴ Bucher, 2013, p. 53f

⁶²⁵ Bucher, 2013, p. 61

⁶²⁶ Bucher, 2013, p. 107f

natives” was actually coined by Marc Prensky in this context.⁶²⁷ He argued that the education system would need to adapt to students who have been immersed in technology all their lives. Education researchers Bennett et al. analyzed the digital natives debate and found there were “grand claims about the nature of this generational change and about the urgent necessity for educational reform in response,” which they likened to an academic form of moral panic.⁶²⁸ Education professor Rolf Schulmeister reviewed dozens of publications about the “net generation” and concluded that there are more similarities than differences between the generations as far as learning strategies are concerned.⁶²⁹ Teacher and digital media expert Philippe Wampfler has advocated for dropping the term “digital natives” all together, mainly claiming that generation is far from the only factor influencing how people use digital media.⁶³⁰ The ubiquity of the term shows that it has proved to be a useful shortcut to describe young users even if being young does not automatically mean tech-savvy.

Is hyper-connectivity challenging learning in the classroom? There is a tremendous amount of literature on media education in the digital age,⁶³¹ but few empirical publications are available on how schools deal with connectivity. As of 2015, every school in Germany has Internet access, and in half of them, there is Internet access in all classrooms.⁶³² This situation is likely comparable to schools in most other highly connected countries. Switzerland’s largest and most influential department of education, the Canton of Zurich Department of Education, launched an ICT guide for schools in 2012.⁶³³ The guide does not suggest connectivity regulations; it is rather a quite complex guide to a comprehensive decision-making process for schools in all things IT. Most schools in the Canton of Zurich introduced a ban on mobile phones in class. Mobile phones should not be visible or audible in class.⁶³⁴ According to the representative German JIM study, the Internet is used for 51 minutes per day on average for school activities. “However,” the authors conclude, “the use of the Internet at school still does not have great significance; one third of adolescents never use the Internet for research purposes related to class.”⁶³⁵ Nevertheless, education experts are debating whether classrooms will be the place of future education *because* hyper-connectivity provides access to an abundance of information and sources.⁶³⁶ About half of the surveyed German middle-school teachers (N=502)⁶³⁷ say they would use digital media in class more often but they do not for various reasons (multiple answers were possible) including that the school lacks devices or that using them means too much additional work for teachers. But even a significant number of teachers in favor of more digital media at school say that it is not always helpful in class. A minority is afraid of technical failures or a lack of skills on their part (Figure 60).

⁶²⁷ Prensky, 2001

⁶²⁸ Bennett et al., 2008

⁶²⁹ Schulmeister, 2009

⁶³⁰ Wampfler, 2014a

⁶³¹ e.g. Palfrey & Gasser, 2008; Süss, 2004

⁶³² Bitkom, 2015, p. 5

⁶³³ ICT-Guide, Kanton Zürich Bildungsdirektion, Fachstelle Bildung & ICT

⁶³⁴ Knapp, 2015

⁶³⁵ Feierabend et al., 2014, p. 64

⁶³⁶ Rey, 2009, p. 41ff, Hunziker, 2015

⁶³⁷ Bitkom, 2015

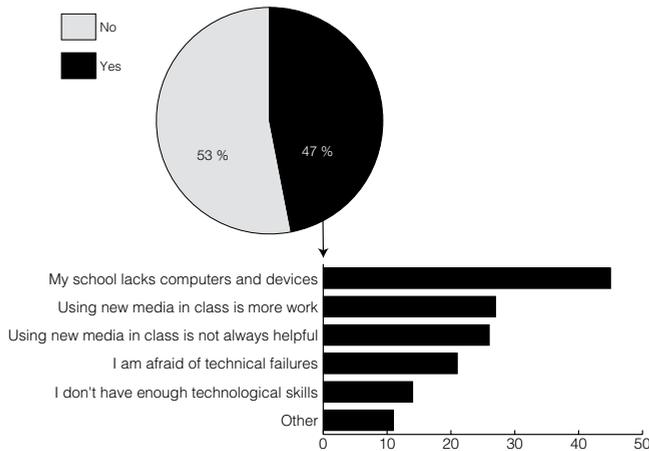


Figure 60 — Almost half of German middle-school teachers say, “I would like to use new media in class more often, but...”⁶³⁸

What do students do with their cellphones at school? The above-mentioned German study additionally surveyed students (N=512) in 2015. The findings revealed that the most frequent cell-phone activity (N=512) among 14 to 19 year-olds at school is listening to music (87%), taking a picture of the black board (74%), chatting with their classmates (70%), looking up information for school (56%), using social media (45%), looking at videos (34%), playing games (34%), making phone calls (20%), and cheating in exams (10%).⁶³⁹

Cheating in Exams with Mobile Devices

A surprisingly high number of German students (10%) admit to cheating at exams using their cellphones.⁶⁴⁰ Principal Monika Bär reported in the ON/OFF expert interview having recently dealt with five students who were involved in cheating using their smartphones. “During the final exams, they exchanged solutions through WhatsApp. They all failed their final exams. Those were no easy conversations.”⁶⁴¹ Bär says her school has to come up with stricter policies around mobile devices after the scandal.

Cheating scandals have prompted schools and universities to take action even regarding very new devices such as smartwatches. But anecdotal evidence shows that many teachers are still clueless about the creative methods some students use during exams: pictures on smartphones of what students were supposed to learn by heart, posting questions on Facebook and waiting for answers, sending pictures of solutions via a messenger to classmates. Some schools collect mobile devices before the exam starts.⁶⁴² The Law School at University of Zurich bans watches in exams.

⁶³⁸ Bitkom, 2015, p. 13

⁶³⁹ Bitkom, 2015, p. 32

⁶⁴⁰ Bitkom, 2015, p. 32

⁶⁴¹ ON/OFF expert interview with Monika Bär in August 2014 in Zurich, Switzerland

⁶⁴² Böhni, 2012

Some other universities ban watches in exams all together, while other universities allow traditional watches but ban smartwatches during exams.⁶⁴³

Multitasking and Distraction

The effects of digital distraction and multitasking have already been discussed in the chapter *Blurring Boundaries*. They apply to the school context in multiple ways.

Teachers have stated that hyper-connectivity tends to take a major toll on students attention and concentration.⁶⁴⁴ What about multitasking in the classroom using laptops? An experimental study demonstrated that multitasking on a laptop in class poses a significant distraction not only to the user but also to fellow students seated around multitaskers, and can be detrimental to comprehension of lecture content.⁶⁴⁵

In many schools and universities, there already is a ban of mobile devices in the classroom. Even some technology advocates seem to have changed their mind about devices in class, as is the case with new media professor Clay Shirky, an internationally renowned Internet scholar and professor. When he introduced a ban on devices in his classes at New York University in the fall semester of 2014, it made international headlines—mainly because he is a “pretty unlikely candidate for Internet censor.”⁶⁴⁶ Shirky says he came late and reluctantly to his decision. Also, he felt that his job was to be more interesting than possible distractions for adult students, which is why a ban had felt like cheating. So why would a leading professor of new media ban devices in classes that are about new media? Shirky lists the following reasons:⁶⁴⁷

- The level of distraction in his classes seemed to grow over time.
- The change seemed to correlate more with the rising ubiquity and utility of the devices.
- He had noticed that when he had a specific reason to ask everyone to set aside their devices, it was as if someone had let fresh air into the room.
- Multitasking is cognitively exhausting.

Joseph Reagle, a communications professor at Northeastern University, has created his own policy for devices in class. It is not a strict ban, but rather he says, “We sometimes use devices in class as part of an activity, but the default policy is for gadgets to be silenced and put away. (Interestingly, as noted in my tips for note-taking, handwritten notes can lead to better learning.) If you want to use a device throughout classes, email me a proposal with your intended usage. Note, device users might also be called upon you to perform tasks such as looking things up or taking collaborative notes. I can also rescind device privileges. Deviations from classroom professionalism and respect may result in dismissal from class and demerits against your grade.”⁶⁴⁸

Some are concerned less about phones in general and more about certain apps in particular. In 2010, a study reported, “Facebook use can lower grades by 20%.”⁶⁴⁹ Rey Junco’s research on social media in higher education challenges similar sweeping generalizations on social media

⁶⁴³ NZZ Campus, 2015

⁶⁴⁴ Purcell et al., 2012

⁶⁴⁵ Sana, Weston, & Cepeda, 2013

⁶⁴⁶ Strauss, 2014; Shirky, 2014b; Haeusler, 2014

⁶⁴⁷ Shirky, 2014a

⁶⁴⁸ Reagle, 2015

⁶⁴⁹ Choney, 2010

use and academic performance.⁶⁵⁰ In a recent study (N=1,649), he analyzed American college students' Facebook use and showed that the negative relation between Facebook use and academic performance is more complicated. He found that seniors⁶⁵¹ spend less time on Facebook in general and also less time multitasking with Facebook than younger students. An interesting finding was that time spent on Facebook (not multitasking) was negatively related to the students' performance for freshmen (first year students), but not for older college students.⁶⁵² Junco's study shows that Facebook multitasking influences academic performance, but time spent on Facebook does not.

In the Swiss Canton of Zurich, most schools have applied the general rule of banning devices in class. Some schools ban mobile devices on the entire compound of the respective school. The Canton of Aargau does not have uniform regulation on mobile devices in schools.⁶⁵³ The Swiss teacher association stated in 2007 that a general ban on mobile devices in schools in all of Switzerland is not useful. Every school should be able to implement connectivity regulations according to their school culture.⁶⁵⁴

In 2015, an interesting project started in the Swiss Canton of Aargau with a number of schools providing tablets for all students in 7th to 9th grade (Oberstufe). In order to minimize distractions, the tablets are set up in a way that teachers can enable and disable apps on their students' tablets in class. For example, they can enable the calculator app but disable all other apps. To avoid late-night activities and sleep distractions, the tablets' Wi-Fi connection is disabled from 10pm to 6am. The schools reported that it took almost three years to set up the project.⁶⁵⁵

So, is Facebook a "weapon of mass distraction" in educational contexts? Many publications about social media in the education context focus on risks involved such as distraction and cyberbullying. However, educators with social media expertise underline that, when used in appropriate ways, social media can stimulate learning and even informal communication between teachers and students—both principal Monika Bär and teacher Philippe Wampfler have been able to talk to students in trouble on Facebook when they would not respond to their calls or messages.⁶⁵⁶

Digital Skills, Information Quality, and Copyright Infringement

Many experts agree that there are tremendous possibilities regarding connectivity and learning. How to teach digital skills, and what these skills actually are, is still subject to debate. Even though teacher training has started including media literacy over the past years, many teachers have not yet been trained in teaching digital skills. Among teachers, technology adoption and enthusiasm varies largely, which is important as educators are often role models for students in many respects, including how to deal with hyper-connectivity. One particularly important digital

⁶⁵⁰ Junco, 2014, p. 73f

⁶⁵¹ In the American education system, a college student is called Freshman (first year), Sophomore (second year), Junior (third year), Senior (fourth year). Seniors in college are typically in the final year of a student's education towards a bachelor's degree.

⁶⁵² Junco, 2015

⁶⁵³ Bleiker & Keller, 2014; Petrig, 2014

⁶⁵⁴ Bleiker & Keller, 2014, p. 2

⁶⁵⁵ Jonsdottir, 2015

⁶⁵⁶ Junco, 2014, p. 198; Wampfler, 2014b; ON/OFF expert interview with Monika Bär in August 2014 in Zurich, Switzerland

skill for students with access to an abundance of information is assessing information quality.⁶⁵⁷

How do youth interact with information online? Gasser, Cortesi, Malik, and Lee have developed a framework for information literacy consisting of four phases: 1) determining information needs, 2) searching for information, 3) evaluating information, 4) creating new information.⁶⁵⁸ While enhancing these digital information skills is a crucial challenge for the current education system, hyper-connectivity at the same time seems to undermine students' search for high-quality information no matter the source. Students do not go to libraries anymore to get relevant books for their class work.⁶⁵⁹ Hyper-connectivity has made it almost too easy to get some kind of information—whether or not it is accurate or trustworthy. A related risk of hyper-connectivity for schools, colleges, and universities, is the increased risk of copyright infringement or plagiarism due to copy/paste from digital sources.⁶⁶⁰

Internet Filtering and Data Security in Education

Web filters in schools are controversial among experts. ON/OFF expert Chris Peterson—who has been conducting a study on schools, libraries, and censorship—says he spent most of high school trying to evade filters, either because he wanted to play video games online or because a term he was researching for science class was blocked.⁶⁶¹ What has he found out about what kind of Web content is blocked in American schools today? “What is blocked? The short answer is that nobody knows. These companies like NetNanny have proprietary black-lists that fall into certain categories of content like adult content, gaming, social media, violent content etc. If you check one of those boxes then you just block anything that is in that category. And then they give the system administrators at every school some levels of customization through blacklists or whitelists. Blacklists being additional sites that you can't access, usually URLs or URL structures or key words, and whitelists being the same thing, except that you can always access even if it is in a blocked category. How do sites get in there? Teachers make requests. They say we want something whitelisted or we want something blacklisted that matches certain expressions or domains.”⁶⁶² Peterson generally advocates against filters because he considers honest conversations with students about what they encounter online more effective.

Teacher and ON/OFF expert Steve Jordan of the Cambridge Rindge and Latin School says that he thinks Web filters are necessary, even if they sometimes block legitimate search results: “There is computers all around the school and there is some pretty serious filter. There is stuff that I can't get on. Sometimes, a kid will do research on drug abuse but they can't get on certain websites because the filter thinks that they are trying to find out how to do drugs. So it is a really pretty serious and strict filter. I as a teacher have a code and can get around a few things but I think it is pretty serious and it has to be.” Jordan says that one student told him that he liked his class, but that he would rather be home watching porn. He wonders if they didn't have a filter, would they be checking porn at school? However, it is not just about porn. One of the Boston Marathon bombers graduated from his school, and his tweets are being reviewed in order

⁶⁵⁷ Genner et al., 2013; Süss, 2004

⁶⁵⁸ Gasser, Cortesi, Malik, & Lee, 2012

⁶⁵⁹ Gasser, Cortesi, & Gerlach, 2012, p. 122; ON/OFF expert interview with Monika Bär in August 2014 in Zurich, Switzerland

⁶⁶⁰ Genner, Süss, Waller, & Hipeli, 2013, p. 28

⁶⁶¹ ON/OFF expert interview with Chris Peterson in October 2014 in Cambridge, MA, USA

⁶⁶² ON/OFF expert interview with Chris Peterson in October 2014 in Cambridge, MA, USA

to learn about his radicalization. Jordan is convinced that for all kinds of liability reasons schools need to have a good filter.⁶⁶³ When asked if it wouldn't be more effective to have honest conversations with students about what can be found online and have students meet the world as it is instead of a censored version of it, Jordan says, "Meet the world like it is? They don't need to meet the world of porn in schools. But then there is this argument that if porn gets censored it is even more alluring."⁶⁶⁴ He adds that he certainly thinks it's always good to have as many honest conversations as you can with students, but he does think there should be a porn filter at schools. According to Jordan, pornography is sometimes detrimental to its viewer, so he is comfortable restricting it at school. He hopes school is a better version of one's culture, or a small sample of what one's culture might aspire to be.

Why do other schools have filters? ON/OFF expert Patrik Hilfiker says that his IT company—which is part of the Kalaidos group, a larger education company including a number of private schools—has to make sure that nothing illegal happens for liability reasons (like virus distribution or spamming). "Our school Wi-Fis are semi-public, and we have to put an infrastructure in place, which makes sure that we could prove that we have done everything we could to prevent unlawful actions on our network," says Hilfiker.⁶⁶⁵ He adds that they need to configure the school systems using anti-virus software, and that customized filtering is rather expensive. Social media such as Facebook are blocked in a single school within the education company, mainly to prevent distraction. He says it depends on the level of education. "Where there are a lot of young students, social media platforms are more likely to be blocked than with older students." Some schools within the Kalaidos group have unblocked previously blocked social media sites such as Facebook. Hilfiker believes this is because "[s]chools want to use Facebook as a marketing tool. So teachers have to find other ways to make sure, students are not working on their Facebook profile pages in class."⁶⁶⁶

All three ON/OFF education experts who talked about Web filters in school settings said that the main purpose is liability and protecting the school from bad PR.⁶⁶⁷ A similar concern is IT security in schools, colleges, and universities. "We want to make sure that our data is secure. Data security is a combination of technology and behavior, which is why we launched a university-wide campaign to raise awareness," explains Reto Schnellmann, Managing Director of the Swiss university ZHAW. He adds that especially with BYOD (bring your own device), responsibilities have become more complicated.⁶⁶⁸

To sum up, most schools use commercial filters to block adult content, and some block social media and certain gaming platforms. However, even if a common line of argument is that filters are in place to protect children from inappropriate online content, schools seem more worried about liability and data security.

⁶⁶³ ON/OFF expert interview with Steve Jordan in January 2015 in Somerville, MA, USA

⁶⁶⁴ ON/OFF expert interview with Steve Jordan in January 2015 in Somerville, MA, USA

⁶⁶⁵ ON/OFF expert interview with Patrik Hilfiker in January 2014 in Zurich, Switzerland

⁶⁶⁶ ON/OFF expert interview with Patrik Hilfiker in January 2014 in Zurich, Switzerland

⁶⁶⁷ ON/OFF expert interview with Chris Peterson in October 2014 in Cambridge, MA, USA, ON/OFF expert interview with Steve Jordan in January 2015 in Somerville, MA, USA, ON/OFF expert interview with Patrik Hilfiker in January 2014 in Zurich, Switzerland

⁶⁶⁸ ON/OFF expert interview with Reto Schnellmann in August 2014 in Zurich, Switzerland

3. News Organizations

News sources and well-informed citizens are vital for democracy. Traditional news organizations are experiencing a moment of fast and disruptive change as the news cycle has become 24/7 and news consumers are increasingly reading, watching, and listening to news stories on connected mobile devices.⁶⁶⁹ Are we better informed than ever or is the current 24/7 news cycle more of a risk than an advantage for journalists and news consumers?

Developing World: Infrastructure, Censorship, and Vital News

The effects of hyper-connectivity are more applicable in countries where mobile devices and reliable connectivity are pervasive. Obviously, this is true for news as well. As shown in the chapter *Digital Connections & Digital Divides*, the gap between the information-rich and information-poor tends to get wider, which does not necessarily mean that over all, the parts of the world with less information are now even less informed. The opposite may be the case according to previous research on “knowledge gaps” as a media effect: the information-poor may be better informed than ever, and still the gap between the information-rich (and sometimes even information-overloaded) is widening.⁶⁷⁰

Two examples in the developing world—India and Cuba—show the limits of the digital, and underline that news and hyper-connectivity are largely a first-world matter. In India, only about 10% of the population actually speaks English, the other billion speaks a large variety of languages. The news industry in India is limited by linguistic and income diversity, the lack of literacy, and infrastructural challenges such as bad connectivity (Wi-Fi and broadband are barely available) and cheap hardware. Building a reliable news service for a majority of Indians is a major challenge.⁶⁷¹ In Cuba, online news travel largely via the “offline Internet.” Those who have Internet access in Cuba share it with friends and family by downloading or copying content to pen drives. “El Paquete Semanal” (the packet of the week) is an ensemble of information and entertainment programs distributed via smartphones and hard drives. The “Street Net” is another part of the Cuban Internet ecosystem of consumption and exchange of news and information via mesh networks that span multiple neighborhoods. According to journalists Elaine Diaz and Ellery Biddle, “This relatively new, web-derived information-sharing economy is having some impact on how Cubans get their news—rather than relying on state media outlets and word-of-mouth, Cubans can now more easily learn of the latest social and political happenings from a range of sources, including independent and foreign ones.”⁶⁷²

⁶⁶⁹ Radcliffe, 2015

⁶⁷⁰ Donohue, Tichenor, & Olien, 1975; Kagan, 1999; Norris, 2001; Gaziano, 1983

⁶⁷¹ Talk by former BBC journalist and India expert Hasit Shah at the Berkman Center for Internet and Society at Harvard University in May 2015

⁶⁷² Diaz & Biddle, 2015

There is an important difference between digital infrastructural challenges (and language and income diversity) and Internet censorship in countries like China, Iran, and Vietnam, where broad-reaching Internet censorship regimes exist. A censored Internet access may have a drastic influence on what kind of news can get accessed. In areas of conflict like the Middle East, being always connected to get news about the current situation or places at immediate risk of violence—even if it is just via a phone—can be vital.⁶⁷³

Developed World: More News via a Multitude of Sources

One of the major changes of hyper-connectivity for news organizations in the Western world is that besides being a radio station, a TV station, or a newspaper, basically all of them have become online publishers as well (what is known as “media convergence”). Keeping up with breaking news has become an issue for traditional newspapers used to publishing one paper a day. And the fact that every news organization, even those with public funding, are online publishers has increased competition and the pressure to be fast and accurate. With global news sites and citizen media, there are new opportunities to participate in local and global conversations. A large report on news consumption by the Reuters Institute for the Study of Journalism from 2015 shows that in 8 out of 12 countries TV is still the main source of news. Still, online channels are becoming a major—in some countries even *the* major—gateway to the news. Not surprisingly, young users (age 18 to 25) were significantly more likely to use online sources including social media as their primary news source while TV remains the primary news source for news consumers older than age 45. The biggest trend in news consumption is the rapid rise in smartphone news usage.⁶⁷⁴

When it comes to the most important advantages of hyper-connectivity, renowned journalist Nick Lüthi identifies information transparency, and as a key disadvantage he cites the dominant role of large corporations like Google and Facebook. Compared to his past positions in print journalism since 1995, as an online journalist, Lüthi says he writes fewer articles and has become more of a curator of content by others (“news jockey”).⁶⁷⁵ Asked about how the 24/7 news cycle has changed journalism, Lüthi replied, “The acceleration of workflows has been leading to increased pressure to react faster. Journalism has become more prone to mistakes and the pressure to be fast leaves less space for reflection. A two-class system in the newsroom is being created: authors and assembly-line workers.” On a global level, Lüthi thinks news quality has improved thanks to constantly available media of quality, but in local markets, news quality has rather decreased due to a lack of competition.⁶⁷⁶

Research on youth and media found that the notion of “news” is changing, as digital media allow users to get news from friends on social media, and now anyone with digital skills can be a creator of news by, for example, creating and sharing political memes.⁶⁷⁷ In the U.S., the Pew Research Center found in 2014 that Facebook is a news source for many adult users, but only incidentally. 47% of adult Facebook users said they had ever received news via the service, but the overwhelming majority (78%) said they picked up news from Facebook when they were on

⁶⁷³ ON/OFF Global Expert Survey

⁶⁷⁴ Radcliffe, 2015

⁶⁷⁵ ON/OFF expert interview with Nick Lüthi in June 2015, Bern, Switzerland—Cambridge, MA, USA

⁶⁷⁶ ON/OFF expert interview with Nick Lüthi in June 2015, Bern, Switzerland—Cambridge, MA, USA

⁶⁷⁷ Cortesi et al., 2015

the site for some other reason. Only 4% said Facebook was their most important news source.⁶⁷⁸ The kind of news they found on Facebook was “soft news” rather than “hard news”⁶⁷⁹—almost three-quarters (73%) said they regularly saw entertainment news on the site. The next most commonly cited topics were community news (65%) and sports (57%).⁶⁸⁰ Twitter, however, has developed into the go-to source for breaking news for about 8% of the U.S. population—the young, mobile, and educated.⁶⁸¹

A representative survey for the Swiss population of 16 years or older demonstrated that 69% access online news and online newspapers regularly or at least sometimes on their phone. In fact, online news apps are more regularly accessed on smartphones than social media (54% at least sometimes). Only 30% of Swiss mobile phone users say they don’t access news on their phones (Figure 61).

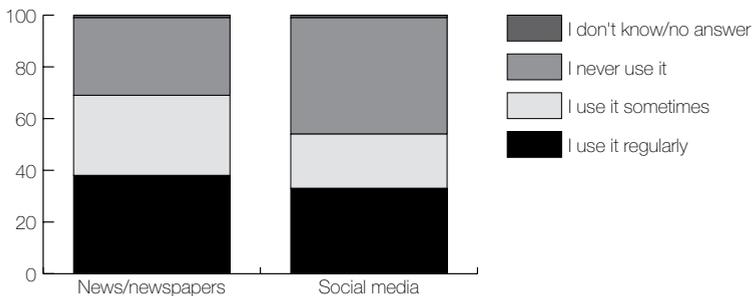


Figure 61 — „How often do you access news/newspapers or social media on your mobile phone?“ – Representative survey for the Swiss population⁶⁸²

However, there are major generation gaps in behavior when it comes to accessing news or newspapers on a mobile phone. About 80% of 16 to 39 year olds regularly or sometimes read news or newspapers on their phone, and the same amount uses social media on their phone. There is no data in this particular survey that shows how many of that youngest generation accesses news sites because they click on links in their social media profiles. Older generations don’t access news sites on their phone as often, and they use social media significantly less often as well (Figure 62).

⁶⁷⁸ Desilver, 2014a

⁶⁷⁹ “Hard news” generally relates to recent events or incidents considered to be of general local, regional, national, or international significance. “Soft news” usually is about human-interest stories, entertainment and has little political or economic relevance or urgency.

⁶⁸⁰ Desilver, 2014

⁶⁸¹ Mitchell & Guskin, 2013

⁶⁸² Bieri et al., 2015, p. 18

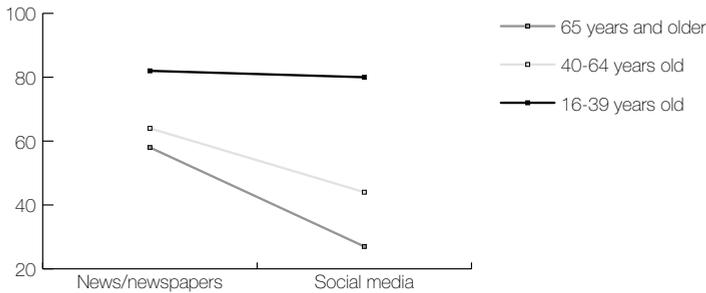


Figure 62 — “How often do you access news/newspapers or social media on your mobile phone?” – Representative survey for the Swiss population, by age.⁶⁸³

A total of 71% of students in the ON/OFF Student Survey reported using a news app on their mobile phone at least daily (37% several times a day, 34% daily). Students use their Facebook app even more often (53% several times a day, 28% daily). There are no significant correlations between using a news app and gender or school type. Frequent use of news apps is positively correlated with frequent Internet and tablet use. Out of all favorite apps, a news app ranks as number 4 among Swiss teens and students.⁶⁸⁴ The news app is “20 Minuten,” which is the digital version of the most successful print newspaper in Switzerland of the same name. It is a free newspaper that has been distributed at train stations and bus stops all over the country since the late 1990s, a successful but country-specific model (the Swiss are number one in the global ranking in using public transport).⁶⁸⁵ “20 Minuten” is not the highest quality news product, but it has nevertheless been argued that younger generations are actually better informed about current events than before the existence of free newspapers and news apps. In Switzerland, every other adolescent between 14 and 19 years reads the free newspaper.⁶⁸⁶

The fact that a significant number of U.S. youth say that Instagram is a major news source for them underlines the assumption that the notion of “news” is changing and for some includes all sorts of news from friends and other Instagram contacts, diverging from a more traditional concept of news as current events, politics, and economy.⁶⁸⁷ A study about news and millennials⁶⁸⁸ in four different countries—United States, Brazil, Singapore and Switzerland—revealed that large differences exist between these countries when it comes to how young people get their news. In Switzerland, 23% of millennials say their most important news source is free print newspapers, and 22% report news apps on their phone to be their major news source. In Brazil, 45% say their primary news source is online news sites and an additional 15% say it is social media (only 6% report using news apps on their phone). In Singapore, 22% say their major news source is social media, closely followed by news apps on their phone. In the United States, 25% report online news sites as their major news source, followed by 23% who say social media (12% report news apps on the phone).⁶⁸⁹ It may not be a coincidence that in the two countries

⁶⁸³ Bieri et al., 2015, p. 19

⁶⁸⁴ According to the ON/OFF Student Survey 2014 as well as the representative Swiss youth and media JAMES study 2014 (Willemsse et al., 2014).

⁶⁸⁵ LITRA - Informationsdienst für den öffentlichen Verkehr, 2014

⁶⁸⁶ Supino, 2010

⁶⁸⁷ American Press Institute, 2015

⁶⁸⁸ Millennials between ages 16 and 25.

⁶⁸⁹ Golder et al., 2014

with a very high smartphone penetration—Singapore and Switzerland—news apps on the phone are the major news source for more than a fifth of 16 to 25 year-olds.

Better Journalism, Better Informed Audience?

The more connected we are, the more information is constantly at our fingertips. This is true not only for news consumers but also for journalists and reporters. A general assumption of the information age is that we are better informed than ever. MIT media professor and founder of the news organization “Global Voices” Ethan Zuckerman states that “a central paradox of this connected age is that while it is easier than ever to share information and perspectives from different parts of the world, we may now often encounter a narrower picture of the world than in a less connected world.”⁶⁹⁰ Similar ideas of “homophily”—the human tendency to bond with similar others—having an effect on our ever more limited exposure to a diversity of news sources have been put forward by other authors. Professor Cass Sunstein warned of “echo chambers” in personalized digital news as early as in 2001.⁶⁹¹ A decade later, journalist Eli Pariser’s book on a similar idea that he called the “filter bubble” has been very influential for the public and academic debate on algorithms filtering of news feeds according to our preferences and whether they are presenting an ever narrower picture of the world by showing us only what we are already interested in.⁶⁹²

In a recent publication on news diversity and youth, Internet and youth scholars Sandra Cortesi and Urs Gasser discussed conceptual challenges regarding news diversity. First of all, the definition of news is changing in a digitally networked environment, and news consumption is changing according to new forms of participation, changing news access circumstances, new types of gatekeepers, and emerging genres (such as memes). They underline that there is still a large variety of news sources youth have access to and that behavioral patterns should be taken in to account before making assumptions of a generally narrow news exposure.⁶⁹³

ON/OFF journalism expert Lüthi says the 24/7-news cycle has changed news consumption behavior positively and negatively. He states, “News gets consumed more superficially, and push notifications are often the only part of news that reaches the larger audience. On the other hand, it is constantly possible to keep up with global news.” Lüthi is skeptical whether news consumers are actually better informed with constant news on their hands: “Just because there is a possibility to get the news from the best sources does not mean that people actually do that.”⁶⁹⁴ Indeed, nearly half of respondents in the Digital News Report admitted to only accessing online news from just a single news outlet.⁶⁹⁵ Interestingly, the most frequently used news sources accessed by youth are not necessarily the most trusted ones. According to the renowned JIM study 2014, in case of contradictory news coverage, 40% of German teens say daily newspapers are the

⁶⁹⁰ Zuckerman, 2013, p. 19

⁶⁹¹ Sunstein, 2001

⁶⁹² Pariser, 2011

⁶⁹³ Cortesi & Gasser, 2015

⁶⁹⁴ ON/OFF expert interview with Nick Lüthi in June 2015, Bern, Switzerland—Cambridge, MA, USA

⁶⁹⁵ Radcliffe, 2015

most credible source, followed by television (26%), radio (17%), and online news (14%).⁶⁹⁶ However, there might be a bias towards socially desired answers.⁶⁹⁷

Social Media & News Organizations

A lot of speculation around the future of news is being published. Some predict a near end of the print news industry all together, others are convinced print news will not disappear and will keep a privileged position within the world of news in terms of trustworthiness. While the news industry is struggling with business models in the digital age—testing pay walls, digital advertising, digital storytelling, video content—new and formerly unlikely news providers appear. In 2015, the teen-oriented smartphone app Snapchat hired a CNN news editor and became a relevant player in the news market, and Instagram’s CEO and cofounder announced wanting to be the source of real-time news. He added, confirming the increased pressure to cover news as events are unfolding, “All of us in social media and regular media, we’re all competing for the same thing, which is this gap between something happening in the world and you knowing about it.”⁶⁹⁸ A 2015 study from Pew Research and the Knight Foundation indicated that a rising number of Americans are getting news on Facebook (about 40%) and Twitter (about 10%). Also, the growth in social media news consumption was consistent across education level, income, gender, age, and race.⁶⁹⁹

But changes are not just in news consumption. Journalists in newsrooms have started to build data and social media skills. Large amounts of data can help create new journalistic insights, stories, helpful infographics, data visualizations, and interactive visualizations. Increasingly, journalists are required to have social media skills and the role of social media as a source for reporting has become more important.⁷⁰⁰ There are many concerns about fact-checking social media, and it has become important to use techniques and tools in the newsroom to identify the trustworthiness of social media sources such as YouTube videos, digitally enhanced or even faked pictures, tweets, and blogs.⁷⁰¹ Journalists and journalistic community managers are using social media accounts for their respective news organization to share online content, to generate clicks, and to leverage the brand of a specific news product on social media. Simultaneously, many journalists have personal social media accounts that many use for both personal and professional purposes (see chapter *Blurring Boundaries*). This has been creating a dilemma for news organizations because they want to see their content and brand on social media, but may not know what to do if a journalist is posting controversial opinions on their “private” Twitter or Facebook account. Is it even possible for a news journalist to publish “private” statements? News organizations have created social media guidelines to address the blurred boundaries caused by hyper-connected networked public sphere. But once in a while, controversial tweets or Facebook posts by journalists still create a stir—until the news organization’s PR department publishes a statement to protect their news brand’s reputation by saying that they do not agree with the comment and that the journalist is merely expressing his private opinion.⁷⁰²

⁶⁹⁶ Feierabend, Plankenhorn, & Rathgeb, 2014, pp. 63

⁶⁹⁷ Most teens probably assume that many adult media researchers think daily print newspapers are trust worthier than random online news.

⁶⁹⁸ Isaac, 2015; Seetharaman, 2015

⁶⁹⁹ Lichterman, 2015

⁷⁰⁰ Felle, Mair, & Radcliffe, 2015

⁷⁰¹ Stearns & Walter, 2015

⁷⁰² Hollenstein, 2015

Responses & Responsibilities

Many of the described hyper-connectivity risks have already been met with various responses—within the world of work, the education system, families, and other societal institutions. In these situations, questions remain about what kinds of responses have already been put in place, and who is responsible for new risks and opportunities within these social systems. The ON/OFF interviews and surveys provide some answers about how experts and surveyed students and adults think about responsibilities—for individuals, schools, companies, and political structures.

In the following, responses to hyper-connectivity, by companies and organizations on the one hand and schools and universities on the other hand, are summarized. Other initiatives such as *Home Office Day*, *National Unplugging Day* and the *Swiss Offline Day* are discussed and the mindfulness trend as a commonly suggested successful response to potential risks of hyper-connectivity.

1. Who Is Responsible?

“Why do we talk about ‘going online’, ‘digital detox’, ‘and how often do you look at your phone’ in 2015? I am not going online, I am [online]. Every adult knows their personal limits. I plead in favor of individual responsibility,” wrote a Swiss journalist on Facebook. However, this view is not shared by all; for example, the employee who sued the City of Chicago for work done out of hours on his smartphone.⁷⁰³ The question is: Who is ultimately responsible—or maybe even liable—for potential risks of hyper-connectivity?

⁷⁰³ Corley, 2010

Who Do ON/OFF Experts Think Is Responsible?

The ON/OFF experts interviewed generally view the individual as a crucial actor when it comes to dealing with potential risks of hyper-connectivity. Most of the risks that the experts were concerned with were related to workplace connectivity off-duty—work-related emails on Sundays are a particularly hot topic. However, experts also claim that other players are just as important as the individuals themselves, through the providing of healthy work environments and the fostering of digital literacy early on. Some argue that when it comes to assigning responsibility, we need to make a distinction between adolescents and adults. And one expert is convinced that the societal debate should be more focused on technology that strives to maximize the time we spend online.

Philip Strasser, MD identifies three different levels of responsibility for hyper-connectivity in the workplace: individual employees, the companies they work for (including corporate culture), and the larger political arena. He argues: “Of course, everyone involved is responsible. Employees do have individual responsibility. But employers are responsible in terms of organizational health. And it should at least be part of corporate culture to protect employees from excessive stress. Given that digital communication comes with information overload, companies could proactively define who are relevant recipients of specific types of information, and in what cases the cc feature in emails actually makes sense. I think blocking emails at night and weekends like Volkswagen is reasonable. Who really needs to get in touch still has enough ways to do that. In the European Union, the key word ‘flexicurity’ is currently debated on a political level (flexibility and security). Employers need a lot of flexibility, and politicians discuss this regarding security (negative consequences) including the blurring boundaries, which digital media are part of.”⁷⁰⁴

Occupational health expert Silvia Kölliker underlines individual responsibilities, but adds that companies and organizations largely influence the environment and the circumstances of technology use. “Early detection of issues are crucial, with regard to oneself, or as a superior. We work with teams to help identify potential issues,” Kölliker says. Additionally, she maintains that the government is responsible for promoting media literacy as an educational goal as early as possible, and for including parents, who are both teachers and role models for their children when it comes to dealing with the hyper-connectivity risks, in this education process.⁷⁰⁵

Hernani Marques of the Chaos Computer Club argues that there is a need for legal regulation as a guarantee that nobody should face negative consequences if they do not reply to emails on Sundays. According to him, everything else is the individual’s responsibility.⁷⁰⁶

Monika Bär, a Head of School, identifies specific responsibilities for schools when it comes to their students: “Dealing with hyper-connectivity at schools for teachers and other employees is part of individual responsibility. For students, it is different. We do have educational responsibilities and to prepare them for their future lives, and to occasionally hold up a mirror. A reasonable connectivity behavior has to be talked about and practiced.”⁷⁰⁷

Corporate social media specialist Bruno Kollhorst is convinced that companies should have guidelines regarding how much and when workplace connectivity is or is not expected.⁷⁰⁸

⁷⁰⁴ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁷⁰⁵ ON/OFF expert interview with Silvia Kölliker in November 2013 in Zurich, Switzerland

⁷⁰⁶ ON/OFF expert interview with Hernani Marques in November 2013 in Zurich, Switzerland

⁷⁰⁷ ON/OFF expert interview with Monika Bär in August 2014 in Zurich, Switzerland

⁷⁰⁸ ON/OFF expert interview with Bruno Kollhorst in January 2014, Zurich, Switzerland – Hamburg, Germany

Berlin-based labor union specialist Kathlen Eggerling says labor law in Germany regulates responsibilities. The law protects employees from working overtime, when they are on vacation, or when they are sick, but is nevertheless problematic because employees are not informed. Eggerling says the law is straightforward; a workday is 8 hours, or up to 10 hours at the maximum, and when an employee is sick or on holiday there should be no connectivity.⁷⁰⁹

Alexander Steinhart, through his connectivity-blocking app Offtime, hopes to advance the public debate about hyper-connectivity and society. Steinhart, who is Offtime's CEO, says that it is especially hard in the start-up environment to find a healthy balance of connectivity. Steinhart says, "The more we grow, we need to have guidelines. What is the expected time frame to get back at messages and emails? What is the free time employees can expect and what behavior is expected from the employee in this free time?" He adds that current technology is about maximizing the time consumers spend and engage online, because that is their role in the online advertising business mode. Steinhart frames it as a responsibility of technology entrepreneurs and designers, in order to continue to maximize consumer engagement, to build technologies to protect users.⁷¹⁰

Marcel Bernet, a digital pioneer in corporate communications, also believes that the individual is ultimately responsible (though children and adolescents are perhaps not personally responsible to the same degree). Bernet argues, "It may be a good idea for corporations to say, if it is an employee's wish, we block their emails on weekends, but I would perceive it as a form of patronization if someone told me I cannot write emails on Sundays. But it is nice if a company explicitly says that nobody has to read emails, even if they are from a superior."⁷¹¹

Agnes von Wyl, professor for clinical psychology, states that, in her own professional life, she has stopped sending emails to her employees on Sundays: "Emailing on a Sunday simply sends a bad message to employees about connectivity requirements."⁷¹²

"Academics are not fond of regulations," says the managing director of a Swiss university Reto Schnellmann. "And in academia, individual responsibility plays an essential role." But he does think that the university as an employer is responsible for raising awareness. While Schnellmann says he is not going to tell anyone they cannot write emails on Sundays, he admits his own team advised him to be aware of the potentially implied messages of his own off-hours emails.⁷¹³

Pediatrician and digital media expert Claire McCarthy reflects on educational responsibilities such as teaching children how to delay gratification: "The ability to have delayed gratification is an executive function skill. It is delayed gratification, troubleshooting, negotiation—these are the air traffic controllers of life. Screens are part of our kids' life. To say no screens, really misses the point. We can teach them how to use them in healthy ways, and how do you know when to shut them off."⁷¹⁴

⁷⁰⁹ ON/OFF expert interview with Kathlen Eggerling in May 2014, Berlin, Germany

⁷¹⁰ ON/OFF expert interview with Alexander Steinhart in May 2014, Berlin, Germany

⁷¹¹ ON/OFF expert interview with Marcel Bernet in June, 2014 in Zurich, Switzerland

⁷¹² ON/OFF expert interview with Agnes von Wyl, August 2014 in Zurich, Switzerland

⁷¹³ ON/OFF expert interview with Reto Schnellmann in August 2014 in Zurich, Switzerland

⁷¹⁴ ON/OFF expert interview with Claire McCarthy in October 2014 in Boston, MA, USA

Neuroscientist Steven Lockley says responsibilities depend on position and hierarchy within an organization. He states that if employees are not in an autonomous position like his, they should be protected from unreasonable connectivity expectations. In terms of sleep quality, he lists individual responsibilities. Lockley says that changing behavior to reduce adverse light exposure or improve sleep often requires a reprioritization of the importance of sleep, and the realization that better sleep can improve productivity, safety and health. Maintaining a regular schedule and prioritizing light days and dark nights will help, as will considering limiting use of electronic device and resisting the need to be on 24/7. Lockley recommends some simple measures that include using dimmer, red-enriched lights for as long as possible before bed in the evening, turning off devices at least an hour before bed, not having a TV in the bedroom, and not having the phone or tablet by the bed. Use blackout curtains or sleep with an eye-mask.⁷¹⁵

Enno Park, president of the Cyborg Association, talks about an increasing privacy invasion not only in work culture but also in our private lives—as an example, he mentions how WhatsApp informs senders when a user receives and opens a message. He says there is cultural pressure to respond quickly (particularly when, as with WhatsApp, users know that messages have been seen), and that this pressure needs to be more widely discussed. Park believes that rules and regulations intended to protect employees would actually complicate things, and that “[t]he best way is to teach people to protect themselves from their own work ethic and to carefully reflect how much time they need to relax.” According to him, change should start not with laws but with programs promoting healthy behaviors. However, Park does think employers should take some responsibility for preventing their employees from information overload and burnout. Regarding privacy risks, he mentions encryption technologies individuals can use to protect our personal communications.⁷¹⁶

In the ON/OFF Global Expert Survey, 21 out of 22 say that employers are not considered to be responsible for protecting employees from risks of being always on. Rather, they say that individuals are responsible for protecting themselves.

Who Do Students Think Is Responsible?

In the ON/OFF survey, students were asked to agree or disagree with the following three statements: “I think everyone is responsible to regulate connectivity for themselves,” (individual responsibility), “I think my school is responsible to regulate connectivity,” (educational responsibility) and “I think my future employer is responsible to regulate connectivity.” (employer’s responsibility).

⁷¹⁵ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

⁷¹⁶ ON/OFF expert interview with Enno Park in November 2014, Cambridge, MA, USA – Berlin, Germany

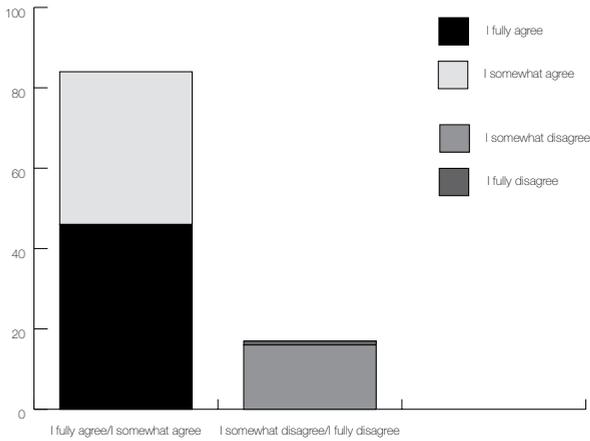


Figure 63 — “I think everyone is responsible to regulate connectivity for themselves.” — ON/OFF Student Survey

An overwhelming majority of ON/OFF students, more than four in five, agrees with the statement, “I think everyone is responsible to regulate connectivity for themselves.” There was a significant negative correlation between this belief and agreement with the statement “It is important for me to be offline for a day once in a while.” Those who care more about regularly disconnecting don’t seem to think it is their responsibility to assume individual responsibility.

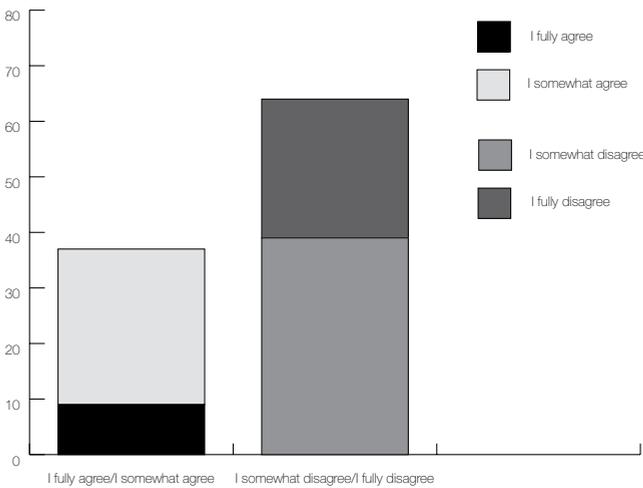


Figure 64 — “I think my school is responsible to regulate connectivity.” — ON/OFF Student Survey

About a third of the ON/OFF students said that their school is responsible for regulating connectivity. Interestingly, there was a highly significant correlation with thinking the school is responsible and experiencing phantom ringing often, and the same is true for those who think that their future employer is responsible to regulate connectivity. It seems that those who experience

phantom ringing would feel less pressure to be connected if an institution were to tell them when they could disconnect.

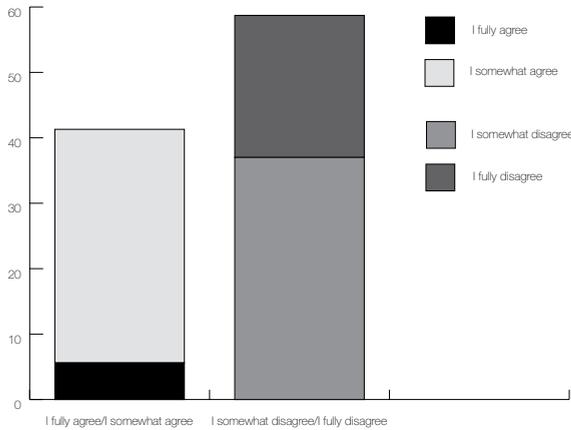


Figure 65 — “I think my future employer is responsible to regulate connectivity.” — ON/OFF Student Survey

A little more than four in ten think that their future employer is responsible for regulating connectivity. This belief correlates with thinking it is important to have clear boundaries between school and leisure which corresponds with separator personality types.

Regarding data protection, many players are responsible, according to young inhabitants of the United States, Brazil, Switzerland, and Singapore. The survey respondents between 16 and 25 years (N=4,000) rate the individual as the most important player in protecting personal data. Other important players include: schools and the education system, companies, government and politics, Internet providers, and technology companies.⁷¹⁷

In summary, experts and survey respondents agree on attributing most responsibility in dealing with risks of hyper-connectivity to the individual. There is a consensus that families and the education system are responsible in teaching children digital literacy, delayed gratification, and healthy ways to turn off devices. In the world of work, hierarchy, personal autonomy, the industry, and the corporate culture shape connectivity expectations. Experts agree that it can be helpful for employees if superiors make their connectivity expectations explicit or announce officially that nobody has to respond to emails and messages on the weekend. A couple of experts mention political responsibilities like health promotion programs.

2. Corporate Responses

Members of the creative industry, freelancers, academics, and other independent workers have used the benefits of hyper-connectivity to be able to work while traveling to inspiring places or out of new and exciting locations instead of the same office everyday. As described in the sub-

⁷¹⁷ Golder et al., 2014, p. 25

chapter “*Bleisure*” and the *Workplace Connectivity Dilemma*, many creative workers enjoy combining work and leisure by working out of nice cafés with WiFi or even in warm places to avoid the winter in their home countries. However, with mobile, flexible work, there is an increased risk of “self-endangering work behavior” (see subchapter *Self-Endangering Work Behavior and the No Muscle*).

Companies have been benefiting from an increasing flexibility of workers thanks to mobile communication technologies for a while. According to ETH professor Gudela Grote’s research, mobile, flexible work or working from home has been promoted since the 1970s: reduced office hours and less commuting, higher productivity, better life balance. But, she adds, the new freedom is only valuable if there are boundaries: If companies promote working from home, they need to support employees in drawing clear lines.⁷¹⁸

German companies have made international headlines by introducing technological connectivity innovations. In late 2011, the company Volkswagen agreed to stop its Blackberry servers from sending emails to its employees when they are off-duty (the servers stop routing emails 30 minutes after the end of employees’ shifts, and then start again 30 minutes before they return to work; the rule does not apply to senior management). The measure was taken after employees complained about blurring boundaries between work and home.⁷¹⁹ Interestingly, another German car manufacturer, Daimler, announced that they were making “striking a balance between employee’s work and private lives” a key aspect of their management culture. The company teamed up with the psychology department at the university of Heidelberg to study how to reconcile employees’ work and private lives. In 2010 and 2011, the researchers surveyed 6,000 employees for their study. Accordingly, the company implemented a number of measures under the umbrella of the Life Balance HR initiative, such as allowing employees to have their incoming emails deleted automatically during vacations in order to avoid the stress of a full inbox during their time off and on their return. Additionally, the Life Balance HR initiative included new guidelines for managers:

1. Observing boundaries: prioritizing tasks and planning capacities;
2. Being able to switch off: no-one is expected to be on call 24/7;
3. Making conscious use of rest: consciously taking a break from your daily work;
4. Reconciling your work and private life: taking advantage of the available Life Balance offers.

The initiative underlined that these guidelines would help managers establish life balance for their own area of responsibility.⁷²⁰

In a survey about connectivity among the 20 largest Swiss companies, a majority responded that their employees are responsible for balancing the risks of hyper-connectivity, though some do train their management to deal with these concerns.⁷²¹ Microsoft’s Barbara Josef says that blocking company emails for the sake of health promotion is not a sophisticated measure: “At Microsoft, it is not considered an achievement if you send emails at 1 a.m. Some Microsoft employees play golf on nice days and work at night and are completely happy about it. If people cannot work because of technological matters, this would be considered a step back.”⁷²²

⁷¹⁸ Grote, 2014

⁷¹⁹ DPA/AFP, 2011; BBC News, 2012

⁷²⁰ Sonntag, 2014

⁷²¹ Metzler, 2014

⁷²² ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

In a experiment with one of the most high-pressure companies, The Boston Consulting Group (BCG), Harvard Business School professor Leslie Perlow aimed to show that it is possible to break the “cycle of responsiveness” (Figure 58).⁷²³ Perlow describes how hard it was to convince most of the ambitious and always-connected BCG consultants to take some predictable time off (PTO). They started with one night a week off and disconnected from their devices. Perlow hoped that if these nonstop-working management consultants were able to make a small change in the way they worked, other professionals and workplaces would see it was possible for them as well. She makes it very clear that it is not possible in a 24/7 work environment to change a culture of immediate responsiveness by yourself. Before her team started the experiment at BCG, many managers and consultants quickly pointed out how they viewed it as impractical to disconnect from work. BCG employees worried about their relationships with other employees and their careers; as one said, “if you refrain from e-mailing colleagues will still e-mail you—and you don’t want to let them down. If you stop working long hours and always being accessible, others will likely speed past you on the career ladder. You never know when the client or customer will call, or what the demands of managing across time zones will present.”⁷²⁴ The responses show that when an individual or small group tries to disconnect in an always-connected company, everyone else remains connected and the disconnection is difficult or costly to maintain. Perlow states, “[W]hat it takes to break the cycle of responsiveness is for you and your colleagues to strive to do it, together.”⁷²⁵

Perlow describes PTO as a radical departure for a BCG team. The process of figuring out how a manager can get the backup needed for team members to take a night off from highly demanding clients every week transforms the whole team and leads to higher empathy levels among team members and richer lives both inside and outside of work.⁷²⁶ One of the BCG consultants reported that in his team, members were looking out for each other to make sure that no one was getting burned out. People who were up late would send each other messages saying, “Why are you up? Go to bed.”⁷²⁷ Although perhaps a single predictable night free from work every week sounds like very little time off for most people, the researchers found that BCG employees who participated in the experiment—and later in a company-wide program—were more satisfied with their work-life balance and with their work in general, and BCG was better able to recruit and retain employees.

How do companies react when someone calls in sick but is then “seen” on Facebook? Or when employees publish controversial statements about the company on social media? In both cases, the hyper-connected private/public sphere has lead companies to fire employees.⁷²⁸ Some companies restrict the usage of social media platforms. An international survey indicates that companies restrict social tools mainly because of security concerns and productivity loss.⁷²⁹ ON/OFF expert Barbara Josef says there is a link between flexible hours and the possibility to work from home and the way companies handle access to social media platforms. She says it is about control—those who restrict Facebook do often also not allow flexible hours.⁷³⁰

⁷²³ Perlow, 2012

⁷²⁴ Perlow, 2012, p. 2

⁷²⁵ Perlow, 2012, p. 8

⁷²⁶ Perlow, 2012, p. 31

⁷²⁷ Perlow, 2012, p. 78

⁷²⁸ BBC News, 2009

⁷²⁹ Ipsos & Microsoft, 2013

⁷³⁰ ON/OFF expert interview with Barbara Josef in October 2013 in Wallisellen/Zurich, Switzerland

As described in other chapters, many experts maintain that companies are responsible for explicitly addressing their expectations of workplace connectivity because this helps avoid employees' assumptions that if a superior contacts them when they are off-duty, they need to reply, or that if they are sick at home, they still need to log in. ON/OFF experts have repeatedly mentioned the importance of leadership and early detection of coworkers who do not seem to detach from work regularly enough.

From his experience with many executives who start feeling burnt out, Strasser says that it can be very simple but helpful to draw a clear line between work and leisure and to define the rule as, "When I leave the office, I don't have to keep working on my phone, so I can relax on my way home before talking to my family." Strasser adds, "This may sound trivial, but it helped those executives who are very tech-oriented to break their habit of staying busy by putting their phones on flight mode."⁷³¹

In summary, the most common response by corporations and organizations is to benefit from a more mobile and flexible workforce, from faster information and communication. Many companies allow work from home or to avoid rush hour or higher productivity at home. Regarding risks of blurring boundaries between work and leisure, a majority of companies consider the individual employee responsible. Some corporations consider connectivity policies within specific teams a responsibility of the team manager depending on the team's tasks. In industries with demanding customers with little sympathy for business hours, teams have "predictable time off" instead of regular free nights and weekends. In Germany, large corporations have introduced special programs or human resources initiatives based on technological solutions to protect executives and other employees from being constantly connected to the workplace.

3. Connectivity Policies in Education

For many years, New York City's public schools banned cellphones all together. NYC's Department of Education stated on their website in 2014 that distraction and safety concerns were the main reasons for the ban: "Safety and security of our students are our utmost concern. It is for this reason that we are urgently requesting that cell phones and other electronic devices be left at home. They are a distraction and pose a safety hazard to our school community. The thefts of cellphones and other electronic devices have become a citywide epidemic."⁷³² In 2015, New York City's mayor Bill de Blasio announced that the ban would end. Principals of schools with a lot of behavioral problems were reported to particularly oppose lifting the ban, mainly due to concerns about cheating and theft.⁷³³ Because of the ban, a small industry that allowed students were able to store their mobile devices for one dollar a day in trucks in front of schools had been thriving (Figure 66). Many truck owners feared they would soon go out of business. New York City's mayor listed several reasons for lifting the ban including uneven enforcement as some schools tolerated cellphones anyway. The mayor maintained that schools would still be able to ban cellphones from classrooms.⁷³⁴

⁷³¹ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁷³² NYC Department of Education, 2014

⁷³³ Harris & Schweber, 2015; K. Taylor, 2015

⁷³⁴ Harris & Schweber, 2015



Figure 66 — Students lining up in front of a cellphone truck in front of a school in New York City⁷³⁵

What do students and experts think about connectivity regulations at schools? Schools that participated in the ON/OFF student survey ban mobile devices not at school, but in class. The ON/OFF questionnaire asked students “Is there a ban on mobile devices in class?” 47% said there is a ban. Interestingly, the other half denied the question or did not respond even though the respective schools all officially banned cellphones in class. How to explain this? Some possibilities arise from personal experience with students and with classrooms. It could be that most teachers have a different way of dealing with the school’s connectivity policy in class—if students are not punished for using their devices in class, they may be confused about the regulation. When asked about their thoughts about connectivity regulations at schools in general, almost every single student expressed an opinion. A surprisingly high percentage of students (60%) is in favor of a ban on connected devices in class (Figure 67).

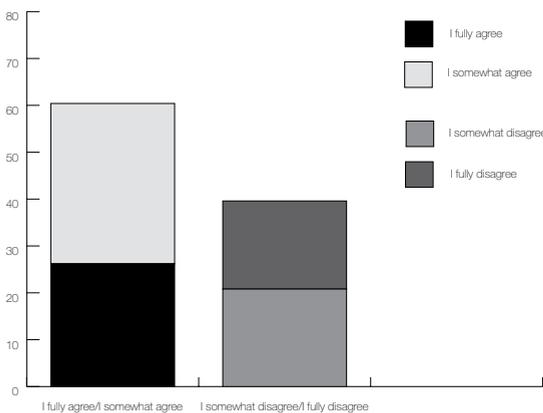


Figure 67 — “I think a ban on cellphones during class is appropriate.” — ON/OFF Student Survey (N=149)

⁷³⁵ Illustration based on a picture widely distributed in mainstream media.

Better-educated students (HS) are significantly more likely to be in favor of a ban on mobile devices in class (80%) than commercial school students (CS, 50%) or IT students (IT, 42%) (Figure 67).

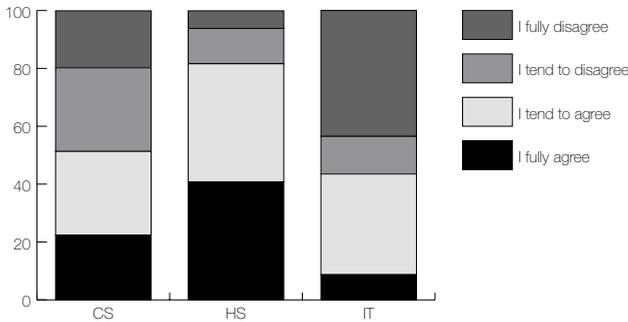


Figure 68 — “I think a ban on cellphones during class is appropriate.” — In percent by school type — ON/OFF Student Survey (N=149)

60% of students overall think that a ban on cellphones during class is appropriate. However, there are significant differences between higher- and lesser-educated students. 80% of higher-educated students are in favor of a cellphone ban in class. While 67% of female students are in favor of a ban in class, only 52% of their male counterparts are. Only 5% are in favor of a ban on cellphones at school in general.

56% say that students should always be able to use their mobile devices, which seems somewhat contradictory given that a larger percentage is in favor of a ban in class. Roughly a third of the students (32%) agree with the statement “I think mobile devices should be part of class.” (Figure 69), and approval is even lower among higher-educated students. 45% of all students surveyed agree with the statement “I am against regulations.”

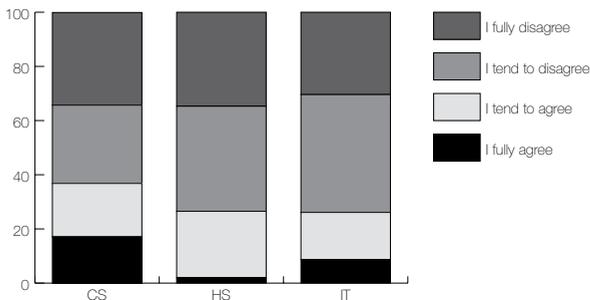


Figure 69 — “I think cellphones should be part of class.” (N=148) — ON/OFF Student Survey

An ON/OFF supervised study among young Swiss students (N=350, average age 12 years), indicates that cellphone users with high addiction scores are less likely to prefer connectivity regula-

tions at school.⁷³⁶ The ON/OFF survey asked older students about their preference regarding connectivity regulations. Students who worry about negative health consequences including information overload were significantly more likely to believe that schools are responsible for regulating connectivity.

Among the ON/OFF global experts, 19 out of 22 agree with the statement “In my country, a ban to use mobile devices in class is considered reasonable.” However, only half of them say the same for a ban to use mobile device at school.

To sum up, a ban on using cellphones in class is considered reasonable internationally. A majority of the surveyed students are in favor of a ban in class but higher-educated students and females are significantly more likely to support a ban.

4. Technological Answers

It may seem ironic to engineer technological solutions to problems that would not exist if the technology didn't exist in the first place. However, a comparison to transportation technologies like planes, cars, or trains may be valuable. Hardly anyone would argue they are not useful means of transportation. They are sophisticated technologies by themselves, but a lot of additional technologies are used to reduce harm they might cause. Traffic lights, electronic braking, airbags, flight controlling systems, and speed measurement systems are all examples that might make the proposition of finding technological answers to technological hyper-connectivity problems seem less bizarre.

Most technologies that try to address risks of hyper-connectivity have their flaws and may ultimately not be effective. But they can nevertheless be helpful in initiating conversations about hyper-connectivity.

Connectivity-Blocking Technologies

German companies block work emails on their employees' mobile devices at night and on the weekends (see subchapter *Corporate Responses*), and pioneering Swiss schools provide tablets for every student but disable the tablet's Wi-Fi connection between 10 p.m. and 6 a.m.⁷³⁷ A report on hyper-connectivity in the professional realm recommends technological measures to block work-related emails for employees when they are not on duty.⁷³⁸

In recent years, a number of apps and software have been developed to measure or limit connectivity behavior. A well-known example, the Freedom App, was created by an American PhD student to “lock you away from the ‘net for up to eight hours at a time. At the end of your time offline, Freedom allows you back on the Internet.”⁷³⁹ It is mainly framed as productivity-enhancing software that helps users to not procrastinate online. Many similar applications have been on the market for both desktop computers and mobile devices (RescueTime, AntiSocial, Mental, Offtime).

⁷³⁶ Bleiker & Keller, 2014

⁷³⁷ Jonsdottir, 2015

⁷³⁸ Syndicom, 2015, p. 11

⁷³⁹ Freedom, n.d.

In the ON/OFF Student Survey, students were asked, “What do you think about software or apps that block your Internet connection temporarily to avoid distractions?” Roughly 2% of respondents have used them, 15% replied that they did not know about them but would be interested in trying them out, and the vast majority (82%) reported not using the software or apps because they do not need them. Those respondents with higher self-control scores were more likely to say that they would be interested in using it.⁷⁴⁰

Offtime is a Berlin-based post-tech⁷⁴¹ startup, whose CEO Alexander Steinhart has served as ON/OFF expert. Offtime has created an app to help users “unplug better, thanks to app blocking, communications filter and insights into your smartphone usage.” Offtime is about customizing connectivity. Mr. Steinhart’s approach goes beyond productivity and well-being. One of the company’s major goals is to be part of a societal debate around hyper-connectivity. He says hyper-connectivity has tremendous advantages such as access to information and democratization of knowledge. The other side of the coin is that we have to deal with an abundance of information and a whole industry based on that. Steinhart is convinced that individuals regularly need solitude in order to reconnect. With his app, he wants to experiment with solutions and contribute to the debate about what is relevant information and phone functions for an individual, and this might not be about on or off, but about a smart way of blocking out or limiting access to unnecessary information and letting other information through.⁷⁴²

MD Philippe Strasser, who specializes in occupational health, is not thrilled with the idea of technological tools to fight technological distraction: “I would not want to define technologically who can contact me and who cannot. This ties up a great amount of my attention and is therefore counterproductive. If the app tells everyone when I’ll be available again, everybody will contact me at the same time. I think this kind of app is a good tool to raise awareness, but they’re not for me.”⁷⁴³ He adds that he considers taking a clear stance on how to deal with constant connectivity is more effective than technological tools.

A connectivity-blocking app called Pocket Points gives students rewards for not using their phones in class. When the application is opened, the phone locks and students start gaining points, which they can use to get deals in local stores near the school. The app is currently only available in the United States, and as of 2015 70 major universities across the country are participating. Upon request, a Pocket Points representative confirms that across their five initial schools, Pocket Points has given out 2.5 million points, which means students stayed off their phones for the equivalent of over 50 years.⁷⁴⁴

Sleep-Enhancing Technology

While LEDs can exacerbate exposure to blue-enriched light, they also represent the solution. With LEDs, it is possible to create fixtures that can emit a wide range of light wavelengths, intensities and patterns of exposure which is much more difficult with other sources. Programmable

⁷⁴⁰ Self-control was measured using items from Hupke, 2011.

⁷⁴¹ Offtime defines post-tech (or post-technology, post-digital-technology) as technology that puts humans at the center and supports focus and intent, well-being and independence (from technology) instead of increasing mere productivity and time spent with digital devices and technology only.

⁷⁴² ON/OFF expert interview with Alexander Steinhart in May 2014, Berlin, Germany

⁷⁴³ ON/OFF expert interview with Philip Strasser in July 2014 in Zurich, Switzerland

⁷⁴⁴ Email by Pocket Points representative to the author on August 13, 2015

LED lighting, that can change the wavelength and intensity by time of day, can ensure that people are exposed to the right light at the right time. NASA have adopted this approach with the new lighting for the International Space Station – multi-LED light fixtures will be installed at the end of 2016 which will allow three light settings: a good quality light for good vision in the ‘day-time’; a high intensity blue enriched light when the crew needs to be maximally alert; and a dimmer, blue-depleted pre-sleep setting to help facilitate sleep.⁷⁴⁵

Back on Earth, Harvard Medical School’s Steven Lockley mentions the software f.lux as “a good example of how you take a source and change it and that is not changing the source and that is changing what the screen puts out.” The software f.lux was designed to prevent disruption of normal sleep patterns and adjusts a computer display’s color temperature according to geographical location and time of day. Redshift is a similar app for Linux users and in 2016, iPhone users were able to activate Night Shift, a new feature of iOS 9.3 which automatically shifts the display to warmer colors in order to reduce blue light output. Another possibility is to use non-digital technology: wearing blue-blocking glasses at night.⁷⁴⁶

Privacy Protection

Technological tools have also been put forward to address privacy and surveillance concerns related to hyper-connectivity. A 2016 Harvard University report identified 865 hardware and software products incorporating encryption from 55 countries, primarily from the U.S. and Germany.⁷⁴⁷ The Electronic Frontier Foundation has published a guide for “surveillance self-defense” that includes a number of encryption technologies and recommendations on how to protect oneself from surveillance while using mobile devices and social networking platforms. The main target is activists as well as everyone else interested in encryption.⁷⁴⁸ Encryption technologies were initially been developed by government employees, but recently governments have considered legally banning end-to-end encryption in an attempt to fight criminals and terrorists.⁷⁴⁹ In 2016, the FBI-Apple encryption dispute following the San Bernardino terrorist attack in California received global attention regarding the question of public access to strong encryption.⁷⁵⁰ In the same year, WhatsApp, one of the most popular smartphone messengers, switched on end-to-end encryption by integrating the previously end-to-end encrypted Signal messenger protocol.⁷⁵¹ Privacy activists have used special pockets (faraday cage) or wallets in order to prevent unintentional data sharing from smartphones or RFID activated cards (*offpocket.com* or *silent-pocket.com*, Figure 70).

⁷⁴⁵ Worth, 2012

⁷⁴⁶ ON/OFF expert interview with Steven Lockley in November 2014 in Cambridge, MA, USA

⁷⁴⁷ Schneier, Seidel, & Vijayakumar, 2016

⁷⁴⁸ Electronic Frontier Foundation, 2015b; Similar guides were published by the Berlin-based Tactical Technology Collective and their campaign „Me and My Shadow.“

⁷⁴⁹ Paletta, 2016; Zittrain, 2015

⁷⁵⁰ Benner & Lichtblau, 2016

⁷⁵¹ Metz, 2016; Open Whisper Systems, 2016

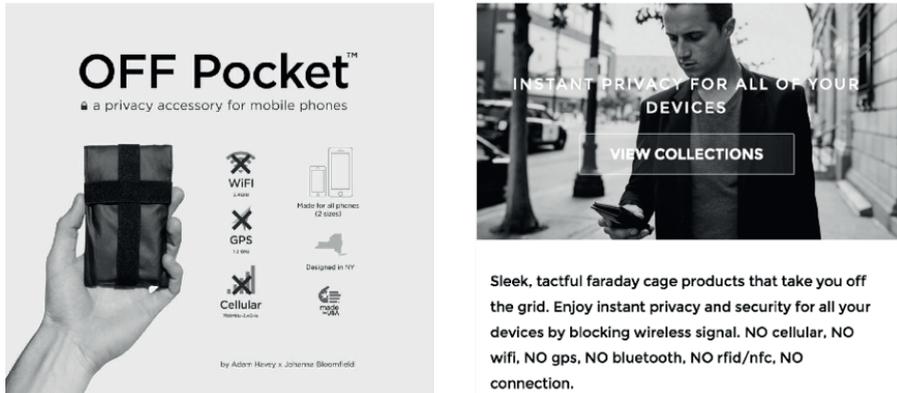


Figure 70 — Faraday cages for privacy purposes

Austrian law student Max Schrems made a specific case for “informational self-determination” by claiming his own data from Facebook through the platform. He received a document of more than 100 pages with detailed information including when he logged into Facebook and his location data. Even information he had deleted appeared in the document. He ended up filing a highly publicized lawsuit against Facebook (Europe vs. Facebook) for privacy violations and violations of European privacy law. Schrems’ Facebook data and the case Europe vs. Facebook show that corporations increasingly monitor consumers in exchange for free services.⁷⁵² Schrems’ case led the European Court of Justice in 2015 to declare the transatlantic Safe Harbor Privacy Principles as invalid.⁷⁵³

Web Filters

Hyper-connectivity means ubiquity of content and accessibility 24/7, and that includes material like pornography. Parents, educators, and schools have expressed concern about kids accessing or even accidentally being exposed to adult, violent, or extremist content online. Web filters have been installed in school networks, and parental controls activated on home computers.

In the ON/OFF global expert survey, 18 out of 22 report that in their country, Internet filtering and blocking website at school is considered reasonable. However, it is far from certain that filters are an effective way of protecting children online. There will always be a network or a device within reach that does not filter. Generally, media education experts recommend that parents have open and age-appropriate conversations with their children about sexuality, violence, and extremism, rather than relying on filters to protect them from harmful content.⁷⁵⁴

Why schools install web filters is discussed in depth in subchapter *Schools and Higher-Education*.

⁷⁵² Schneier, 2015a

⁷⁵³ Court of Justice of the European Union, 2015

⁷⁵⁴ Genner et al., 2015

Product Design

There is a philosophy that technology should be designed as a tool that operates in the background without taking a toll on people's attention. In the 1990s, researchers started thinking about how to design information technologies so they would be of good use to humans. Researchers Mark Weiser and John Seely Brown coined the terms "calm computing" and "calm technology" in 1995. Principles of "calm technology" include that technology should require the smallest amount of our attention, should inform, and should be designed for people first.⁷⁵⁵

However, for some reason we do not seem to want technology that does not catch our attention. An important part of the digital economy capitalizes on attention (for example, the more time users spend on a website, the more advertising money it brings in), and social media companies especially are working to increase user engagement to serve their business model (see subchapter *Addiction by Design*). Moreover, many technological devices such as the newest model of the iPhone or other connected gadgets are not only tools but also signifiers of social status. We want our newest device to catch the attention of those we want to impress.

5. Post-Privacy & Disconnectionist Movements

As a reaction to ubiquitous data and connectivity, two very different movements have formed: the post-privacy movement and the disconnectionist movement. These movements are not officially organized or strictly defined, so they can be difficult to define and describe. It could be argued that anyone who makes statements about the death of privacy is somehow part of the post-privacy movement, while anyone who promotes a debate around disconnecting or unplugging from connected devices is in one way or another part of the disconnectionist movement. While these categorizations seem too broad, nevertheless, who and what are part of both the post-privacy and the disconnectionist movements is not always clear.

Post-Privacy

Based on her experience with the U.S. criminal justice system in the case of digital activist Aaron Swartz, journalist Quinn Norton coined what has become known as *Norton's Law*: "All data, over time, approaches deleted, or public."⁷⁵⁶ Following this line of argumentation, privacy and security are merely temporal illusions of the moment, because in the digital era, and especially in the post-Snowden era, privacy is dead and we live in a post-privacy world. While Norton's experience with the criminal justice system was rather painful, and privacy activists in general can tend to have a dystopian vision on these matters, some argue that a post-privacy world has advantages. These include increased transparency in business, government, and society at large, and therefore more accountability. Boston-based technology entrepreneur Nova Spivack argues that "the NSA is not the enemy, but that they too must become more transparent, just like the rest of us."⁷⁵⁷

⁷⁵⁵ Calm Technology, n.d.

⁷⁵⁶ Norton, 2015

⁷⁵⁷ Spivack, 2013

It is not clear whether those who say they have nothing to hide (see chapter *Privacy*) are actually part of the post-privacy movement or have just given up all hope that at least some things may remain undisclosed.

Highly publicized data breaches fuel the debate about the death of privacy. Recent examples are the Sony Pictures Entertainment hack in 2014, after which large amounts of confidential information including personal emails were released; the 2015 Hacking Team hack, which exposed the global surveillance technology industry; and the Ashley Madison data breach, which leaked very personal data from a commercial cheating website.

Unplugging as an Experiment

The disconnectionist movement takes all forms and shapes. In the past few years, many newspapers have run stories with journalists or activists reporting on having spent some time offline. One of the more prominent examples was editor Paul Miller's piece "I'm still here: back online after a year without the Internet."⁷⁵⁸ Some of the authors of these pieces stated that during the experiment, they missed being online and realized how intertwined with technology our lives already are. Others stated how great and real it felt to be offline and argued that everyone should go offline regularly. There have even been books published about personal experiences with going offline for a time, such as *Ich bin dann mal offline*.⁷⁵⁹ Author Joël Luc Cachelin's book *Offliner* talks about an actual disconnectionist "counterculture."⁷⁶⁰ He describes the societal pushback against the "hyper-digital future." While these works are individual examples of disconnecting, larger scale events like "National Unplugging Day," "Offline Days," and device-free parties such as "Unplug SF" (Figure 71) are local culmination points for the disconnectionist movement.

Are technology-adverse subcultures such as Waldorf school communities or even the Amish part of the disconnectionist movement? Or are they simply sticking to their old principles while disconnectionists represent members of the technologically-saturated who have come to the conclusion that enough is enough? Either way, it may not matter as disconnecting temporarily is becoming a major trend. At one of the most technology-oriented global events, TED (Technology, Entertainment, Design) organizers decided to run an experiment banning the use of smartphones, tablets, laptops, cameras—any electronic device—during the June 2015 conference. European TED director Bruno Giussani said it was a huge success and may be repeated.⁷⁶¹

"Disconnect to Reconnect" as a Business Model

In the United States, a company called Digital Detox has made disconnecting their business model. Digital Detox operates in digitally saturated California. A former VP of a startup decided after a near-death experience to leave his "always-on, digitally enthralled reality"⁷⁶² behind and to travel the world with his partner. More than two years later, the couple started planning small retreats with yoga, art, and no digital devices allowed. These retreats later turned into an event

⁷⁵⁸ Miller, 2013

⁷⁵⁹ Koch, 2010

⁷⁶⁰ Cachelin, 2015

⁷⁶¹ Giussani, 2015

⁷⁶² TheDigitalDetox.org, 2014

business with summer camps for adults and device-free parties. On their website, the founders state that they are not Luddites. They claim, “[B]y disconnecting from our devices we reconnect with: ourselves, each other, our communities, and the world around us. Becoming more present, authentic, compassionate and understanding.”⁷⁶³ A similar initiative, Offlines, has been started in Berlin, Germany with almost identical rhetoric—disconnect to reconnect, come for a digital detox, and enjoy real life by going offline for a day or the length of a workshop.⁷⁶⁴ Wisdom 2.0 was founded in the San Francisco Bay Area and serves as a successful business model for conferences in the United States and Western Europe. The idea is to bring together speakers from the technology industry (Facebook, Twitter, eBay, Zynga, and Paypal) with speakers from neuroscience and “wisdom traditions” such as yoga and mindfulness.⁷⁶⁵



Figure 71 — Flyer for a device-free annual party in San Francisco in 2015

In the art world, the disconnectionist movement manifests itself with projects such as the Seymour+ space (Figure 72). It opened in late 2014 and is located near the Canal St Martin in Paris and is part of the Seymour Projects, founded by Franco-American writer Melissa Unger. The Seymour Projects aim to “cultivate creative self-expression by encouraging individuals to balance technological stimuli with internal exploration.” It is not only an entirely technology-free space with no computers and no cellphones, there are also no books or magazines allowed—only paper and pencils. Seymour+ wants to be a “haven for your mind where you can disconnect in order to reconnect with yourself.” It also claims to be a place to go to “when you need a respite from technology, external distractions or other outside influences that hinder your ability to access your own thoughts, imagination and intuition.”

⁷⁶³ TheDigitalDetox.org, 2014

⁷⁶⁴ Offlines.net, 2015

⁷⁶⁵ Wisdom2summit.com, 2015



Figure 72 — Offline space in Paris⁷⁶⁶

Disconnecting from Social Media or News

There is research on Facebook quitters (see subchapter *Motivations and Personality*) and the reasons why they deleted⁷⁶⁷ their Facebook accounts—mainly for privacy reasons; some because of the addictive qualities of social media.⁷⁶⁸ No studies on partially disconnecting from the Web as a whole could be found at this point. Very active social media users have decided to take a break from social media for a while still using the Internet.

An example of partial unplugging was the “99 days of freedom” campaign in 2014, which encouraged Facebook users to stay off the social network for roughly three months and to replace their Facebook profile picture with a “time-off” image. The campaign launched after Facebook had revealed their highly controversial mood experiment. Many people were very upset about the experiment and claimed that Facebook’s researchers manipulated emotions without consent of their users.⁷⁶⁹ When ON/OFF expert and communications consultant Marcel Bernet took a four-month break from social media, it was not because he was upset with Facebook and other social media platforms. During the break from social media, he recognized more deeply the addictive instant gratification of your content getting liked, shared, and commented on.⁷⁷⁰

Being constantly informed and connected to the news may have negative effects on individual happiness, health, and creativity, authors Jesse Armstrong and Rolf Dobelli suggest.⁷⁷¹ They recommend giving up reading the news all together or going for a “news detox” for the “news addicted.” Though a small part of online addiction may indeed be linked to news addiction (chapter *Addiction*), giving up news all together certainly is not a healthy diet for responsible citizens in a democracy. The Guardian journalist Madeleine Bunting calls Rolf Dobelli’s ideas about

⁷⁶⁶ Photographer: Camille Malissen, courtesy of Seymour Projects, Paris

⁷⁶⁷ Deleted in the Facebook sense of the term: the profile is rather deactivated than entirely deleted from the Facebook servers.

⁷⁶⁸ Stieger et al., 2013

⁷⁶⁹ Withnall, 2014

⁷⁷⁰ ON/OFF expert interview Marcel Bernet in June, 2014 in Zurich, Switzerland

⁷⁷¹ Armstrong, 2015; Dobelli, 2013

not needing news “dangerous.” She claims, “It is all about healthy moderation.”⁷⁷² The “slow news movement” as an answer to ubiquitous and fast-paced news is similar to the relationship of the “slow food movement” to fast food. University of Oregon journalism professor Peter Laufer says about the movement, “I’m practicing what I call ‘Slow News,’ named, obviously, after the Slow Food movement. I’m working hard to get off the 24-hour news merry-go-round because—despite the fact that I am a journalist—I’m convinced most news can wait.”⁷⁷³

6. Mindfulness & Relaxation

In February 2014, TIME magazine’s cover heralded “The Mindful Revolution – The science of finding focus in a stressed-out, multitasking culture.” The mindfulness trend has become mainstream, but it could be just the latest label for the age-old human need to relax body and mind. In the 1970s, Herbert Benson of the Harvard Medical School coined the term “relaxation response,” identifying the body’s physiologic reaction that is the exact opposite of the stress response.⁷⁷⁴ Almost 40 years later, Benson co-authored the *Relaxation Revolution* and concludes, “Because all health conditions have some stress component, it is no overstatement to say that virtually every single health problem and disease can be improved with a mind-body approach.” Benson and Proctor argue in favor of mind-body science as a primary treatment option along with drugs and surgery because relaxation such as meditation can impact nausea, diabetes, asthma, skin reactions, heart failure, anxiety.⁷⁷⁵ The mindfulness movement is based on the very same principles than Benson’s relaxation response to stress or a mind-body approach. Mindfulness has been stated to be one of the most effective ways of dealing with stress caused by digital overload.⁷⁷⁶ Over all, it has a much less radical approach to hyper-connectivity than the disconnectionist movement, although there might be a considerable overlap.

Relaxation and Stillness for Employees and Youth

Lately, one of the major global Internet publishing pioneers has become one of the loudest advocates for a mindful relationship with technology: Arianna Huffington, founder and editor-in-chief of the popular and influential Huffington Post Media Group. In her most recent book—a number 1 New York Times bestseller—she writes, “[T]he ability to be in constant contact, and our growing reliance on technology are all conspiring to create a noisy traffic jam between us and our place of insight and peace. Call it an iParadox: Our smartphones are actually blocking our path to wisdom.”⁷⁷⁷ There is no way that Huffington is advocating for people to disconnect entirely, if only because as an online media mogul, she needs clicks on the international and multilingual *Huffington Post* just as every other news outlet. But for the past years, she has used her high profile status—and ironically, her very successful social media presence—to promote sleep, mindfulness

⁷⁷² Bunting, 2013

⁷⁷³ Laufer, 2013

⁷⁷⁴ Benson & Klipper, 1975

⁷⁷⁵ Benson & Proctor, 2011

⁷⁷⁶ For example by Frank Schirrmacher, former publisher of the major German newspaper Frankfurter Allgemeine Zeitung, in his book on digital overload and digital distractions called *Payback*.

⁷⁷⁷ Huffington, 2014a, p. 142

meditation, and regular temporary unplugging from social media and the Internet all together. She includes her company and employees in this campaign; the *Huffington Post* introduced nap rooms and permits their employees to take a tech-free break and to nap.⁷⁷⁸

As screen time for children and youth increases, many parents and educators in hyper-connected communities worry. The 2015 New York Times article “Screen Addiction Is Taking a Toll on Children” went viral on social media and attracted several hundred comments, in which many parents expressed their concerns regarding their kids’ screen time, on the New York Times alone.⁷⁷⁹ MIT professor Turkle states in *Alone Together* how hard it was for today’s youth to learn social and emotional skills if hyper-connectivity gets in the way with stillness and time to discover their feelings. She says, “Today’s adolescents have no less need than those of previous generations to learn empathetic skills, to think about their values and identity, and to manage and express feelings. They need time to discover themselves, time to think. But technology, put in the service of always-on communication and telegraphic speed and brevity, has changed the rules of engagement with all of this. When is downtime, when is stillness? The text-driven world of rapid response does not make self-reflection impossible but it does little to cultivate it.”⁷⁸⁰ By favoring offline self-reflection over online self-reflection, Turkle may have fallen prey to the common assumption of digital dualism (chapter *Beyond Digital Dualism*). No current research shows that highly connected youth are per se negatively influenced in their identity development and social skills. ON/OFF expert Silvia Kölliker maintains that it is not necessarily about unplugging, it is generally about a more careful relationship with oneself: “Mindfulness is getting more attention. In schools, we successfully train students in mindfulness. And I think this is the way for the business world as well.”⁷⁸¹ A Cambridge, MA-based high school offers a “mindful lunch” once a week but many more initiatives are trying to support the teaching of mindfulness in schools.⁷⁸²

Wisdom 2.0 and Mindfulness in Silicon Valley

The mindfulness movement is affecting business leaders in the technology sector. Although, the term mindfulness may not necessarily appear, mindful approaches range from taking a short moment of silence before business meetings to corporate positions dedicated to making the company culture more mindful.⁷⁸³ At Google’s corporate headquarters in Mountain View (Silicon Valley), software engineer Chade-Meng Tan has worked with Google since 2000 (employee number 107). After helping to build Google’s first mobile search service, he worked with Google’s Personal Growth team and published a best-selling book called *Search Inside Yourself*. He continues to work with Google in the Talent Team. In his book and motivational course of the same title, Tan says attention training is the first step to emotional intelligence, which is useful in order to remain calm in a stressful and hectic business environment. Tan says, “The mind is like a flag, fluttering in the wind, in motion, in distress. Mindfulness is like a flag pole that literally grounds the mind.” The second step, he says, is self-knowledge and self-mastery. He explains that with attention training you can sort of increase the resolution and vividness of an image, or

⁷⁷⁸ Huffington, 2014b

⁷⁷⁹ Brody, 2015

⁷⁸⁰ Turkle, 2011, p. 172

⁷⁸¹ ON/OFF expert interview with Silvia Kölliker in November 2013 in Zurich, Switzerland

⁷⁸² MindfulSchools.org, 2016; MindfulnessInSchools.org, 2016

⁷⁸³ ON/OFF expert interview with Ursula Oesterle in December 2014 in Palo Alto, California, USA

in this case your own emotions, which is important in order to allow you to figure out your motivations and see opportunities. As a third step, Tan lists creating mental habits. An example is the “just like me” exercise. In a difficult situation, you tell yourself, “This person is just like me. He or she wants to be happy, just like me.”⁷⁸⁴

Two highly influential U.S. East Coast-based academics who have worked on the effects of mindfulness for several decades are Harvard psychology professor Ellen Langer and Jon Kabat-Zinn, professor of medicine at the University of Massachusetts Medical School. Kabat-Zinn is also the founder of the Stress Reduction Clinic and the Center for Mindfulness in Medicine, Health Care, and Society. His MBSR program (mindfulness-based stress reduction) has popularized basic meditation techniques in Western medicine and clinical therapy. MBSR is now recognized worldwide and being applied in therapy and psychiatry—there are about 1,000 certified MBSR instructors teaching mindfulness classes worldwide—and is one of the techniques being applied in burnout prevention and treatment (subchapter *Burnout*).⁷⁸⁵ According to Kabat-Zinn, mindfulness means “paying attention in a particular way, on purpose, in the present moment, non-judgmentally.”⁷⁸⁶ In 2015 and 2016, Kabat-Zinn led mindfulness sessions for global leaders at the World Economic Forum in Davos, Switzerland.⁷⁸⁷ Langer’s research on mindfulness shows that subtle shifts in our thinking, in our language, in our expectations, can improve general health and happiness. Neuroplasticity means that the structure and function of our brains change according to what we think, do, and pay attention to. Mindfulness techniques help challenge the idea that the limits we have lived with and impose on ourselves are real.⁷⁸⁸

ON/OFF expert from Swisscom Silicon Valley Ursula Oesterle talks about attending the first of the Wisdom 2.0 conferences in California: “There were yoga and meditation teachers, and also a lot of mothers who blamed technology for making their kids autistic. But over the years, a lot more business people joined and the conference is no more anti-technology, it focuses on mindfulness and finding a human balance with technology. What does it mean to be mindful in the era of technology?”⁷⁸⁹

Evgeny Morozov—one of the most prominent technology critics—has criticized the “evangelists of unplugging.” He accuses leaders of the disconnectionist movement like Arianna Huffington of promoting mindfulness and disconnection for the wrong reasons: treating disconnection as a way to regain productivity. Citing Dow Schüll’s publication *Addiction by Design* (see subchapter *Addiction*), Morozov calls for more effective ways than individuals temporary unplugging to “sabotage the addiction tactics of the acceleration-distraction complex that is Silicon Valley.” He concludes, “We must be mindful of all this mindfulness.”⁷⁹⁰

The “Mindful Cyborgs” is a podcast series about “contemplative computing, bio/life-hacking and unhacking, frictionless existence, quantified self netocracy, robotics and digital duality.” The Mindful Cyborgs team includes, among others, Chris Dancy (who has been called “the most connected human on earth” and is a leader of the American quantified self movement) and

⁷⁸⁴ Tan, 2012; Tan, 2012b

⁷⁸⁵ Baer, 2003; Goodman & Schorling, 2012

⁷⁸⁶ Kabat-Zinn, 1994

⁷⁸⁷ Gelles, 2015

⁷⁸⁸ Langer, 1989; Langer, 2009

⁷⁸⁹ ON/OFF expert interview with Ursula Oesterle in December 2014 in Palo Alto, California, USA

⁷⁹⁰ Morozov, 2014

Sara Watson (a quantified self and data specialist).⁷⁹¹ Mindfulness and hyper-connectivity are obviously not opposites.

Mindful or Conscientious Connectivity

Mindfully using technology does not necessarily mean disconnecting. Proponents of a mindfulness approach underline that it is about being in the present and being aware of both the social setting and our motives use technology at a given moment. Unlike in Rushkoff's concept of "the present shock," being present in this sense does not mean paying all of our attention to the constant real-time stream of digital notifications and messages, although being fully present could mean being very focused writing an email or a message (but being mindful of not doing it while in traffic or in a social setting where it does not seem appropriate). Some mindfulness instructors have meditators turn on the sound of their connected devices so they can learn not to react to every single digital distraction.⁷⁹² Being present means being mindful of when and why we use technology: Is the social situation appropriate to use our devices? Have we informed our physically present company why we have to prioritize our digital communication for a moment? Do we use technology simply because we are bored (which would be fine, but being mindful would mean being aware of the boredom as a motivation)? Do we use it because we do not want to think about negative feelings we might have?⁷⁹³

Digital communications consultant and coach Marcel Bernet uses the metaphor of the carousel to address acceleration and speed in the realm of digital and real-time communication. "If you stand close to the central axis of the carousel, everything is much slower than on the brink of digital innovation where centrifugal forces are at work. Near the center of the carousel, it is easier to keep an overview." ON/OFF expert Bernet likens strategies and priorities to the center of the carousel and fast, ubiquitous and real-time information and communication to the outer margins of the carousel where it is harder to remember strategic goals and priorities.⁷⁹⁴ In this sense, being mindfully connected means setting priorities and using those to focus on relevant aspects, and ultimately to slow down.

A similar mindset but with an educational approach led to the creation of Harvard researcher Carrie James's concept of "conscientious connectivity." The sociologist and education specialist defines it as "a way of being mindful in the digital sphere, paying attention to the implications of our online behavior."⁷⁹⁵

7. Offline Day & Digital Detox

In the United States, the National Day of Unplugging was based on the Sabbath Manifesto, which was created by a nonprofit Jewish community called Reboot. They based the idea on the

⁷⁹¹ Mindful Cyborgs, n.d.

⁷⁹² Willard, 2016

⁷⁹³ These thoughts were inspired by a discussion with Marcel Bernet in the ON/OFF expert interview and a book by Jack Kornfield (Kornfield, 1993).

⁷⁹⁴ ON/OFF expert interview Marcel Bernet in June, 2014 in Zurich, Switzerland; Bernet, 2006, p. 17f

⁷⁹⁵ Walsh, 2015

Sabbath in the literal sense (“On the seventh day though shalt rest”) applying it to “the fast-paced and technology-obsessed present society.” The Sabbath Manifesto consists of ten principles:

1. Avoid technology,
2. Connect with loved ones,
3. Nurture your health,
4. Get outside,
5. Avoid commerce,
6. Light candles,
7. Drink wine,
8. Eat bread,
9. Find silence,
10. Give back.

The initiators emphasize that the ten principles are only guidelines and that they welcome all backgrounds, nationalities, and religions to participate.⁷⁹⁶ National Day of Unplugging is announced twice a year. Among the ON/OFF global experts, one out of 22 reported that in their country a National Day of Unplugging or Offline Day had taken place.

In Switzerland, the Offline Day was initiated by two renowned bloggers and professional social media experts, Tom Brühwiler and Kevin Kyburz. The first Offline Day was on December 15, 2013, which was a Sunday. The second Swiss Offline Day was on the same date but on a Monday, which made it considerably harder for people to participate. The ON/OFF Offline Day Adult Survey was distributed by the organizers on December 16, 2013 and produced some interesting results.

Among the ON/OFF respondents, almost half report thinking the Offline Day initiative is a good idea. But only 27% had actually participated in the event by not using the Internet for 24 hours. 12% said that they had initially intended participating but ended up not disconnecting. 60% of the respondents did not participate.

| | |
|---|---|
| <i>Offline Day 2013</i> | |
| What do you think about the Offline Day? (N=143) | Useful: 48% Useless: 36% No opinion: 15% |
| Did you participate in the Offline Day? (N=147) | Yes: 27% No: 60% I wanted to, but finally didn't: 12% |
| If you participated, how was it? (N=36) | It was okay, but I realized how often I usually use the Internet: 42% The Offline Day was a day like every day, just without the Internet: 33% It was hard for me to spend an entire day offline: 25% |
| If you did not participate, why not? (N=100) | I don't think this is a useful event: 62% I didn't know about the event beforehand: 23% I needed the Internet to get work done or for other duties: 9% I didn't think I could spend a day without the Internet: 6% |
| If it were on a Monday, would you participate? (N=133) | No, spending a day without Internet is only possible on a day off: 49% No, I would never participate in the first place: 41% Yes, I would organize accordingly: 11% |

Figure 73 — ON/OFF Adult Survey results (N=148)

⁷⁹⁶ Sabbath Manifesto, n.d.

Not surprisingly, there are highly significant correlations between a positive attitude towards the Offline Day event and both thinking that hyper-connectivity could have negative health consequences and thinking it is important to spend a day offline once in a while.

Only 11% of the respondents said they would participate if the Offline Day event was on a Monday (and not on a Sunday, as in 2013). Nevertheless, the 2014 event did take place on a Monday. No data is available about how many actually participated. Also, what “offline” really means remains controversial. Strictly speaking, not using the Internet for 24 hours in a hyper-connected country is almost impossible given that connected sensors are ubiquitous. In the context of the Offline Day, disconnecting is not framed as a “pure” offline experience; it is rather about not sending or reading emails, engaging on social media, and actively looking up information.

Of course, going offline for a day is not the only option. As described above, offline camps (sometimes for several weeks) are all the rage in California, and a similar concept has been adapted to short-term offline workshops in Berlin, for example. Being paid to confiscate someone’s connected devices and go camping or walking in the woods with them is indeed an interesting, and apparently successful, business model.

8. Tech-Free Zones

In public or semi-public places, technology-free zones or zones with usage restrictions have already implemented policies. Many cafés in the United States have “No cellphones” signs to make sure people in line are ready to order when it is their turn, or they do not allow laptops for the sake of atmosphere (Figure 74).



Figure 74 —Signs in cafés in Cambridge, MA and New York City, USA

In Italy, a café had a sign that said, “Qui non c’è wifi, parlate tra di voi.” (There is no Wi-Fi, talk to each other.) Some restaurants offer discounts for guests who are ready to leave their devices behind.⁷⁹⁷ When Google Glass first became popular, some bars banned users from wearing it in their establishment. There are multiple reasons given for these bans. Some cafés state that cell-phones slow down the ordering process; restaurant owners were quoted that some of their guests were “so engrossed in their phones that they don’t seem to be enjoying their meals or their com-

⁷⁹⁷ CBS New York, 2014a

panions.⁷⁹⁸ Connected glasses tend to be problematic for privacy reasons because it is virtually impossible to tell if somebody with Google Glass is currently filming or potentially live streaming.

The Seymour+ project in Paris (see subchapter *Disconnectionist Movement*) is entirely technology-free space intending to foster creativity. In libraries, which traditionally have been zones of silence and concentration, audible connectivity is regulated. Calls are usually not permitted, or only in specific phone zones (Figure 75). However, while I am writing these lines at the Harvard Law School Library (in the quiet zone, not the phone zone), I would not really mind if someone reprimanded the person sitting next to me whose ringer is on silent but whose smartphone constantly vibrates, or the two students who have been showing each other apparently very funny online videos for the past 20 minutes at the table next to me and are not able to suppress their giggling. I cannot decide whether it is really the technology causing these distractions, or simply annoying user behavior.

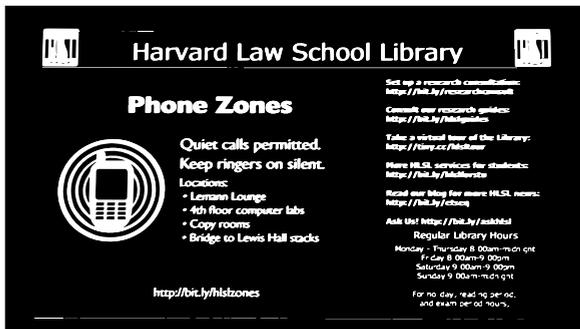


Figure 75 — Video screen, Harvard Law School Library entrance

U.S. Journalist William Powers has created “Walden zones” in his family home. These areas are designated to be tech-free zones, and include for example the family dinner table.⁷⁹⁹ “Walden zones” is a cultural reference to one of the most famous and influential books in American literature, *Walden*,⁸⁰⁰ written by American poet and philosopher Henry David Thoreau in the 19th century. Thoreau’s books are said to have influenced the abolitionist movement, Leo Tolstoy, Mahatma Gandhi, and Martin Luther King. The book *Walden* refers to an experiment Thoreau embarked on in July 1845. For two years, the writer moved to a small, self-built house around the shores of Walden Pond, a beautiful little lake near Boston (Figure 76).

⁷⁹⁸ CBS New York, 2014a

⁷⁹⁹ Powers, 2010

⁸⁰⁰ Thoreau, 1910

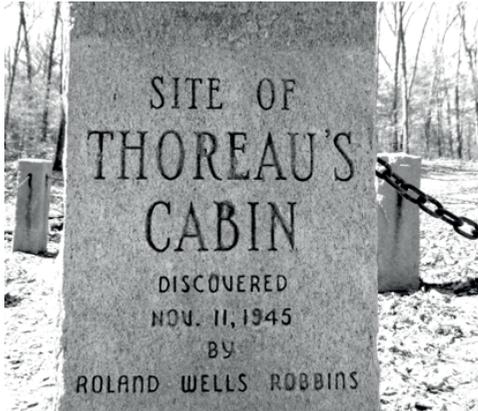


Figure 76 — Site of American author Henry David Thoreau’s cabin near Walden Pond, about 20 miles from Boston.

The book is as much a reflection upon simple living in natural surroundings as a social experiment. The author hoped to understand more about society by immersing himself in nature and personal introspection. In *Walden*, Thoreau expresses skepticism about technology and modern communication tools: “Our inventions are wont to be⁸⁰¹ pretty toys, which distract our attention from serious things. [...] We are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate.”⁸⁰²

Internet addiction expert Kimberly Young advises her clients and families in general to create “tech-free zones and times.”⁸⁰³ Generally, technology-free zones are framed as important for various reasons such as avoiding distraction, creating a cozy atmosphere, and making device-free family time.

9. Movies, Humor, & Rants

Other societal responses to people glued to smartphone screens include movies, humor, cartoons and, ironically, rants on social media condemning the addictive qualities of social media.

The movie *Disconnect*, a thriller released in the United States in 2013, dramatizes how technology has alienated people from one other and portrays other potentially detrimental aspects of connectivity like digital identity theft or cyberbullying.⁸⁰⁴ The 2016 documentary *Screenagers* by a U.S. filmmaker and physician aims at understanding children and youth’s increased connection to screens and focuses on parenting, education, and self-esteem related to digital media.⁸⁰⁵

A large number of cartoons—in *The New Yorker*, among others—make fun of people being distracted by being busy on their mobile devices. The advertising industry has tried to appeal to customers using humor regarding hyper-connectivity. An international condom manufacturer ran TV ads with couples in laboratories being told it would be revealed to them how their smartphones could make sex amazing. The secret: the off button—“turn off to turn on.”⁸⁰⁶ An

⁸⁰¹ wont to be = typically

⁸⁰² Thoreau, 1910, p. 67

⁸⁰³ ON/OFF expert interview with Kimberly Young in November 2014, Cambridge, MA—Bradford, PA, USA

⁸⁰⁴ Rubin, 2013

⁸⁰⁵ Ruston, 2016

⁸⁰⁶ Durex, 2015

advertiser of pasta sauce shared the news that they were marketing a connected pepper mill to avoid the “annoying experience with friends or family where you sit down for dinner, but everyone’s checking Instagram and tweeting instead of being together. When you start to grind pepper, it shuts off Wi-Fi, TVs, and other electronic devices to which it’s paired.”⁸⁰⁷

It is difficult to prove if the “Phone Stacking Game” is real, a joke, or an modern urban legend, but in 2013, mainstream media widely reported that smartphone-loving groups of people in Silicon Valley and New York City played this game during dinner. The rules are simple; everyone places their phones in the middle of the table; whoever looks at their device before the check arrives pays for everyone.⁸⁰⁸

A parody of the period drama TV series “Downton Abbey” shows a British family sitting at the breakfast table with everyone looking at their phones. The family decides that everyone is too distracted by their phones and not listening to each other, and that this may lead to the end of civilization. They end up ignoring their ringing phones and of course something terrible happens at this very moment—the video ends with the butler reading a telegram from the sinking Titanic that asks for help and wonders why the family did not pick up their phones.

Plenty of online videos suggest life without technology is more real than life online. One of them is the poetic YouTube rant “Look Up” by Gary Turk, published in spring 2014. A year later, the video had 53 million views on YouTube: “I have 422 friends, yet I am lonely. I speak to all of them every day but none of them really know me. [...] When you step away from this device of delusion, you awaken to see a world of confusion. A world in which we are slaves to the technology we mastered. When you’re in public, put your hands behind your head and step away from your phone [...] just talk to one another. [...] Look up from your phone and shut down the display.”⁸⁰⁹ Another example is the online video “I Forgot My Phone” (48 million views in two years). It shows a woman who gets ignored all day because of technology from the moment she wakes up until she goes to sleep again.⁸¹⁰ Yet another video about how “screens and smartphones are anti-social” called “Anti Social Network” was uploaded in 2014 to YouTube (a social network) and was presumably intended to be spread among users (probably while looking at their phones). Blogger Jez Kemp criticized these videos for their overly simplistic message: “Phones are bad, Facebook is bad, ‘the outside’ is good. Simple messages travel fast on the Internet, especially when you give them nice music. It’s harder to have a realistic message: that social technology has good and bad aspects, it’s part of our changing society, it’s not evil but does require discussion.”⁸¹¹ It can be argued that creating and sharing this kind of videos is an activity that is part of the “disconnectionist movement.”

In summary, most of these straight-forward and hidden messages in movies, humor, advertising, and social media rants are about friends, family, and strangers ignoring each other because they look at their connected devices. The underlying message seems to be that offline is more real than online. Advertising in particular uses the topic of hyper-connectivity in a way that seems free of actual judgment but taps into these stereotypes in funny ways to promote their products.

⁸⁰⁷ Baral, 2015

⁸⁰⁸ Tell, 2013

⁸⁰⁹ Turk, 2014

⁸¹⁰ deGuzman, 2013

⁸¹¹ Kemp, 2014

Beyond Digital Dualism

In the context of computer and Internet technology, “online” and “offline” have specific meanings: “online” indicates a state of connectivity, while “offline” is a disconnected state. Online versus offline has become contentious. A “disconnectionist movement” has formed, encouraging Internet users to regularly “go offline,” “unplug,” and “disconnect to reconnect.” Meanwhile, privacy experts point out that it has become almost impossible to go offline in the strict sense of the term, and in the academic discourse, the term “digital dualism” criticizes the assumption that the Internet is a virtual space separate and opposed to the physical and face-to-face. In the age of hyper-connectivity, unintentional data sharing and user tracking, and the Internet of Things, who or what is really online? This chapter aims to clarify the terms online and offline for the current age. Also, it ultimately suggests a new perspective on how online connectivity can be described based on a novel user-centric framework: the *ON/OFF scale*.

1. Is Being Offline More Real?

After 15 years of blogging, Andrew Sullivan—a prolific and very influential U.S. blogger—announced in January 2015 that he was retiring: “I am saturated in digital life and I want to return to the actual world again.”⁸¹² Sullivan implies in his statement that “the actual world” is more real than his “digital life.” To describe this kind of thinking, Internet scholar Nathan Jurgenson coined the term “digital dualism” in a number of publications, one of which is called *The IRL*.

⁸¹² Sullivan, 2015

Fetish.⁸¹³ IRL refers to the common abbreviation for “in real life” when referring to “off the Internet” or “offline.” In later publications, Jurgenson considers “online” and “IRL” a false dichotomy. He writes, “Digital dualism is forgetting how real, embodied, and material digitality is as well as forgetting how virtual and technologically mediated bodies, materiality, and the rest of reality always are. None of this is to say, e.g., gchatting and meeting at a coffee shop are the same thing; that is the most common and unimpressive misunderstanding of this critique.”⁸¹⁴ Similarly, Jurgenson argues that technology sociologist Sherry Turkle’s term “second self”—coined for our online presence in the 1990s—implies a notion of first and second selves, which is a false binary.⁸¹⁵

Jurgenson argues against the glorification of the offline that underlies the rhetoric of many “disconnectionists” and those who use their philosophy for promotion and advertising reasons,⁸¹⁶ such as digital detox retreats that advertise with claims such as “Life is what’s happening when you put your phone away.”⁸¹⁷ Jurgenson calls out “disconnectionists” on their conflation of “the unreal” and “the real” with the use of the Internet or lack thereof respectively, and refers to research on performance and performativity by sociologist Erving Goffman in the 1950s and philosopher Judith Butler in the 1990s. Goffman and Butler, among other scholars, argued for an understanding of the self as “performed” and “constructed” as opposed to the traditional discourse about a “natural” and “real” self. If we “perform” in our everyday life, and we do so online as well, the distinction between online versus offline identities becomes itself somewhat constructed.⁸¹⁸ Jurgenson eloquently describes the blurring boundaries between online and offline and the problem with the terms themselves: “Any zero-sum ‘on’ and ‘offline’ digital dualism betrays the reality of devices and bodies working together, always intersecting and overlapping, to construct, maintain, and destroy intimacy, pleasure, and other social bonds.”⁸¹⁹

Despite Jurgenson’s theoretical insights, perceived reality seems to differ: according to a 2015 representative study by Pew Research, roughly three-quarters of U.S. teens think people are less authentic and real on social media than they are offline.⁸²⁰

In his critique of the “disconnectionist movement,” Jurgenson does not take into account that encouraging temporary “unplugging” at night or on the weekend does not necessarily mean that advocates claim that people are more “real” and “authentic” when they are “off.” The reasons why people go online and offline are so intertwined in intention and situation that focusing solely or primarily on technology fails to acknowledge the context of connectivity or other underlying issues. Seeing the personal value in being disconnected from work-related email for a weekend or a vacation (and calling this “going offline”) does not mean that one finds digital navigation, private messages, or online news to be inherently harmful or taboo, or that someone considers themselves “more real” because they are disconnected from their emails or social media accounts. Additionally, the idea that the offline is more authentic is not without any support: for example, face-to-face communication generally provides more contextual non-verbal and paraverbal aspects than digital communication, which possibly increases the authentic feel.

⁸¹³ Jurgenson, 2012; Jurgenson’s line of argument has been widely received, e.g. Banks, 2012; Kaeser, 2014; Wampfler, 2014b, p. 31; Wampfler, 2012

⁸¹⁴ Jurgenson, 2015

⁸¹⁵ Jurgenson, 2011

⁸¹⁶ Jurgenson, 2013

⁸¹⁷ Offtime & Swisscom, 2015

⁸¹⁸ Jurgenson, 2015

⁸¹⁹ Jurgenson, 2015

⁸²⁰ Lenhart, 2015b

The ON/OFF scale presented later in this article is not about an evaluation of “more real” versus “less real,” but about broadening the academic discourse on the terms online and offline. The scale also challenges “digital dualism” but in a different sense: It suggests an understanding of online and offline as a multi-dimensional continuum rather than a dualistic ON/OFF switch.

2. Distinguishing Online & Offline

Does the distinction between online and offline still make sense in the age of hyper-connectivity? In the ON/OFF Adult Survey, 23% of the respondents selected “Yes, the distinction between online and offline still matters”; 38% chose the option “Online and offline are increasingly blurred, but sometimes going completely offline is necessary”; 40% chose “No, making distinctions between online and offline doesn’t make sense”; and 1% chose the option “Other.” Overall, a majority of the ON/OFF Adult Survey respondents feel that the distinction between online and offline is still relevant. 13 out of 22 respondents of the ON/OFF Global Internet Expert Survey stated that a distinction between “online” and “offline” still makes sense to them. 9 out of 22 said the distinction no longer makes sense—6 experts said “no,” while 3 experts selected the option “other” but essentially argued against the distinction in their follow-up explanation. In the following table (Figure 77), expert definitions are provided (as they were reported in the survey) and summarized.

| <i>Does the distinction between online and offline make sense to you?</i> | <i>If yes, how would you characterize the difference between online and offline? If no, why?</i> |
|---|---|
| <p>Yes</p> <p>(13 out of 22 respondents)</p> | <p>Online is when I am on the Internet (via any device); offline is when I do not use a computer and do not feel obliged to respond to any message or information I receive on my smartphone (during vacation, illness etc.) / Being online means looking at a small electronic screen. It actually demands attention. Offline is just more relaxing in this sense. / With mobile devices, being offline is increasingly a mental state that leads a person to avoid checking the device. In my country, complete disconnection is a relevant concept when we talk about digital gap and digital inclusion, not so much the right to disconnect. / It does make sense in a historic perspective (societies before the Internet and since). Also, I think it is necessary to differentiate two aspects of being online: having access (to an unknown amount of information) and being accessed (by unknown entities). We can only explore both (social, political, economic) notions in relation to the state of being offline. So this duality is the basis of all social Internet research. / Offline means you are not accessing information from anything other than your physical senses. Online means you are connected or can be connected to remote sources of information and to other people through Internet or phone. / Online means being connected to the net with a device near me (cell phone, tablet, computer etc.). Offline means putting away or disconnecting all device and spending time with something non-digital. / Being disconnected feels like real freedom although connecting after a long break means a lot of work, therefore some people prefer staying connected in low volume as a means to reduce work overload upon reconnecting. / Online is being connected to everything whereas offline world is becoming more of a social/information black hole. / Since South Africa is a developing country, the main objective from a policy perspective is to provide universal access to the entire population, and this objective has not been reached as yet. Also, another discussion from a policy perspective is how to enforce offline rights such as privacy protection, freedom of expression, safety and security, in an online environment.</p> |

| | |
|---|--|
| | <p><i>Summary: Respondents who feel a distinction between online and offline still makes sense have various and very different definitions of the two terms. Some experts point out that offline in their context mainly refers to specific groups in their country who do not have access to the Internet. Others point to individual use of devices and conscious unplugging from them. Two experts mention the feeling of relaxation and freedom when going offline. One expert points out a distinction within being online: having access and being accessed.</i></p> |
| <p>No (9 out of 22 respondents)</p> | <p>Everyone and everything is online, it is just a matter of how close we are with the net. / Because content I enjoy offline has often been downloaded via the Internet and increasing convergence means that many traditionally offline activities now involve the Internet, e.g. I use VOIP phone lines, consume TV over the Internet etc. / Because not all uses of digital technology are simply the same. There is a wide variety of uses that effect life in different ways - Technology is not the point here (and I feel that is what this survey suggests). The point is: are you the master of your time and life or are you letting anything dictate what you do and when. That is getting really hard - but to me it sounds odd to assume that this is a technological issue of simply "being online." / No longer because of the Internet of Things / The lines between offline and online are becoming more and more blurred (that is not a common concept in my country). It also depends on how you define online and offline (if it is communicating with others using technology or being on the Internet or using apps that use some form of connection to broadband) / It only does when controlling what I check on my smartphone (If I'm online I would expect to engage (read/reply/produce content). When I think of myself as offline I'm still trying to clean the different app messages, even though I might not necessarily engage in a consumption of the content that has been signaled/alerted to attend.)</p> <p><i>Summary: Respondents who feel a distinction between online and offline does not make sense anymore illustrate their point in various ways. One expert claims that there is no escape—all humans and objects are online (Internet of Things). Another respondent points out that content we use offline is often content downloaded from the Web. It is not about technology, says another respondent, it is about who is the master of your time and life.</i></p> |

Figure 77 — Distinguishing online and offline — ON/OFF Global Expert Survey

3. ON/OFF Scale

The ON/OFF scale (Figure 78) redefines online and offline by suggesting various stages of connectivity using a big picture approach. The basic idea behind the scale is that the distinction between online and offline is a spectrum rather than a binary. The goal of the ON/OFF scale is to provide a timely definition of online and offline and a theoretical framework that will facilitate academic and other debates about online connectivity.

In the terms of the ON/OFF scale, a user is online if there is any kind of connectivity or data access or sharing, though they can be considered to have more or less online connectivity depending on technological, behavioral, and social circumstances. At the other end of the spectrum, a user is only offline in a specific moment if there is no connectivity at all and if no connected device is accessing or sharing any kind of data about the user (knowingly or unknowingly). I argue that the term online can be applied to users in the ON/OFF categories 1 to 6. In the strict sense of the term, offline can only be applied to the ON/OFF category 0.

| | ON | | | | | | OFF |
|----------|---|---|--|---|---|--|--|
| | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | Hyper-connected | Connected | Voluntarily limited access | Restricted access | Distant or unreliable connection | Offline access | Unplugged |
| DEVICE | One or multiple devices turned on, large number of applications, Internet of Things | Device for limited purpose. Small and/or very slow device(s) | Device on. Software might block online access of specific applications. | Device(s) available, potentially hardware or software restrictions. | Device(s) turned on but either no reliable connection or device(s) put away | Device(s) in flight mode or use of blocking software | No device. Or all connected device(s) turned off without malware, or battery removed |
| ACCESS | High-speed Internet connection | Somewhat restricted Internet access or slow connection | Voluntarily limited Internet access | Internet access is heavily filtered and/or censored. | Internet access unreliable or via notifications or calls | No Internet access or software blocks access entirely | No access for geographical, economic, or personal reasons, age or culture |
| USER | Potentially multitasking for multiple contexts | Single-tasking or actively engaging but restricted due to infrastructure | Could use connected device/s and uncensored access anytime but limited online interaction. | Can use connected device but is heavily restricted in accessing information online. | Potentially hearing, feeling, or seeing notifications, but not using device actively | Uses downloaded content offline. Or cannot use device due to social or policy restrictions | Non-user but potential proxy user |
| TRACKING | Third-party tracking very likely (in many cases required and desirable). Unwanted tracking depending on targeted tracking and encryption. | Third-party tracking very likely, depending on targeted tracking and use of encryption | Third-party tracking likely, depending on use of encryption | Third-party tracking likely, especially in countries with Internet censorship and limited freedom of expression, depending on use of encryption | Third-party tracking likely (at least location data) | No real-time tracking except if malware is spying on location data and via microphone (device only seemingly off) | No real-time tracking |
| EXAMPLES | Users of one or more mobile and other connected devices in the developed world. Private and professional use. Users of Internet of Things applications. | Users of a connected device with a restricted purpose (e.g. library computer, tablet as checkout). Users with very slow connection or a smartphone only (cannot fill in important paperwork). | Users of connected devices with activated software that blocks online connectivity of certain applications, usually for productivity or bandwidth reasons. | Users with censored access in authoritarian regimes, or partially blocked access in companies. Users of devices with heavily filtered parental or similar controls. | Users with no reliable connection (developing world, conflict zones, nature, subways). Potentially hearing or feeling notifications, but not using device actively (e.g. cellphone ban in class, during a conversation, dinner, funeral, or classical concert.) | Mobile device in airplane mode, or using a disconnected device to view offline content (e.g. e-reader or Cuba's El paquete semanal). Special case: connected device in a faraday cage. | The majority of the global population who are non-users. Some are in connected developed countries and do not have access due to economic reasons or age. Special case: most Amish and Mennonites do not have access for cultural reasons. |

Figure 78 — ON/OFF scale (detailed version)

The following remarks are intended to clarify general aspects of the ON/OFF scale, which includes the categories *Device*, *Access*, and *Tracking*. Additionally, *Examples* are used to illustrate the 0 to 6 classifications.

A user's online connectivity at a moment in time. The ON/OFF scale is user-centric and the seven categories refer to a specific user's online connectivity at a moment in time. In some cases, users may remain in a certain category nearly indefinitely (people who are in the unplugged category or an ON/OFF 0), while others may transition rapidly (users who switch their hyper-connected device to flight mode and back, from an ON/OFF 6 to a 1, then back to a 6).

The spectrum between 0 and 6. Although I argue that the ON/OFF scale represents a continuum between hyper-connected and unplugged, and that an individual is more online in category 5 than in category 2, there is no linearity in the spectrum—users need not move from category 1 to category 2 in order to reach category 3. Also, a user in category 6 is not twice as online as one at level 3. I could have chosen to go with a 0 to 10 scale, but that would not have been less arbitrary than going with a 0 to 6 scale. The ON/OFF scale as I suggest it is intended to facilitate theoretical analysis and practical debates about the current state of online connectivity of a particular individual by making it easier to reference levels and states of connectivity.

Keeping it simple. In order to be useful and relatively easy to remember, the granularity of the scale from 0 to 6 seems sufficient, even though connectivity could feasibly be broken down into yet more stages, categories, or even dimensions. Keeping the scale simple makes it more applicable. The ON/OFF scale (7 categories, 0 to 6) was inspired by two existing academic scales that have proved useful in non-scholarly discussions: the Bennett scale⁸²¹ (6 categories, 1 to 6) and the Kinsey scale⁸²² (8 categories, 0 to 6 plus X), both of which use a similar number of levels.

Who or what is online? There is no clear line between a user and a user's device, or a user and a user's data: a user can be online, or a user's device can be connected. It seems clear that a user who actively engages with one or several connected devices can be considered more online than someone with a connected device they are not actively engaging with. But what about the involuntary production of data about a user versus a user's active sharing of data online? Data and knowledge can be produced and disseminated intentionally by users (through social media or email), unintentionally but actively (through metadata related to posts or data related to browsing behaviors), or unintentionally and without knowledge or consent (tracking and surveillance), and the distinctions between these categories often blur. Delving too far into these complex distinctions would work against the intentional simplicity of the ON/OFF scale, but the category *Track-*

⁸²¹ The Bennett scale describes individual intercultural sensitivity from stages 1 to 6. The first three stages describe individuals who see their own culture as central to reality (ethnocentricity). Stages 4 to 6 describe individuals who see their culture in context to others (ethnorelativity). 1 = denial of cultural difference, 6 = integration of difference. The scale was developed in the 1980s by Milton Bennett, an American sociologist.

⁸²² The Kinsey scale describes sexual orientation from 0 to 6, where 0 = exclusively heterosexual behavior, 6 = exclusively homosexual behavior, X = non-sexual. The scale was first published in 1948 by American biologist Alfred Kinsey in combination with large survey data on human sexual behavior. The Kinsey scale is still in use in modern sexology research and is also used by practitioners such as sexual identity and orientation counselors, even if many consider it not comprehensive enough to cover all sexual identity issues.

ing addresses the basic and varying likelihood of (potentially non-intentional) tracking or data sharing.

Examples are just examples. For illustration and clarification purposes, I provide examples for each category of the ON/OFF scale. The examples are far from being exhaustive and may in some cases even seem contradictory. They are meant to illustrate various stages between online and offline and that the state of connectivity can be the result of a large number of circumstances depending on the individual user, the technological infrastructure, the social and cultural setting the user is in, and many other factors.

Other relevant dimensions.⁸²³ Depending on the context or goal of a specific analysis, more dimensions are interesting and potentially important to consider when rating an individual's connectivity. When considering health and privacy aspects of hyper-connectivity, the following two dimensions seem particularly relevant:

- **Attention & salience:** How aware is the user of their online connectivity or how much attention do they pay to their connected device or specific online content? There are many ways of interacting with a connected device as a user, or even with a multitude of connected devices. Connectivity has a very different quality for a user who is multitasking on one or more connected devices while attempting to pay attention to a person in their physical presence as opposed to a user who is not paying any attention to their single connected device. On the other hand, even if users are technically disconnected, specific online activities can still be on their mind. This is generally referred to as salience—a cognitive stimulus associated with motivational or emotional factors. I argue that the dimensions of attention and salience matter for connectivity, especially in the context of *psychological and social aspects* (such as attention span, fear of missing out or FoMO,⁸²⁴ Internet addiction, or social relationships).
- **Control:** How much control does a user have over what kind of data gets shared? Is the user consciously creating and sharing content online, or is a user consuming online content and data about the use is collected independent of the user's wishes? Is a user merely connected and therefore data—some of which can be controlled by the user, some of which cannot—is being shared? Additionally, it may matter whether the user actually cares about being in control of their own data or not, or whether the user knows how to protect or encrypt data if they do care. I argue that in the context of *data privacy*, the dimension of control is crucial.

⁸²³ Initial drafts of the ON/OFF scale were shared with experts at two events (Point to Point Conference at the MIT Media Lab, May 2, 2015; Fellows Hour at the Berkman Center for Internet and Society at Harvard University, June 30, 2015) and experts provided feedback with even more dimensions they felt were important to include. Some of the following dimensions could be described as their own spectrum and including them would have undermined the priority of simplicity: consumption/creation (is the user consuming or creating online content), upload/download (is the user uploading or downloading data), attention/awareness (how aware is the user of their online connectivity or how much attention do they pay to their connected device), information type (what kind of information is being accessed online), connectivity/production of data (is the user consciously online or is merely data being produced), degrees of separation (how far away is the user from the Web), privacy/freedom of expression (is data sharing online related more to privacy issues or freedom of expression).

⁸²⁴ Przybylski et al., 2013

The term “conscientious connectivity”—introduced by sociologist Carrie James and media scholar Henry Jenkins—offers a related educational perspective by highlighting the importance of a mindful and responsible usage of the Internet regarding screen time, data privacy, and ethical behavior online.⁸²⁵

Some of the following questions are intended to clarify and illustrate the logic of the ON/OFF scale:

- *Is a user online if they do not know they are?* A study that revealed a significant number of Facebook users said in a survey that they did not use the Internet, just Facebook.⁸²⁶ I argue that they are online, of course, even if they do not realize they are.
- *Is a user online if data about them can be found online?* You could argue that many people are online—even if they are disconnected from the Web—simply because so much data about them can be found online. I argue that this is irrelevant to the ON/OFF scale, which is about a user’s connectivity at a given moment (and not about a user’s data that can get accessed online).
- *Is a user online if their connected fridge at home shares data with an online food store about what is in the fridge and should get ordered online?* This is where the data sharing in the context of the Internet of Things and who or what is online gets complicated. I argue that as long as a connected device (including sensors which transmit data via a connected device) shares data about an identifiable person at a given moment, this person is online.
- *Is someone online if they are filmed by a connected camera in public space?* Again, I would argue that as long as a connected camera shares data about an identifiable person, this person is online in that particular moment. But then again, identifiable for whom? For someone watching the video stream of the respective camera knowing the person? For a secret service agent using facial recognition software and malware to locate a connected individual? This is a conceivable but not very likely scenario. In this case, it can be argued that the individual is in stage 1 on the ON/OFF scale and being tracked.
- *Is someone more online if they access or share data on the WWW or in the deep web (password-protected webserver or encrypted communication)?* Depending on the context, this could be a highly relevant question regarding connectivity behavior. However, the public/private dimension is not included in the ON/OFF scale for simplicity reasons.
- *Is a user online if they are carrying a mobile device in their pocket that (unintentionally) shares location data with their provider?* I argue that a user is online as long as there is sharing of (location) data with cell phone or Wi-Fi providers or specific apps running in the background (most of which tends to be unintentional). This is also true for wearable devices such as smartwatches.

⁸²⁵ James & Jenkins, 2014

⁸²⁶ Mirani, 2015

- *Is a user more online if they think about being online extensively* without using a device than someone who barely interacts with their connected device? In the context of psychology and mental health, cognitive salience of online activities or Internet-related fear of missing out (FoMO) is potentially much more relevant than actual connectivity. But in order to be online in the sense of the ON/OFF scale sense, I argue that some kind of technological connectivity is necessary.

Conclusion

What are the societal implications of the anytime-anywhere Internet? And what does online/offline mean in the era of hyper-connectivity? These are the research questions explored in the ON/OFF study using an exploratory, comprehensive, and interdisciplinary approach. In order to make theoretical distinctions in the debate around benefits and risks of hyper-connectivity, I suggest a new user-centric model for how we can understand online and offline as a continuum rather than simply distinguishing connected and disconnected: the *ON/OFF scale*.

Internet-enabled mobile devices have been the fastest-spreading information and communications technology in human history, which confirms the numerous advantages of being able to connect instantly, anytime, and anywhere. Billions of people worldwide are ever more connected and in the Global North, the Internet has become a ubiquitous utility like electricity, and an indispensable part of many lives. The anytime-anywhere Internet is a new phenomenon that it is currently understudied even while many of us have experienced how it impacts numerous aspects of our individual lives and societies at large. Because hyper-connectivity is a new research field, the ON/OFF study explores related risks and rewards, focusing on the big picture and on those who have already had to make decisions about technology policies for their employees, for their students, for children and youth, or for themselves despite not having clear evidence to guide them. This technology assessment aims at demonstrating interconnected aspects of hyper-connectivity and at challenging common assumptions in a more encompassing way than previous studies based on an interdisciplinary and multi-method approach. Future research could benefit from deep-dive studies further exploring specific topics in the ON/OFF study.

The first part of the conclusion chapter condenses and summarizes key findings of the ON/OFF study (the references can be found in the respective chapters). *The second part* revisits popular hypotheses about hyper-connectivity and reflects them by summarizing insights from the ON/OFF study. *The third part* of the conclusion analyzes and prioritizes implications of risks and rewards of hyper-connectivity for decision-makers on various levels to help them make more informed decisions regarding online connectivity.

1. Key Findings

Technology interacts with the current social circumstances and is not per se positive or negative. The ON/OFF study demonstrates that both beneficial and detrimental effects of the anytime-anywhere Internet cannot be generalized as they depend on a number of aspects further explored below: geographical, infrastructural, organizational, individual, social, and cultural circumstances. Based on the exploration of crucial aspects of hyper-connectivity and society, the ON/OFF study suggests a new model of how we can understand the terms online and offline in the era of hyper-connected devices and the Internet of Things.

Redefining online/offline with the ON/OFF scale. The terms anytime-anywhere Internet and hyper-connectivity imply that we are “always on.” They suggest that there is no “offline” anymore. ON/OFF survey respondents are divided when it comes to the question if distinguishing between online and offline still makes sense. A small majority argues that the term offline still relates to people, mainly in the developing world, who are entirely disconnected from the Internet, or to those, primarily in hyper-connected societies, consciously unplugging from connected devices and online services. However, respondents also argue that with the advent of the Internet of Things, hardly anyone can escape all kinds of connectivity.

But who or what is online? Is it an individual interacting with a connected device? Or is it a connected “thing” (in the sense of the Internet of Things) like our connected coffee machine or fridge sending data about our drinking and eating habits over the Internet? Or does it include when we are not actively engaging but a device in our pocket reveals specific data including location about us? Or when any data about us can be accessed? To what degree are we online if our Internet access is limited to a small device or if our government heavily filters what we can access online?

By introducing the ON/OFF scale, I argue that all of the above-mentioned examples are “being online” on the continuum between ON and OFF. I argue that individuals who are somewhere between 1 and 6 on the ON/OFF scale are somewhere on the continuum of online.

| ON | | | | | | OFF |
|-----------------|-----------|----------------------------|-------------------|----------------------------------|----------------|-----------|
| 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Hyper-connected | Connected | Voluntarily limited access | Restricted access | Distant or unreliable connection | Offline access | Unplugged |

Figure 79 — ON/OFF scale (short version, detailed version see Figure 78)

The ON/OFF scale’s basic idea is to describe Internet connectivity as a spectrum with various stages between ON and OFF rather than the popular either/or concept of online/offline. The scale is user-centric, i.e. it describes an individual’s online connectivity at a given moment in time. Hyper-connectivity is described as stage 6 on the scale: being connected through one or multiple devices using a high-speed connection, potentially multitasking for various contexts with various applications, and having a high likelihood of being tracked. For analytical purposes, the scale is divided into various connectivity categories. Being connected with certain limitations compared

to hyper-connected is stage 5 (e.g. small device, device with limited purpose, slow connection). Someone who voluntarily limits access is stage 4 (e.g. social media blocked), and an individual with a restricted access is stage 3 (e.g. lack of infrastructure, censorship or no freedom of expression, heavily filtered access). Someone with a distant or unreliable connection is stage 2 (e.g. developing world, conflict zone, nature, subway), and an individual with a device in flight mode or using downloaded or pre-loaded Internet content offline or is stage 1. Only someone without Internet access or a connected device at all, with only entirely turned-off devices without potentially spying malware, or with only devices from which the battery has been removed is considered to be stage 0, i.e. offline.

The ON/OFF scale describes technological aspects of access, devices, and potential tracking. While some political, cultural, and social aspects are included in the detailed scale, other widely discussed effects of connectivity—attention and cognitive salience, control over data sharing, health or privacy benefits and risks—add too much complexity to capture in a two-dimensional scale.

Social acceleration and blurring boundaries. Societal acceleration is often described as being caused by increasingly fast and ubiquitous connectivity. Research shows that in modernity, technology and social change are indeed closely interrelated. Innovations in information and communications technology are a major driver for societal acceleration but far from the only one. Innovations in transport and production technologies are other critical factors. Additionally, various aspects of individualization and mobility play a crucial role for acceleration in Western societies, including geographic, familial, professional, political, and religious mobility. While the anytime-anywhere Internet is certainly part of some of these social changes, it is not the root cause for societal acceleration. Still, no other media and communications technologies in the past have been adopted as fast as the Internet and smartphones, and recipients of personal email messages are expected to reply measurably faster than 15 years ago.

Mobile information and communications technologies have been demonstrated to blur various boundaries and to lead to “context collapse.” With hyper-connectivity, lines get blurred between local and global, between private and professional, between working hours and leisure time, between deliberate and unintentional data sharing, between productivity and distraction, between connected individuals and “things,” between online and offline.

Productivity and digital distractions are among the most discussed effects of hyper-connectivity. While a majority says the possibility of being constantly connected makes them more productive, roughly a third feels more distracted. Interestingly, many feel distracted, but do not seem to mind; among ON/OFF surveyed students, three quarters reported they do not mind constant connectivity. However, half of all the students said it makes them feel distracted.

Young people significantly more often than older people perceive hyper-connectivity as a leash rather than as means for providing more freedom. This finding somewhat contradicts a common narrative about generations and technology. Similarly, regarding blurring boundaries between private and work contexts, individuals report perceiving constant connection to their friends and family as more binding than constant workplace connectivity.

Social relationships. A large majority feels more connected to friends and family thanks to hyper-connectivity. Especially for youth, connecting with peers is crucial, even more so if they are isolated for physical or social reasons. However, many users try to avoid certain friends or people

form their past online, and some experience an increased amount of social pressure. Early cyborg experiments revealed a sense of multi-locality in social relationships. Studies show that the way people connect online is linked to their previous experience of connecting with family members. If they felt lonely within their families, they are more likely to experience an increased sense of loneliness online. But, actively reaching out on social media actually reduces loneliness. A significant number of smartphone users report using their device to ignore others, and much higher numbers report they have felt ignored because another household member spends too much time online, especially on a mobile device.

In parent-children relationships, concerns about children and hyper-connectivity are diverse, from a reduced attention span to an early exposure to adult material to a rise in ADHD. However, studies show that children have complained about the parents' excessive smartphone use, and that parents have lost sight of their child because they were busy with a smartphone. Many parents have come across useful information specifically about parenting on social media.

Findings suggest that individual resilience to social pressure and temptations decreases feelings of distraction and overload caused by hyper-connectivity. Experiencing "phantom ringing" is statistically linked to an increased feeling of social pressure, and a tendency towards compulsive cellphone checking.

Regarding mobile devices in social settings such as meals, there are cultural differences between the U.S. and Switzerland. About three in four young Swiss reported in the ON/OFF survey that they think it is not appropriate to actively use a mobile device during a meal. In the U.S., it is only about one in two.

The Amish and some Mennonites, more than any other conservative group in the Western world, have tried to compartmentalize communication technology so that it does not overwhelm their communal life. Despite common narratives about these religions as a very old-fashioned Western subculture that entirely avoids modern technology, some Amish and Mennonite people actively use some online applications as long as the use lines up with one of their most important cultural principles: serving their social community.

Digital divides. Individuals living in a developed and democratic country are much more likely to benefit from instantly accessing information, connecting with people in real-time, and being able to engage in mobile, flexible work. For a majority of the global population, the major risk of hyper-connectivity is simply not having access to it. The largest digital divide worldwide has persisted between developing and developed countries (Global South and Global North); countries with a very high broadband penetration rate are those that are economically thriving. 90% of those without Internet access live in the developing world. If the Internet connects more and more humans anytime and anywhere, those who cannot, or can only partially, participate are even more excluded. Living in a developing country drastically increases the risk of being left out of the tremendous opportunities of the digital age such as instantly communicating with friends and family and accessing information for education or business purposes. It increases the risk of infrastructural challenges (such as no access at all, a small screen only, and unreliable, very slow, censored, or otherwise restricted access), lack of income to afford technology, lack of digital skills, and facing repercussions due to digital surveillance. Less discussed digital divides within connected societies are participation and skills divides, which tend to be discussed as generational divides though they are not only related to age, but also to education and income, personal interest in technology, and personality traits, and cultural divides. Skills divides tend to be underesti-

mated, especially in technology policy that attempts to provide infrastructure that will grant access to the disconnected. Without an appropriate social support system and transfer of digital skills, the gaps are unlikely to disappear even if technological access is offered.

Among young users, there are significant differences in frequency, duration, motivation, and confidence. Compared to older users, young users tend to be more connected, more confident, and less worried, but are more likely to perceive hyper-connectivity as less freeing, more distracting, and even more frustrating. ON/OFF data suggests younger users worry less about privacy issues of the anytime-anywhere Internet than older users. A significant generational difference in the ON/OFF data is connectivity at night; about a third of students but only one in ten adults sleep with their mobile device turned on. However, generational divides regarding connectivity behavior intersect with geographical location, interest in technology, and personality traits.

Individual motivations are crucial in understanding and assessing risks and benefits of connectivity behavior. Generally, individuals with polychronicity and high role integration preferences (who have a tendency towards multitasking and who do not mind blurring boundaries between work and private lives) are more positively affected by blurring boundaries than those with monochronicity and high role segmentation preferences. Extraversion is linked to increased levels of connectivity duration and frequency. Neuroscientific research confirms that individuals generally looking for gains in reputation use social network sites more intensely. ON/OFF data suggests that resilience to social pressure correlates with a number of relevant aspects of hyper-connectivity: fewer worries about health risks such as information overload, lower levels of digital distraction, lower levels of fear of missing out (FoMO), significantly less experience with “phantom ringing.”

Cultural divides in online connectivity behavior and social norms for connected devices in social settings are still understudied. The ON/OFF study found that even the risk perception of information overload and privacy are culturally different between Europe and the United States, with Europe being significantly more apprehensive regarding both risks.

Health benefits and risks. The constant flow of data and information allows for many medical and psychological applications, such as being able to instantly activate a rescue app in case of emergency, allowing doctors to access patient records from other hospitals instantaneously, using Big Data analyses for medical and psychological research and to learn more about hidden correlations of diseases, or simply conferring peace of mind and a sense of safety to an older person or someone with a non-assertive personality.

The major health risk of hyper-connectivity—possibly the least controversial risk—is traffic accidents. Mobile devices have led to a significant increase not only in distracted driving, but also distracted cycling and walking. Less fatal but a prevalent risk are sleep disorders due to cognitive and emotional activation when using mobile devices in bed. Additionally blue light of screens can cause circadian rhythm disorders. Exposure to blue light of LED screens affects melatonin in the human eye, which leads to a suppression of the hormone melatonin, and ultimately keeps us from feeling sleepy. Using devices before going to bed or in bed can substantially delay sleep. While this may be a minor risk short term, it affects a large percentage of individuals by potentially causing chronic sleep deprivation. The average sleep duration has declined over the past decades. How much of this decline is due to the increasing use of screens emitting blue light

is still debated, but cutting-edge research is testing new technologies to limit negative effects of blue light.

Less prevalent, but more severe and more often talked about is the risk of Internet addiction. While Internet addiction is not an official diagnosis in the current version of the Diagnostic and Statistical Manual of Mental Disorders, many therapists and other practitioners have used the clinical criteria of gambling disorder to diagnose Internet addiction. Various studies estimate the prevalence rate of Internet addiction in Western countries between 1% to 8%. Research shows that similar to other types of addiction, more than four in five individuals with a diagnosed Internet addiction exhibited other diagnosable health disorders (high comorbidity rate with depression and anxiety disorders). Some online activities have been rated more addictive than others, namely online role-playing games (MMORPG), online communities, online gambling, online pornography. Individuals with high impulsivity and family relationship issues are at an increased risk of developing an addiction. Youth are at higher risk of excessive use because the frontal lobe in the brain, which regulates self-control, is not yet fully developed until later in life. However, very frequent use alone is not enough to diagnose addiction. It is not the actual time spent online that determines if users have a problem, but rather how that time users spend impacts their life. Technology seems to be blamed too often for addiction issues, but many IT companies are indeed working on ways to maximize user engagement by constant stimulation and instant gratification. The incentive is simple: their business model is based on displaying ads to users for as long and as often as possible on their sites.

Stress-related disorders such as information overload or even burnout have been linked to hyper-connectivity—mainly in Western Europe. There is no scientific evidence that hyper-connectivity can cause stress-related diseases, but a significant number of burnout patients experience hyper-connectivity as an exacerbating factor in their exhaustion. Research found a substantial overlap between depression and burnout. The industry and corporate culture can substantially increase the risk of exhaustion. Many stay connected to their workplace without explicit expectations, which indicates a lack of communication between executives and employees. To a certain extent, it seems digital media is being blamed for underlying issues like major changes in the workplace from physical to mental labor, higher acceptance of mental illness in general, and a rise in Europe of a new name, burnout, of an age old diagnosis: exhaustion or neurasthenia.

Researchers and experts have described the following minor or contested health risks of hyper-connectivity: radiation, nearsightedness, neck and spine problems, the smartphone thumb, exposure to germs, and indirect risks of carbon dioxide emissions to which the Internet contributes.

Privacy. Being connected means sharing location data and other metadata with cellphone providers, Wi-Fi-providers, companies behind specific apps, and others. A lot of data is produced unintentionally; some information is shared on purpose with a specific audience. Even within “anonymized” datasets with more sensitive data, individuals can be identified surprisingly easily through metadata like location. Experts call for legal regulation of data collection and usage, but such efforts face a longstanding dilemma of Internet jurisdiction: how to reconcile a global Internet and international data flow with local law. With hyper-connectivity, it has become more efficient to track down criminals and terrorists. Governments and law enforcement authorities collaborating with surveillance companies have put in place an unprecedented surveillance system, which is at the core of current global debates since the Snowden revelations in 2013. Are we safer

because of this surveillance and data retention, or are we paying too high of a price for security by allowing companies and governments to collect and store very personal data about us?

There have been chilling effects in the use of specific online services or search terms since the Snowden revelations. Older and female users tend to worry more about data privacy than their younger and male counterparts, ON/OFF data suggests. Millennials rate the individual, schools, and the education system as the most important players in protecting personal data.

Those with a post-privacy attitude and high extraversion scores are less negatively affected by blurring boundaries between public and private information and data sharing than privacy advocates and introverts. Heated, frequently transatlantic debates about the right to be forgotten online revolve around information, mainly published by youth and intended for a specific audience, remaining associated with their names and online selves for years to come, accessible anytime and anywhere. Europeans tend to support the right to be forgotten for protection of personality reasons while Americans tend to give more weight to preventing any form of censorship.

Institutional challenges. Institutions shape the way individuals relate to hyper-connectivity.

Corporations & organizations: In the business world, hyper-connectivity allows for customers to be helped in real-time, products to be shipped almost immediately, and employees to be contactable even if they are traveling. Having employees work from home reduces office costs, and general worker satisfaction is increased with a higher degree of flexibility. Research about hyper-connectivity in the world of work is mainly around the benefits of mobile flexible work and trying to limit risks involved like information overload, digital distractions, a cycle of responsiveness, and expectations of supplemental work done while off-duty. Mobile devices distributed by the company foster workplace connectivity beyond office hours. Constant workplace connectivity increases the risk of exhaustion; scientific studies confirm that the lack of psychological detachment from work in the evening predicts negative activation and fatigue in employees.

Schools and higher-education institutions: The education system benefits from an abundance of information and learning material online, but is being challenged by digital distractions in class, cheating in exams, and potential liabilities for illegal activities on their school network. Teachers tend to recognize the potential of using digital tools but some do not actually use them for various reasons (e.g. school lacks equipment, teachers lack skills, it takes too much time to set it up). On the downside, hyper-connectivity decreases the motivation for students to do research in school libraries and using print sources, which sometimes may be of higher information quality than digital sources. A majority of U.S. teachers say that digital technologies more distract students than help them academically. Many parties expect education institutions to teach digital skills, but experts are still debating about how to define digital skills, and many teachers have yet to catch up learning the skills themselves, and obvious prerequisite for being able to teach them.

News corporations: What is news for generations that grow up getting news about their friends' lives via social media? It remains unclear how traditional news outlets can build an audience among hyper-connected young people in Western countries, while the gap between the well-informed and the under-informed in the developing world seems to grow. Competition among news organizations has increased with the rise of the hyper-connected news consumers who expect to be informed in real-time, and as media convergence turns traditional newspaper companies and radio or TV stations into online news providers as well. Also, the news industry is struggling to make new financial business models work when the former advertising-plus-subscriptions model does not generate nearly as much revenue online, partially due to companies

like Google and Facebook attracting a large share of advertising money that used to fund professional editorial content. Facebook's news feed algorithms for instance curate what users might find interesting forcing news corporations to adapt their stories to the logic of news feeds.

Due to hyper-connected and networked public spheres journalists have more sources on their hands, but fact checking and questioning the trustworthiness of sources is still a crucial task in journalistic work and has become technologically more sophisticated. Protecting anonymous sources has become more challenging for news organizations and encryption skills are becoming crucial know-how within news organizations.

Can a journalist publish opinions as a private person in a hyper-connected public sphere? Journalists who publish personal and controversial opinions online tend to make news organizations with a reputation of objectivity quite nervous.

Hyper-connectivity increases the risk of being tracked, which is a threat for investigative journalism and the effective protection of sources.

Responses and responsibilities. How has hyper-connectivity been responded to so far, and who is responsible of managing potential risks? According to the ON/OFF surveys, the individual is largely responsible for dealing with potential risks of hyper-connectivity. Simultaneously, many agree that employers and the education system have responsibilities as well, and some experts state they think the political system has responsibilities.

Many companies make use of mobile, flexible, and remote work models. The creative industry and freelancers ("digital nomads") are increasingly organizing co-working spaces or meeting in Wi-Fi cafés, "Coworkation," which combines work and a vacation, is gaining popularity for mobile workers, particularly in warmer and cheaper places. Meanwhile, a few European companies have started offering technological barriers to mitigate the risks of burnout, such as blocking email servers at night and deleting emails during employee's vacation. Experts underscore the importance of leadership in order for employees to successfully make use of flexibility benefits, as well as creating a motivating atmosphere and detecting self-endangering work behavior that may eventually lead to exhaustion or burnout.

The major dilemma in education is teaching digital skills while handling digital distractions. Most schools and even higher education institutions have introduced a ban on connected devices in class as a default, mainly due to digital distractions and lack of attention to what is going on in class. Some allow the use of devices at specific moments, and some schools distribute a tablet to every student but have put a system in place to allow the teacher to block all the apps not needed in class.

Technological solutions to address the risk of too much technology have already been developed and are still in the making. For example, some connectivity-blocking apps let through specific information while blocking unnecessary communication and information. ON/OFF data suggests that a majority of students would not be interested in using technology limiting digital distractions. Interestingly, those with higher scores in self-control would be more interested in using it.

When it comes to privacy risks, digital privacy advocates recommend a number of encryption tools. As a reaction to ubiquitous data and connectivity, the post-privacy movement claims that privacy is dead and that transparency can actually be beneficial. Mainstream users worry much more about criminals and hackers, and certain friends and people from their past, than they do about government surveillance.

The disconnectionist movement, which reminds hyper-connected people to regularly “disconnect to reconnect,” is interestingly spearheaded by some of the most prominent digital pioneers and is mostly popular in one of the most digitally saturated parts of the world: the San Francisco Bay Area in California. The conference Wisdom 2.0 and Digital Detox camps are examples of disconnectionism as a business model. Offline Days or National Unplugging Days are disconnectionist campaigns that try to raise awareness of the pervasiveness of the Internet in our lives.

Mindful or conscientious connectivity are considered among the most effective ways of dealing with hyper-connectivity. These methods question intentions of usage and emphasize not instantly reacting to impulses (for example, in cases of notifications or messages).

Technology-free zones have been created in cafés, restaurants, libraries, and at dinner tables and in art spaces in order to foster creativity and a cozy atmosphere, avoid distractions, and spend device-free time with family.

Artists and advertising have addressed changes in social relationships by making parodies or, ironically, by sharing serious rants about “anti-social technologies” on social networks.

2. Reflecting Common Assumptions

An important motivation for this study was my interest in testing common assumptions on online connectivity behavior in the era of smartphones. One of the most common assumptions is that most of us are addicted to our mobile devices, which eventually leads to information overload or even burnout. Another is that younger generations who grew up with digital technologies (digital natives) are better at dealing with constant connectivity than people who grew up in the analogue age (digital immigrants). After the Snowden revelations, a general assumption was that people would change their connectivity behavior after realizing that being always on with their smartphone could actually lead to ubiquitous mass surveillance.

One goal of this study was to show—based on a large number of expert interviews, three surveys and the findings of many relevant and recent studies—to what extent these assumptions are valid, where we need more distinctions or where we need to set priorities about what we worry about.

— Popular Assumption 1: Productivity and Always On.

Hyper-connectivity furthers productivity but also increases interruptions.

Research suggests that a large majority feels that real-time communication, information, and collaboration make them more productive. Roughly a quarter of U.S. smartphone users feel distracted rather than connected. Studies show that simply being aware of a new message or a missed call can have the same distracting effect as actually using a mobile device, and connected devices are a major source of distraction for students in class, and even for those sitting next to the actual users. Interestingly, some research suggests that brief episodes of privately browsing the Internet in the workplace do not jeopardize productivity and can have a restorative effect. Being able to access all sorts of sources while working on a connected device has been blamed for major digital distractions and a behavior called cyberprocrastination. However, research from the pre-Internet era shows that procrastination behavior is highly correlated with fear of failure, depression, low self-esteem, and anxiety. ON/OFF data indicates that worrying about information overload due hyper-connectivity is also statistically re-

lated to finding it hard to set social boundaries. Blurring boundaries between work hours and free time and between private and professional contexts, along with constantly increasing expectations to get back to emails quickly, may contribute to increasing digital interruptions. However, some digital distractions, which are part of cyberprocrastination behavior, are caused by personal struggles rather than technology.

— **Popular Assumption 2: Burnout and Always On.**

Constant online connectivity and information overload are the driving force of psychological stress including burnout in the workplace.

Research suggests that current information and communication technology is indeed one of several causes of a rise in stress-related absenteeism. Mobile technology allows for more temporal and spatial flexibility and has been demonstrated to blur the boundaries between private and professional lives. Hyper-connectivity can lead to acceleration of communication and a cycle of responsiveness, which—depending on the industry, the position, the corporate culture, and individual personal boundaries—takes a major effort to break. It is suspected that psychological stress and mental illness have become the leading cause of absenteeism in Western countries for two reasons: first, because most jobs have moved to the service industry over the past decades, and second, because mental illness is less stigmatized than it used to be. Hyper-connectivity likely adds to these reasons. However, burnout—an increasingly common diagnosis yet not an officially recognized medical condition—has been scientifically linked to underlying issues such as depression, anxiety, or personality disorders. Hyper-connectivity, although often blamed for stress-related diseases, is not the cause of information overload and burnout, but can contribute to intensifying existing individual patterns and self-endangering work behavior.

— **Popular Assumption 3: Addiction and Always On.**

Internet addiction is a major health risk and most smartphone users are addicted.

As of today, Internet and smartphone addiction are not clinically recognized medical conditions, yet clinical treatment of Internet and gaming addiction has been established over the past decade in the Western world and in parts of Asia. In many cases, even passionately hyper-connected people do not meet clinical criteria for addiction (such as tolerance development, social withdrawal etc.), even if they call themselves addicts. Recent research suggests that non-substance addictions such as Internet or gaming addiction disorders do have similar neurological effects to substance addictions. Technology is often blamed for addiction disorders, but generally speaking, addictions come with underlying individual issues, which are the root cause for addictions in a clinical sense. At the same time, technology is not neutral. It has been scientifically shown specifically with gambling addiction disorder that some technology is “addictive by design”—a successful business model for the gambling industry that many Silicon Valley companies are adopting for themselves.

— **Popular Assumption 4: Generations and Always On.**

Younger generations are better at dealing with the anytime-anywhere Internet because they grew up with the Internet.

Generational differences are probably the most popular distinction made in Internet use. However, many other factors play into how and why people use the Internet. 60% of the global population is still offline, and this figure includes many young people. How, when, and why individuals connect to the Internet depends on aspects such as education level, position, income, gender, cultural background, motivations, and personality type. Yet, there are indeed

significant generational differences. Young people in hyper-connected countries hardly distinguish time spent online or offline and generally find the idea of living without the Internet unimaginable to a greater degree. Despite popular belief, research shows that young people experience constant connectivity as more stressful and distracting than older generations.

— **Popular Assumption 5: Privacy and Always On.**

Connected devices challenge privacy and data protection.

Most experts agree that with the growing numbers of connected sensors and devices and the Internet of Things, an enormous amount of data is being produced, which leads to massive challenges for data privacy and cybersecurity. The deepest privacy threat with mobile connected devices is considered to be location tracking. The market currently rewards cheap technology and inadequate data security standards. Privacy and cybersecurity experts call for better encryption technologies and legal regulations to ban devices with weak data security standards from being launched in the first place. Powerful technology and always-connected devices have made surveillance and undetected privacy invasions easier than ever and are challenging the legal system. The debate about a reasonable balance between legitimate surveillance of specific targets and massive data collection and retention is currently ongoing.

3. Reflecting Implications for Decision-Makers

Decision-makers are faced with the challenge of balancing some contradictory effects of hyper-connectivity on society, and have to put the above-presented risks and rewards in perspective. In order to make a technology assessment useful for decision-makers, this subchapter reflects and prioritizes implications based on the analysis in the previous chapters. Priorities depend largely on the level of decision-making or the specific target group that will benefit from decisions made related to connectivity. The *first* part analyzes implications on the political sphere, the *second* part focuses on implications for the world of work, the *third* part reflects implications on the educational system, the *fourth* part analyzes implications on families and individuals, and finally, the *fifth* part reflects implications for future research.

Implications for the Political Sphere

— **Connecting the disconnected.** On a global scale, connecting the offline 60% of the world population to the benefits of the Web is a much more pressing issue than helping the connected 40% balance the risks of being always on. Most hazards of hyper-connectivity are a First World problem. The digital divide between the Global North and the Global South remains the largest among all digital divides described in the ON/OFF study (chapter *Digital Connections & Digital Divides*). Therefore, it can be argued that enabling the Global South to participate in the global information society by connecting them to online services is the most important priority for decision-makers on a global scale. The more hyper-connected the Global North becomes, the larger the gaps between those with nearly unlimited access to information, communication resources, and online transactions, which are ultimately linked to educational resources and economic prosperity, and those with no or very limited access. The same is true for digital inclusion within hyper-connected societies, which, as shown in the

subchapter *Access, Skills, and Participation*, digital divides on a national or local level in the First World matters just as much. The more a society is built around connectivity benefits and its services assume that nearly anyone is hyper-connected, the more those not connected for various reasons (age, lack of skills, disabilities, etc.) are excluded. As a consequence, one of the biggest societal risks of hyper-connectivity is the emergence of a privileged hyper-connected minority leading to increased social and economic disparities—globally and locally.

- **Restoring trust in government surveillance and regulating data privacy.** Revealing our location data to cellphone providers is necessary because there can be no mobile calls, no mobile messages, and no mobile Internet connectivity if the cellphone provider does not know where we are. Having these incredible information and communication resources at our fingertips anytime and anywhere comes with a price tag: surrendering our location data. Near-constantly connected mobile devices make surveillance and tracking easier than ever and the privacy implications of hyper-connectivity (and regular connectivity) are tremendous. Privacy concerns are not limited only to mobile devices and cellphone providers, but include connected cameras in public spaces, facial recognition software, location-enabled apps, and an incredible amount of metadata produced by emails, credit card purchases, wearable technology, and connected sensors, among other “smart” technology. The Snowden revelations have had a global impact on the debate around surveillance and data privacy and have led to quantifiable chilling effects in trust in governments and secret services. Restoring trust in legitimate surveillance of criminal activities while limiting mass surveillance and data retention as much as possible is going to be an important task for many governments—at least in democracies. Because connected devices produce such a large amount of data, and because the market logic does not encourage secure data protection (encryption technologies and secure data storage are costly), hyper-connectivity may create more and more data privacy issues. As shown in the chapter on *Privacy*, technological solutions will not be enough to protect potentially sensitive data; legal regulation will be necessary to regulate the use of data by companies and by individuals. Regulating data privacy is a particularly pressing and complicated political issue in a world of data-mining global corporations, national governments struggling to ensure compliance with existing data protection regulations, and national parliaments lagging behind when it comes to timely new regulations for the globalized fast-paced technology industry in order to ensure data privacy.
- **Public health promotion.** In many countries, public health promotion is a political responsibility on the national level. Raising awareness of potential risks of hyper-connectivity can be complicated for government agencies—mainly because the risks are so diverse. By far the most fatal and undisputed of the health hazards linked to hyper-connectivity is *traffic accidents*. Pedestrians, cyclists, and drivers who are distracted by connected mobile devices have increasingly been the cause of traffic accidents (subchapter *Traffic*). Accordingly, national and local road security measures have already been taken by government authorities in many places, but these accidents remain a pressing issue for decision-makers responsible for setting traffic laws and regulations and creating smart awareness campaigns. As shown in subchapter *Sleep*, traffic accidents and lack of sleep are connected. We spend more time on our connected devices and many look at their devices before going to sleep—the effects of blue-light on the circadian system (the human body’s sleep-waking clock) have only recently been discovered and are still largely unknown to the general public. The blue light of screens can exacerbate lack of sleep, which is not only a potential risk for road security but also for mental and

physical health (e.g. effects on memory, motivation, mood, perception, immune system, and metabolism). *Internet addiction* is generally perceived as one of the major health risks of hyper-connectivity (subchapter *Addiction*). Even if it is not officially recognized as a health condition by the diagnostic manuals such as the DSM and ICD, government agencies and a number of countries have addressed and published official reports on Internet addiction and advice booklets. However, the number of people suffering from Internet addiction is relatively small when compared to more common addictions such as alcohol and tobacco. Additionally, there are a number of minor health risks that are more prevalent but have so far been overlooked by public health promotion, including problems with *eyesight, neck and spine, thumb, and germs* (subchapter *Other physical health effects*). In Western Europe, *burnout and information overload* as a result of constant workplace connectivity have been addressed by political leaders (Secretary of Labor, labor unions, employers), while in the United States and other hyper-connected countries, the risks of burnout and information overload are not part of the public debate and are not perceived as something that political leaders are responsible for. In one European country, legislation has been proposed to protect employees from the stress of constant workplace connectivity; in another European country, labor unions and employers have agreed to grant employees in the IT sector a right to disconnect. Last but not least, modern healthcare and health services have already benefited significantly from hyper-connectivity: being always on means being able to *contact ambulances immediately* in case of emergency. For *mental health*, smartphone apps have been used to help improve depression and anxiety disorders, and *telepsychiatry* can alleviate the shortage of child and adolescent psychiatrists.

- **Promotion of digital literacy.** New technologies require new skills. Teaching youth these skills also helps mitigate some of the risks of digital media such as cyberbullying or violent video games, which has led to political decision makers backing digital education measure in some countries. A similar push for digital literacy as part of the education as a means to address potential risks of hyper-connectivity seems just as appropriate. The term digital literacy, much like media literacy, is still subject to debate, and depending on the definition, involving political decision-makers may be more or less relevant. However, conceptualizing digital literacy as an important part of a timely education seems crucial, and therefore political decision-makers could advocate for corresponding budget planning to train public schoolteachers and additional media and technology experts. Education and digital literacy promotion is not limited to children and youth; it may serve parts of the population that tend to be excluded from the benefits of hyper-connectivity.
- **Legal challenges.** Apart from data protection concerns mentioned above, the main legal challenges related to hyper-connectivity have been about Big Data—datasets used for public good like urban planning that were declared to be anonymous but turn out not to be due to too many data points. Additionally, when employees sue their employers for health issues or extra hours worked while being connected that they were not paid for, it creates new challenges for the legal system. For large sets of collected data, whether publicly or privately collected through hyper-connected devices, the question of who has legal access to the data is still unclear.
- **Relevant questions for political decision-makers:** *What are the most pressing priorities on a specific political level regarding online connectivity? Is it addressing the global digital divide? Is it addressing digital divides on a national or local level? Are we aware that building and providing technological access alone will not be enough? Do we provide enough resources to build a social support system and pay for extra work*

hours? Do we provide enough financial resources for teacher training to make sure digital literacy is part of a timely education? How can we restore trust and balance the use of technological tools for national security and unnecessary mass surveillance? What can we do to protect citizens and consumers from excessive data collection by the private sector? How can we regulate the use of collected intimate data like gapless individual location profiles or personal health data?

Implications for the World of Work

- **Rethinking the use of technology for work.** Digital communication and information technologies are a fundamental part of many jobs and companies often provide mobile devices to increase productivity and mobile flexible work. However, real-time communication has not always proved to be more efficient especially due to frequent interruptions of the workflow. The main risk in the world of work has been identified as constant workplace connectivity and blurring boundaries between private and professional lives—especially for workers in IT and very customer-oriented industries. Research shows that regular psychological detachment from work is crucial to foster positive mood and low fatigue. The ON/OFF study shows that the risk assessment of constant workplace connectivity varies according to culture. While the risks of burnout and information overload are part of the public debate in Western Europe, they are much less talked about in the equally hyper-connected United States. A potential explanation for the difference is that there is a generally more technology-enthusiastic culture in North America compared to a more techno-skeptical culture in Europe.
- **Integrators and separators.** An important result of the analysis around personalities and hyper-connectivity is very different individual preferences with regard to separation or integration of private and professional lives. For integrator personalities with a high degree of autonomy in their jobs, hyper-connectivity can be very rewarding while it can cause a high amount of stress in separator personalities and with employees with a small degree of autonomy, for example in customer-driven industries. This means there is no one-size-fits-all solution for companies in order to protect employees from potential health risks due to connectivity. Research shows that many people are on call—even if they have not specifically been asked to be—because they feel implicit pressure to do so and do not want to let their colleagues down. While it is possible for organizations or companies to create strict regulations about connectivity, it is much more effective to make connectivity preferences and implicit expectations explicit within specific teams as part of a “psychological work contract” (chapter *World of Work*). Depending on an individual’s role in the company or organization, expectations of connectivity may vary. Some individuals report that they do not mind being contacted by their colleagues while on vacation. However, many employees do mind checking work-related email on holiday and studies show that regularly taking a break from work is what it takes for most workers to stay healthy, motivated, and productive. Engaging in a constant work-related connectivity behavior increases the risk for developing psychological outcomes such as burnout or absenteeism. It may be helpful to discuss within teams and among collaborators how to have each other’s back when a colleague has time off and how to break the unproductive “cycle of responsiveness” (chapter *World of Work*).
- **Leadership and company culture.** ON/OFF experts have highlighted the importance of leadership and company culture in effectively and healthily harnessing hyper-connectivity.

Managers and directors are role models and their connectivity behavior sends implicit messages (so, for example, if they are sending emails on Sundays or late at night, others will perceive that to be the expectation). Many employees stay connected to the workplace on a vacation even if nobody explicitly told them to. While no company policy will fit for all, formal communication policies regarding the use of mobile devices and an explicit statement about when employees are (not) expected to respond to emails, messages and calls is an effective measure for the common situation of implicit expectations of connectivity. Interestingly, a study which compared work-related connectivity with family- and friend-related connectivity found that hyper-connectivity in the personal life was over all perceived as a little more stressful than work-related hyper-connectivity. Discussing connectivity preferences with friends and family may be just as important as discussing it with co-workers. Making connectivity expectations explicit can be a relief for employees. This includes an official company statement that nobody has to reply to messages on weekends or on a vacation even if they are from a superior.

- **Industry and position.** Some industries are more affected by hyper-connectivity than others. The IT sector, management consulting companies, and law firms, for example, have a reputation of being more exposed to risks of hyper-connectivity than workers with shifts and collective labor agreements in industries with a low degree of digitization. Workers on call, executives who are generally expected to work overtime or positions such as spokesperson for a global company run an increased risk of not being able to regularly detach from work. However, high job autonomy and control over what gets through the boundaries of work and leisure reduces risks. In customer-driven industries without official business hours, disconnecting from work-related communication takes a greater effort.
- **Mindful use of technology in business.** There is a general trend towards mindfulness in Western culture. It is driven by the medical and psychology community, but also by leaders in the technology sector who have found mindfulness to be one of the most effective ways of dealing with hyper-connectivity. Strict connectivity regulations in the world of work tend to be useless if we want to benefit from the major advantages of flexible and mobile work schedules, or if we work for international companies or organizations that operate in different time zones. A mindful approach focuses on individual awareness of how and why we use technology and what impact connectivity has on our work, our focus, and our general health. It is not about strict rules of unplugging, but about individual adaptations according to what we found to be a helpful use of connectivity in order to work productively and reduce stress and interruptions, which may cause stress-related diseases such as burnout in the long run. Mindfulness in the business world comes in many different shapes. Some companies have banned devices from their meetings entirely, while some take other approaches, such as allowing devices but requiring a silent minute before every meeting in which everyone focuses on the goals of the meeting in order to make it more efficient. Some organizations and companies take it a step farther and offer mindfulness training for their employees.
- **Relevant questions for decision-makers in the world of work:** *How do we balance the productive use of information and communication technology with the need to regularly detach from work? How do we avoid unnecessary email and information overload and a cycle of responsiveness? Is it useful to define policies on when and how employees should be contactable and when not? Does it seem useful to have team leaders define connectivity expectations? Should connectivity expectations be part of a psychological contract in the hiring process? How can we foster a corporate culture that encourages a healthy life domain balance?*

Implications for the Education System

- **Teaching digital skills without constant digital distraction.** Schools and colleges already have an important role in media education and media literacy. With smartphones, an overwhelming percentage of students in the developed world has shifted into hyper-connectivity in just a few years. Digital skills have become an important part of the current debate on media literacy—even if a common understanding of what is encompassed by both media literacy and digital skills has not yet been established. Decision-makers in education face a large number of challenges regarding hyper-connectivity. The major challenge is how to promote digital skills while reducing digital distractions to avoid constantly divided attention. Research confirms that connected devices are indeed a major source of distraction for students in class, and even impact those sitting next to users. Audible or vibrating notifications on a mobile device have been shown to have an equally distracting effect as actually using the device. Even technology advocates have argued for banning connected devices in the classroom as a default (with some exceptions, such as one person taking notes or looking up information for the group, or for reasons related to disabilities).
- **Navigating the abundance of information and fighting library laziness.** Undeniably, students receive tremendous educational benefits of having constant and ubiquitous online access to an abundance of sources and information that can be used in class and for research or training purposes. An increasingly important part of education has become filtering relevant from irrelevant information and high-quality from low-quality sources, telling apart private from public information and propaganda or PR from independent information, and last but not least, encouraging students to consider using traditional books—even if they are not just one click away. The convenience of hyper-connectivity takes its toll on willingness to look for high-quality information in physical sources, which often require more effort to access.
- **Which digital skills?** As of today, there is no consensus among education experts on what digital skills are and which of them could and should be taught in schools. Education ministers have been debating mandatory coding and computer science classes for all students given the pervasiveness of connectivity in the developed world. Mandatory coding classes can be expected to improve digital skills with a learning-by-doing approach, and at the same time, would address digital divides (mainly the massive gender divide in the technology sector). However, while coding and computer science may be relevant for a current understanding of media literacy, they are far from enough to foster critical thinking about online information and news quality. Understanding how, why, and where to get high-quality information and news while protecting private information requires knowledge about analogue and digital sources, journalism, news values, and news-curating algorithms. It involves knowing about freedom of the press, freedom of speech, censorship, and privacy in a historical context. Therefore, lessons about civil liberties, current and historical authoritarian regimes including their propaganda, censorship, and privacy invasions are an equally important basis for media literacy and future citizens in the digital age. Up-to-date teacher training would cover all these important topics.
- **Training teachers in the digital age.** The education system lags behind as many teachers are not yet ready to teach the benefits of digital media and may lack appropriate school or classroom infrastructure or personal digital skills. Teacher training is crucial in order for

schools to be a highly relevant realm of media literacy promotion and to prepare students to benefit from digital tools in their futures as citizens and workers. Technology adoption and enthusiasm varies widely among teachers. Training for new teachers and professors has to be adapted to current technology, and additional training for current educators must be provided to help them catch up. Teachers and other educators are role models for students in dealing with hyper-connectivity.

- **Smart school policies.** Hyper-connectivity challenges students' attention by blurring boundaries between school context and private matters, blurring the lines between classmates and friends not physically present at school, and challenging the IT infrastructure at schools and colleges (bandwidth, security with multiplying school- and student-owned devices, filtering adult content, legal liability). Most schools have adopted a quasi-ban of mobile devices in class (devices put away in silent mode) in order to foster undivided attention. A small number of schools ban mobile devices on their property all together. Even colleges have started introducing a non-device-policy as a default (with some exceptions).
- **Relevant questions for decision-makers within the education system:** *How do we balance the educational benefits of having constant access to invaluable online resources with preserving focus and attention? How can we give students and teachers the best access possible to high-quality information and encourage them to use the best sources—regardless of those being online or offline? Are hyper-connected devices getting in the way of social interactions among students? Are temporary bans of mobile devices appropriate for specific times or spaces in order to foster undivided attention or strong-tie relationships within the school? How do we ensure data security and data privacy within our school network—even if students, teachers, professors and staff bring their own devices? Is the use of Web filters appropriate and more effective than having open conversations with students about online content? Are our IT policies education-driven or mainly liability-driven?*

Implications for the Future of News

- **News production has changed.** The Internet has led to a process of ongoing media convergence. News media—newspapers, radio, TV—still exist but even traditional news corporations that used to publish only on paper or via radio waves have all become online news providers as well, and must compete with Web-only content providers that are, for the most part, globally accessible and operating in a 24/7 news cycle. Hyper-connectivity forces journalism to keep up with news around the clock and to provide different formats for different devices such as large computer screens, tablets, and smartphones. The news industry is struggling with new business models online, where their traditional advertising-plus-subscription model does not work the same way. Paywalls or subscriptions are difficult to enforce when another news outlet is just a few (free) clicks away. In terms of advertising, news corporations do not only have to compete with other traditional news corporations, but also with Internet giants such as Google and Facebook. The currency in the online advertising business is clicks. It was difficult to get accurate readership numbers in the traditional newspaper business, but clicks are extremely quantifiable. Click-driven business models do not reward accurate and relevant information, but then again, tabloid journalism has always been financially more sustainable than providing high-quality information. Relevant and high-quality news are as important to democracies as ever. Curating rather than creating news and understanding content-curating algorithms in social media has become part of professional journalism. Data

visualizations or news stories based on large data sets have started to change journalistic storytelling in meaningful ways. In the developed world, the 24/7 news cycle based on hyper-connectivity creates a greater incentive to be fast than to be accurate in a competitive news-publishing environment. In the developing world, news companies are restricted by a number of factors such as infrastructure, illiteracy, and linguistic diversity.

- **News consumption has changed.** The number of affordable and accessible news sources and devices has skyrocketed in the past decades, and has been contributing to a general sense of information overload among news consumers. The number of news sources and the multiple possibilities of accessing news through mobile connected devices on the go may have contributed to a reduced attention span. Younger generations are growing up with a large number of news sources at their fingertips and a changing notion of what is meant by “news.” Social media and digital messenger companies like Snapchat and Instagram, which are very popular among young users, have announced their intention to become leaders in the news business. Even though hyper-connected devices theoretically allow news consumers to reach a variety of global news sources, many use only a single source on their device. Experts suspect that the only news that the mainstream tends to be informed of is delivered via push notifications on mobile devices.
- **Protecting sources.** Hyper-connected devices tend to reveal more information about journalists who have been targets of surveillance or data theft, and not only in authoritarian regimes. Key loggers have been found in German newsrooms and the Swiss *Neue Zürcher Zeitung* has been subject to NSA surveillance, in addition to the journalists in dictatorships who have been targets of surveillance since long before hyper-connectivity. Powerful surveillance technologies have become affordable for many authoritarian regimes, secret services, and law enforcement authorities. Authoritarian regimes tend to target regime critics, dissidents, journalists, and activists of resistance movements through their online communication and mobile devices. Research confirms that surveillance has negative psychological and sometimes even physical effects. It is vital for journalists to protect their sources. Encryption technologies are an effective way for journalists to protect their communications with sources from eavesdropping. However, in some regimes, even expressing interest in encryption technologies may be enough to end up on the authorities’ radar.
- **Relevant questions for decision-makers in the news business:** *How can we embrace the digital era and its 24/7 news cycle as a publishing house while sticking to the principles of relevant and trustworthy news? How can we reach and engage a younger audience who has a different notion of news? How can we protect sources, journalists, and correspondents who might be under digital surveillance, in authoritarian regimes and elsewhere?*

Implications for Families and Individuals

A significant number of potential risks around hyper-connectivity are in the hands of individuals and families alone. No laws, regulations, or employer can protect against these risks.

- **No texting and driving.** And no other distracting mobile device activities in traffic—for drivers, bikers, cyclists, and pedestrians. This is very straightforward and does not need any further explanations.
- **Devices do not turn themselves on; people turn them on.** Individuals are the only ones who can actively manage the boundaries between their work and private lives. Depending on the corporate culture, the job position (and what kind of connectivity it explicitly requires), and personal role integration preference (integrators vs. separators), it may be more or less difficult or important for individuals to manage connectivity in a way that promotes personal well-being. Research finds that psychological detachment from work is associated with positive mood and low fatigue, and that many employees stay connected to the workplace even if nobody explicitly told them they needed to be. If the company does not have explicit policies about connectivity, individuals need to define their own policies (e.g. no work-related emails at night or on the weekend) to keep themselves from being regularly affected by email overload.
- **Sleep, posture, and germs.** Screens put out a large amount of blue light, which suppresses melatonin. Using screens at night can have a negative impact on the human sleep-wake clock. Avoiding blue light two hours before going to sleep or using apps to reduce blue light helps maintain a healthy sleep cycle. Ubiquitous mobile devices have been found to foster bad body posture with a tilted head, which can eventually lead to neck and back pain. Paying attention to a good body posture while looking at screens is helpful. Regular cleaning of the most frequently used devices is advised because of the easy accumulation of germs. However, users must be careful, as many cleaning products may damage touchscreens.
- **Single-tasking and relaxation.** Most people perform significantly better in tasks if they focus on a single activity. Hyper-connectivity—multiple devices, a fast Internet connection, and a number of notifications—fosters media multi-tasking. This leads to constantly divided attention. Finding individual strategies to avoid multi-tasking is not only crucial for productivity but also in order to prevent psychological stress. Relaxation can help with focus and fostering individual resilience.
- **Dopamine rushes.** Some online activities such as certain online games, social media, or online pornography trigger dopamine rushes, which can be highly addictive depending on personal circumstances. If individuals suspect they do have a problematic Internet use, experts recommend a counseling regime that includes working on underlying issues.
- **Parenting and screen time.** Parents are role models—any verbal guideline will always be less powerful than personally following the guides and values parents and educators want youth to develop. This is true not just of screen time, but in encouraging a balance of physical movement, spending time with peers, and healthy eating habits. The frontal lobe (the part of the brain responsible for impulse control among many other functions) continues to develop in humans until the 20s, so children and youth may need help limiting their screen time. Pa-

rental guidelines are helpful, but rather than banning screens altogether, guidelines should emphasize physical movement and family values such as conversations at the dinner table.

- **Activists.** Powerful surveillance technology has become affordable for many authoritarian regimes, secret services, and law enforcement authorities. Democratic states that use invasive surveillance technologies claim they are being used to fight terrorism and criminals. Authoritarian regimes target regime critics, dissidents, and activists of resistance movements through their online communication and mobile devices. Research confirms that surveillance has negative psychological and sometimes even physical effects. Strong encryption technologies are the most effective way for activists to escape some surveillance. However, in some regimes, even expressing interest in encryption technologies may be enough to end up on the authorities' radar.
- **Relevant questions for individuals and parents:** *How do I make sure I am not distracted by notifications or messages while in traffic—as a driver, a cyclist, or pedestrian? Do I have more of an integrator or separator personality? How do I make sure I get regular breaks from work and how do I deal with private pressure to quickly respond to messages and calls? How can I stay focused on my current task without multi-tasking? How can I minimize potential negative effects of the blue light of screens on sleep and of my posture while looking at screens? Have I developed an addictive behavior that has become out of control? What can I do as a parent to support physical activities and focus over digital multi-tasking? Is there a need to limit my child's screen time? As a journalist, how can I protect sources in the digital age? As an activist, how can I protect my digital communication?*

Implications for Future Research

- **More research needed.** In order to prevent potential pitfalls in the most fast-evolving information and communication infrastructure, research needs to continue assessing and addressing its risks and rewards despite the challenges of a moving research topic. The ON/OFF study is an example of how Internet studies overlap with both emerging and traditional research fields, which are relevant in aiding understanding of the pervasive impact of current communication and information technologies on societies at large. It is an example of how ubiquitous digital technologies shape the field of Media and Communication Studies. Technology assessments like the ON/OFF study tend to be explorative in nature and based on multi-method designs. Many aspects are not yet thoroughly studied, and deep dive or longitudinal studies for understudied areas presented in the ON/OFF study would be highly relevant for future research.
- **Measuring Internet usage.** Measuring time spent online has become virtually impossible when limited to traditional self-reporting measures for three reasons: first, Internet technologies are more and more pervasive, making an estimate of time is increasingly difficult; second, many do not realize they are online when using smartphone apps; and third, too many definitions of the term “online” lead to confusing results. Either researchers need to find new technological ways of measuring an individual's Internet connectivity, or the interest in measuring it will fade, similar to the lack of interest in how much time people are using electricity.
- **Redefining online versus offline.** One of the major goals of the ON/OFF study was going beyond the online/offline dualism and finding a timely definition of the terms in the age of

hyper-connectivity. The ON/OFF scale (subchapter *ON/OFF Scale*) is this study's main theoretical contribution, providing a much more detailed—yet not overly complicated—definition of “online” versus “offline.” It will be interesting to see whether it is actually a useful contribution for future research, and how it may inspire other scholars to come up with new and improved versions of it.

- **Fleshing out the theoretical term “mediatization.”** As shown in the chapter *Blurring Boundaries*, there is an international theoretical debate in the field of Media and Communication Studies around the term “mediatization” as a major concept that describes the ubiquity of information and communication technologies. Former president of the ICA International Communication Association, Sonia Livingstone, says, “Communication scholars need to attend to the societal implications of the common claim that ‘everything is mediated.’” The ON/OFF study shows a variety of approaches for how the concept “mediatization” can be understood in the context of ubiquitous connectivity and its societal consequences.
- **What is media literacy in the age of hyper-connectivity?** Research on media literacy has a longstanding tradition in the field of Media and Communication Studies. It tends to be related to media education studies and media psychology. Media scholars have come up with dozens of definitions of the term. Most of them include the following skills: accessing, analyzing, evaluating, and creating media. I understand digital literacy as part of a modern understanding of media literacy. With new benefits and risks related to ubiquitous connectivity, the term media literacy has become ever more all-encompassing because the skill set required for accessing, analyzing, evaluating, and creating media has become much larger. In the context of the ON/OFF study, I argue that a current understanding of the term “media literacy” should include additional skills such as knowing about basic aspects of unintentional data sharing that occurs simply from being connected, data privacy, and algorithms. Also, balancing the benefits of being able to keep in touch and informed anytime, anywhere with pitfalls such as constant digital distractions, information overload, and the stress of an unhealthy cycle of responsiveness. Additionally, it includes being socially and emotionally aware of people physically present around us when we use digital devices to connect with absent others.
- **Relevant questions for researchers:** *What do we really mean when we talk about online and offline? What would the next version of the ON/OFF scale look like? How can we define media literacy and digital literacy in the age of hyper-connectivity? What do we really mean by mediatization? Which aspects of hyper-connectivity do we need deep dive studies on?*

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OFF | ON

Are you constantly online? Or are you offline sometimes? Are you offline if you are not interacting with your connected devices? Or if no data about you is being collected? Do you check Instagram and Twitter during dinner? Do you turn off your smartphone at night? Do you check work emails on vacation? Do you feel you have to disconnect regularly—to relax, to concentrate, or to protect your privacy? Or do you feel more relaxed when constantly connected because your loved ones, a work emergency, or the news are always at your fingertips? Why are some people—even within networked societies—still completely offline given the tremendous opportunities of the Internet? And what does it even mean to be online or offline in the age of hyper-connectivity?

In **ON | OFF**, Sarah Genner assesses the risks and rewards of the anytime-anywhere Internet, focusing on digital divides, social relationships, physical and mental health, and data privacy. She discusses implications for a variety of decision-makers in the world of work, in education, in families, and in politics. The author deconstructs the online/offline dichotomy and suggests the **ON | OFF** scale as a new theoretical framework for researchers and practitioners.

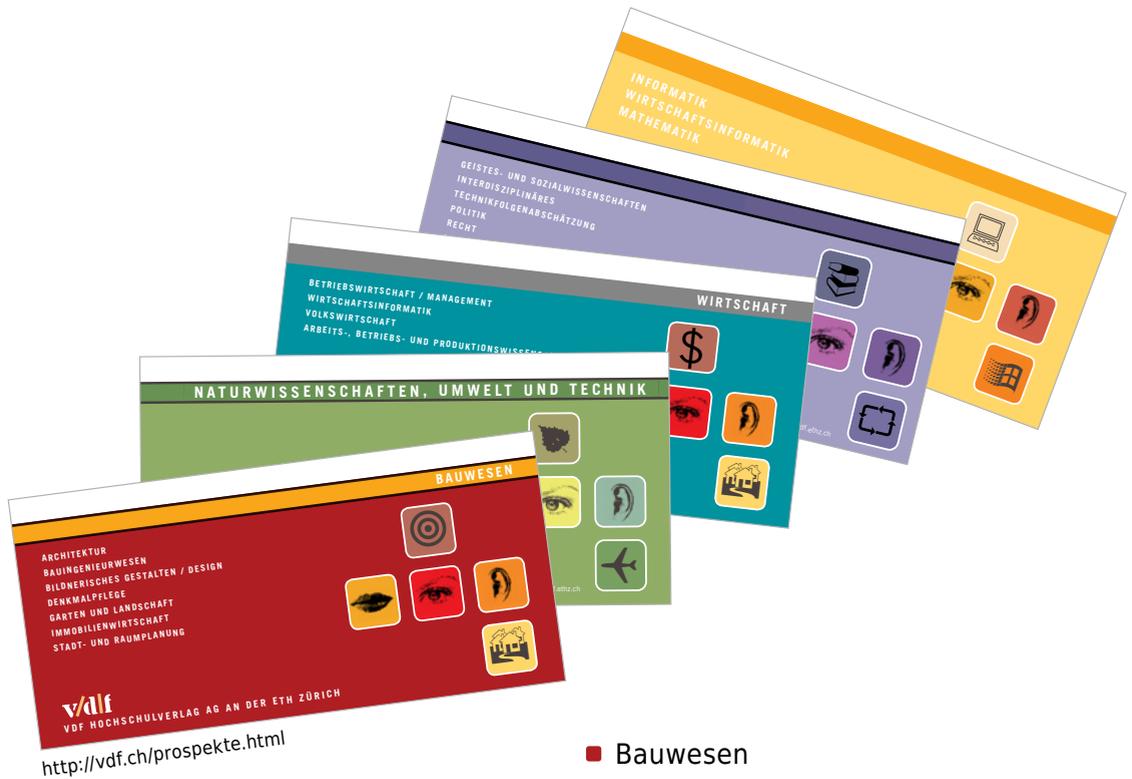
Sarah Genner studied in Zurich and Berlin. Her research focuses on the societal and psychological implications of digital information and communication technologies. She is associate researcher and lecturer in media psychology at Zurich University for Applied Sciences. In 2014–2015 she was visiting scholar at the Berkman Center for Internet and Society at Harvard University.

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