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Stories From Experts About the Impact of Digital Life

While many technology experts and scholars have concerns about the overall social, political and economic fallout from the spread of digital activities, they also tend to report that their own experience of digital life has been positive

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Stories About the Impact of Digital Life

While many technology experts, scholars and others have concerns about the overall social, political and economic fallouts from the spread of digital activities, they also tend to report that their own experience of digital life has been positive

Technology experts and scholars have never been at a loss for concerns about the current and future impact of the internet.

Over the years of canvassings by [Pew Research Center](#) and [Elon University's Imagining the Internet Center](#), many experts have been anxious about the way people's online activities can [undermine truth](#), foment [distrust](#), jeopardize individuals' [well-being](#) when it comes to physical and emotional health, enable [trolls](#) to weaken democracy and community, compromise [human agency](#) as algorithms become embedded in more activities, [kill privacy](#), make institutions [less secure](#), open up larger social divisions as [digital divides](#) widen, and wipe out untold numbers of [decent-paying jobs](#).

An early-2018 expert canvassing of technology experts, scholars and health specialists on [the future of digital life and well-being](#) contained references to some of those concerns. The experts who participated in that research project were also [asked to share anecdotes about their own personal experiences with digital life](#). This report shares those observations.

Specifically, the participants in the nonscientific canvassing were asked:

Please share a brief personal anecdote about how digital life has changed your daily life, your family's life or your friends' lives in regard to well-being – some brief observation about life for self, family or friends. Tell us how this observation or anecdote captures how hyperconnected life changes people's well-being compared to the way life was before digital connectivity existed.

Many of these experts wrote about a number of powerful ways digital life makes things better. Some themes:

- **Glorious connectedness:** Many said that the internet has provided one of the greatest boons to individuals: the ability to reach out and connect directly with friends, family, colleagues, knowledge, education, entertainment and more anywhere globally at any time in a nearly free and frictionless manner.
- **Invent, reinvent, innovate:** Digital tools enable people to invent or reinvent their lives and careers. They can also innovate through wide networking with people and information that

allows them to develop businesses, find the perfect job, and meet soulmates, colleagues, new friends and fellow interest-sharers.

- **Life-saving advice and assistance:** People can tap into and share medical, safety and health resources and support at a moment's notice; this is crucial for personal health and a game-changer for people engaged in child and elder care.
- **Efficient transactions:** These experts also hailed the way the internet revolutionizes life logistics and experiences. They cited benefits – including accessing online education, researching purchases, finding the best options for anything, making quick-hit social connections, planning trips, or coordinating activities – which allow people to be more mobile, savvy and globally enriched.

Some of these experts, though, wrote about negative impacts – experienced by themselves or by those around them. Among the themes:

- **Connectedness overload:** Low-friction instant access to nearly everything, anytime, anywhere is causing stress, anxiety, sleeplessness and loss of patience. Some experts noted that they witness people missing out on or diminishing important face-to-face social interactions and experiences. Some also noted that work demands and entertainment lures tug away at users 24/7/365 and that there is a loss of attention to “real life.”
- **Trust tensions:** The business model of internet platforms is mostly built on an attention economy that rewards addictive products that heighten users' emotions and perpetuate polarization. In addition, there are concerns among experts about issues of security, surveillance and privacy.
- **Personal identity issues:** Self-promotion, narcissism, click bait, trolling, propaganda and pressures to conform have become dominant in social networks, causing some individuals to experience the loss of self-confidence and self-esteem. This encourages them to lose faith in others and adopt a negative world view.
- **Focus failures:** Digital life fosters shallow engagement with information as people glide through multiple information streams daily, taking little time for reflection. People have a diminishing capacity to concentrate well enough to stay on task and do long-term, deep-dive thinking.

Themes about the personal impacts of digital life

THE POSITIVES OF DIGITAL LIFE	+	Glorious connectedness	Many argued that the internet has provided one of the greatest boons to individuals: the ability to reach out and connect directly with friends, family, colleagues, knowledge, education, entertainment and more anywhere globally at any time in a nearly free and frictionless manner.
	+	Invent, reinvent, innovate	Digital tools enable people to invent or reinvent their lives and careers. They can also innovate through wide networking with people and information that allows them to develop businesses, find the perfect job, and meet soulmates, colleagues, new friends and fellow interest-sharers.
	+	Life-saving advice and assistance	People can tap into and share medical, safety and health resources and support at a moment's notice, which is crucial for personal health and a game-changer for people engaged in child and elder care.
	+	Efficient transactions	These experts also hailed the way the internet revolutionizes life logistics and experiences. They cited benefits including accessing online education, researching purchases, finding the best options for anything, making quick-hit social connections, planning trips, or coordinating activities – which allow people to be more mobile, savvy and globally enriched.
THE NEGATIVES OF DIGITAL LIFE	-	Connectedness overload	Low-friction instant access to nearly everything, anytime, anywhere is causing stress, anxiety, sleeplessness and loss of patience. Some experts noted that they witness people missing out on or diminishing important face-to-face social interactions and experiences. Some also noted that work demands and entertainment lures tug away at users 24/7/365 and that there is a loss of attention to “real life.”
	-	Trust tensions	The business model of internet platforms is mostly built on an attention economy that rewards addictive products that heighten users' emotions and perpetuate polarization. In addition, there are concerns among experts about issues of security, surveillance and privacy.
	-	Personal identity issues	Self-promotion, narcissism, click bait, trolling, propaganda and pressures to conform have become dominant in social networks, causing some individuals to experience the loss of self-confidence and self-esteem. This encourages them to lose faith in others and adopt a negative worldview.
	-	Focus failures	Digital life fosters shallow engagement with information as people glide through multiple information streams daily, taking little time for reflection. People have a diminishing capacity to concentrate well enough to stay on task and do long-term, deep-dive thinking.

PEW RESEARCH CENTER and ELON UNIVERSITY'S IMAGINING THE INTERNET CENTER, 2018

The remainder of this report draws from elaboration of these ideas by respondents who shared anecdotes and observations. It is broken into three chapters: **1)** anecdotes and comments about the positives of digital life; **2)** anecdotes and comments about potentially harmful aspects of that life; and **3)** responses in which people's statements or anecdotes were fairly evenly split with both pros and cons of digital life. Some responses are lightly edited for style.

1. The positives of digital life

The greatest share of participants in this canvassing said their own experience and their observed experience among friends and family is that digital life improves many of the dimensions of their work, play and home lives. They cited broad changes for the better as the internet revolutionized everything, from the most pressing intellectual and emotional experiences to some of the most prosaic and everyday aspects of existence.

Louis Rossetto, self-proclaimed “troublemaker” and founder and former editor-in-chief of Wired magazine, summed it all up this way: “Digital technology is so broad today as to encompass almost everything. No product is made today, no person moves today, nothing is collected, analyzed or communicated without some ‘digital technology’ being an integral part of it. That, in itself, speaks to the overwhelming ‘value’ of digital technology. It is so useful that in short order it has become an integral part of all of our lives. That doesn’t happen because it makes our lives miserable.”

Larry Irving, co-founder of The Mobile Alliance for Global Good, wrote, “There is almost no area in which digital technology has not impacted my and my family’s life. I work more from home and have more flexibility and a global client base because of digital technology. I monitor my health and keep my physician informed using data technology. My wife has gone back to a graduate school program and is much more connected to school because of technology. My entertainment and reading options have exploded exponentially because of new technologies. Use of home speakers, Internet of Things, AI [artificial intelligence] and other emerging technologies is just impacting my life and likely will become more central. I used to write out first drafts of memos longhand. Increasingly I use a new free beta AI-based transcription service Temi to dictate my first draft and then edit that draft. Even when it’s awful, that first draft is better than staring at that blank piece of paper trying to think of something to say. I have numerous meetings with people I don’t know or only met once or twice previously. Recently I had a meeting with someone I didn’t know well. An app I use Accompany pulled up an email exchange between the two of us a decade ago about an issue we both care about. Accompany also provided me a very recent article where the person I was meeting with discussed the same issue and current concerns. Having that knowledge was incredible useful for our recent meeting and simply could not/would not have been possible without the use of digital technology.”

Mike Liebhold, senior researcher and distinguished fellow at the Institute for the Future, wrote, “Almost every member of my family regularly uses the internet to inform or improve aspects of their well-being: diet, fitness, health, social interaction with family and friends in person and online, education, entertainment, employment, commerce, finance and civic engagement.”

William Schrader, the founding CEO of PSINet, wrote, “Every single day: I have private communications with business associates in Europe, Asia, Latin America and in North America, *and* I receive emails or social media notices from my family members and their extended friends, *and* I receive the latest news and alerts from 20 different real news publications (such as the New York Times, Wall Street Journal, Washington Post and the Economist). All of this comes with little effort. *And*, after doing my local security, I can check every public investment I have made anywhere on earth *and* I can check my bank accounts and make transactions I deem of import, *and* I can search for any one or multiple piece of information that I need instantly, with or without Wi-Fi. Yes, I have what I wanted, *everything* at my fingertips. That means information, knowledge, history, ability to transact. I try to *never* do this when others are with me, since I love living in the moment. Since I am alone a lot, I can find the time. But I do not condemn or even slightly criticize people for taking a call, checking a text, reading, etc. What we built is what we wanted. It’s just that few people are happier. But, I am OK.”

Paul Saffo, a leading Silicon-Valley-based technological forecaster and consulting professor in the School of Engineering at Stanford University, said, “I have had an email address on my business card since 1982, and carry enough electronics on my person to get nervous in lightning storms. Digital connectivity has become like oxygen, utterly essential to my research. The net effect of these innovations has been to tie me more closely to other individuals and extend my interpersonal connections well beyond the pre-internet links of in-person interactions and telecommunications. I have friends – close friends who I have known for well over a decade and with whom I communicate nearly every day. We have never met in-person. In fact, we have never spoken over the phone. At the end of the day, the two of the three highest human desires are the desire to be useful, and the desire to share stories. We have been doing both since our distant ancestors sat around a savanna campfire sharing their days and their dreams. Now, thanks to digital media, the circle around the campfire has grown to encompass (if we wish) all of humanity.”

Garland McCoy, president of the Technology Education Institute, said, “I can be a real-time engaged parent, husband, partner, problem solver, counselor, comforter, etc., while traveling anywhere in the world, and – if I am comfortable with a little inconvenience – I can usually manage this real-time interaction for free! Something that was never possible before. No more ‘Death of a Salesman.’”

Kyle Rose, principal architect at Akamai Technologies and active Internet Engineering Task Force (IETF) participant, wrote, “There are simply too many things to list here. I’ll just hit on three. I can more easily keep in regular contact with friends in distant places. Those with whom I would have lost most contact (because, really, there’s no way I’m going to write letters or spend

hours on the phone) I can now maintain a relationship with, sometimes of a fairly deep and interactive nature, via social media. This enables us to pick right up when we do finally see each other in person. Technology eases the difficulties of day-to-day life. Because of the internet, I have access to virtually all of recorded music at all times. I can get up-to-date maps and traffic data to avoid incidents. I can order food, groceries or a taxi, obtain up-to-date information about my flight status, and navigate foreign cities via public transit all from my phone with a few taps of my finger. Finally and relatedly, how the hell did I ever learn anything before the internet? The card catalog? Virtually all of human knowledge is at my fingertips at all times. It is rare that I ask a question of fact that someone hasn't yet answered, and now many of those answers are available to anyone with access to a search engine. The impact of all of these is profoundly positive. And this is only a taste of what the internet, and technological advances in general, promise.”

Fred Davis, a futurist/consultant based in North America, wrote, “Messaging apps allow me to connect with people who have given me support, provided a chance to talk about life’s challenges, seek advice and many other things. Access to people is simplified. Chat apps (unlike Facebook) provide a one-on-one connection with another person, which can be more personal, human and healing than posting on social networks. I have been using a Fitbit for a number of years. I have had a heart attack and triple bypass and am pre-diabetic. Getting regular exercise is important, and my Fitbit helps me set and attain fitness goals much more easily than before. The ability to monitor and track my sleep helps me take actions to get better sleep, which definitely increases well-being. By connecting to my Fitbit scale I can also track my weight and tie it to my exercise goals. My Fitbit can connect to a Dexcom blood sugar-testing device that can test blood sugar every five minutes, which is extremely helpful in managing my pre-diabetes.”

These one-liners from **anonymous** respondents hit on a number of different positive themes:

- “I can get answers to questions about almost anything just by asking my telephone.”
- “I can save money on everything, including clothing and shoes, airfares, hotels and eat at better restaurants and drink better wine.”
- “Navigation via car has dramatically improved, with accurate up-to-date traffic information and destination wayfinding.”
- “Digital life is being able to speak and see someone – regardless of where you are – on a phone you carry on your person.”
- “Most people I have dated and approximately all of my friends knew me on the internet first; before such digital connectivity I would have just been lonely.”
- “Sharing photos of new generations instantly with loved ones on the other side of the world and using video and chat to send/receive money; to joke, to tease, to mourn.”

- “My son has grown up in a world in which he will never be lost; he will never be without a person to talk to; he will never be stopped from searching for an answer to a query.”
- “I work remotely for a company halfway around the world, and so does my partner. No need to be at a main office.”
- “The diffusion of webinars allows me to participate in many events organized in different countries without having to travel to them.”
- “Digital technology allows me to have better knowledge that empowers me to better support my own health when I face challenges.”
- “My job didn’t exist 15 years ago. I am a digital content manager.”
- “It means that we can participate in important moments that time and distance barred us from in the past.”
- “I feel more supported in good times and bad and laugh more than before I was connected online.”

Here is a roundup of the many ways these experts described the benefits they get and the benefits they observe.

Family enrichment and enhancement

Pamela Rutledge, director of the Media Psychology Research Center, said, “My 90-year-old father was on Facebook for the sole purpose of connecting with kids and grandkids who were scattered across the country. Reading and commenting on their posts gave him the ability to participate in the process of their lives. Knowing what the family members were doing increased his sense of involvement and the overall intimacy he experienced with them all. This familiarity also jump-started any family gathering, keeping people who were geographically disparate from feeling like relative strangers and allowing relationships to be more immediately meaningful. Texting in all forms serves the same purpose. Closeness in relationships is achieved by the frequency of contact. The human brain reacts to virtual contact as if it were real, releasing the same neurotransmitters of positive emotion and reward as if people were face to face. Texting allows for the multiple touchpoints, the sharing of life’s process and the reassurance of connection. These experiences replicate the behaviors that developmental psychologist Mary Ainsworth described in her ground-breaking work on attachment theory and how people form a secure attachment style, essential to emotional well-being.”

Stowe Boyd, managing director at Work Futures, said, “The simplest anecdote is about keeping a family messaging chat open with my wife and children. My kids – both in their 20s – live in Brooklyn, which is close to where we live, but over an hour away. However, we all participate in the chat, often several times in a day. We share pictures, links, stories, plans. It is simply much

lower friction than how I managed to remain in contact – or didn’t, really – with my parents when I was in my 20s. Then it was an occasional phone call, visits when possible, but it was pretty tenuous. And I had what most of my contacts considered an unusually close and caring relationship with my folks. I wouldn’t say my family today is *hyperconnected*, but we certainly remain *very* connected, where scarcely a day passes without some interaction between all of us despite the physical distance involved. And this has allowed an extra richness to my life, and I guess theirs, a counter to the possible distance that could otherwise grow in our relations because of the hour of travel that separates us.”

David Weinberger, a senior researcher at Harvard University’s Berkman Klein Center for Internet & Society, said, “The most obvious [difference of digital life] for many of us, I’m sure, is the lowering of the barrier to communication: I am in closer touch with my family – grown kids, siblings, in-laws, the whole group – because we can communicate with everything from texts to video calls. We support one another better and know our daily lives better than we could before.”

Sonia Jorge, executive director of the Alliance for Affordable Internet and head of digital inclusion programs at the Web Foundation, said, “Regardless of where I am, my kids can reach me to talk, text me a message to ask questions, help sort out a plan, to tell me about their day, their worries, I can help them with homework or even music practice over video! And, as all mothers, I have often ‘saved’ many situations! Once I got a message from a school in the middle of an important business meeting and managed to sort the situation without any major issue, and all from a different continent! The ability to stay connected as needed is so important for me and it allows me to be closer, to be there! I cannot imagine [life] otherwise and this allows me to do what I do in ways that would have been very hard before digital connectivity.”

Steve Stroh, technology journalist, said, “Two observations. The first is that one of the regrets of my life is that I didn’t work hard enough to stay in touch with all of my family and friends as I moved away from my hometown and got involved in my career. Thus, many of my family and friends that were once dear to me are now estranged – entirely my fault. In my daughter’s generation (born in the 1990s), with social media like Facebook, etc., my daughter’s generation and beyond, they will never get entirely out of touch with family and friends (unless they really want to). They’ll know about significant events in their friends’ and family’s lives as things happen, and can always reach out because there’s a consistent point of contact – the social media messaging, ‘stable’ phone numbers such as mobile, email, etc. The second is that my wife and I maintain a near-daily ‘running conversation’ with my daughter who’s moved away via three-way ‘text’ messaging. We often share photos (of the family pets, as it turns out) and let each other know about important or unimportant – perhaps funny – things that are going on in our lives. So the

three of us are never really out of touch, which is a wonderful, wonderful thing. I wish I could do this with MY father (who is, alas, very technophobic).”

Maureen Cooney, head of privacy at Sprint, commented, “My mother, who is in her 80s, lives on her own and is a technology leader in our family. Her adoption of cellphone use for calls, texting, email, FaceTime, and photo-sharing, daily use of an iPad and computer to play games and to communicate, participation in social media via Facebook, managing her finances, and even device control in her home via internet connected technology, as well as for entertainment through an Amazon Echo, [which] keeps her connected to us and the wider world as she ages, raising her feelings of confidence, safety, activity and independence. It lets family and friends easily connect with her in many ways in real time, which otherwise would not be the case.”

Richard Sambrook, professor of journalism at Cardiff University in the United Kingdom, wrote, “Very simply, I can talk to and see my daughter on the other side of the world at low or zero cost via video/smartphone technology in a way that was unthinkable a decade or more ago. It helps hold families together.”

Perry Hewitt, vice president of marketing and digital strategy at ITHAKA, said, “We live in an aging society; in the developed world, the population is getting older, people are living longer, and fertility rates are falling. Here in the U.S., where families can be geographically dispersed and family-leave policies minimal, caring for older relatives is difficult. Our family has benefitted from the many technology advances in elder care from cameras to robots to medication reminders to video calling. There is so much available to track critical metrics and improve quality of life – for the elderly and their tapped-out caregivers. I believe we’re still in the infancy of technologies that can improve medical compliance and personal safety, and combat a scourge many older Americans face: loneliness.”

Mary Chayko, a professor at the Rutgers University’s School of Communication and Information, wrote, “My family and I now stay in contact via an unending series of group texts. While we would have remained connected via letters or phone calls in a pre-digital time, this allows the simpler, more convenient and more frequent sharing of moments both incidental and more meaningful, and keeps us consistently in one another’s minds and hearts.”

Alex Halavais, director of the M.A. in social technologies at Arizona State University, said, “We have two children in elementary school. It starts at the same time each day and ends at the same time. The children are generally out of touch with the family during this period. This would not have been unusual when I was in elementary school or when my parents were in elementary school, but the other institutions in our lives have changed this. We have shared family calendars

that show who needs to be where and when, but these change with some consistency. While my partner and I both have busy careers, they never fall within clearly defined work hours, and mobile technologies mean that our everyday social and business lives are weaved together rather than blocked in clear periods. Time has changed, except for the kids' grade school. It remains anchored in one position: the 20th century."

Eelco Herder, an assistant professor of computer science whose focus is on personalization and privacy at Radboud Universiteit Nijmegen in the Netherlands, wrote, "My husband and I live relatively far away (about two to five hours) from our families and our friends live in several countries. Facebook makes it easier to stay in touch with them, to inform them about important events, to show pictures of our daily lives, and – in return – to be informed about things that matter to them. For me, my circle of online friends has evolved from mainly 'online contacts' in the mid-2000s to people whom I know in daily life. As a result, if we meet friends after a year or so without contact, we do not need to give an overview of last year, but just continue the conversation and play a board game. It is also easier now to stay in touch with a larger number of people than in earlier days. Apps like WhatsApp allow us to have daily contact with our families, simply by exchanging short messages or sending quick pictures. This interaction does not replace phone calls and visits, but complements them."

Nathaniel Borenstein, chief scientist at Mimecast, said, "In the 1980s and early 90s, people asked me why I cared so much about advancing the capacities of email. My usual reply: 'Some day I will have grandchildren, and I want to get pictures of them right away, by email.' This dream came true when I received an email that contained a sonogram image of my twin granddaughters when they were each no bigger than a few cells. I had expected those first pictures to be considerably cuter. Even though I was an evangelist for the future of communication technology, that technology exceeded my wildest imaginings."

Greg Shannon, chief scientist for the CERT Division at Carnegie Mellon University's Software Engineering Institute, commented, "When I call my dad, who is hard of hearing, the real-time network-enabled transcription service kicks in so that he can understand what I'm saying by reading the words on his screen. This dramatically enhances the quality of our conversation and allows us to be more connected. I'm sure it does wonders for his general health at 90. Our three sons all work in/around software. Their minds are filled with notions of programming frameworks, database schemes and abstract models of what data and interactions mean. It's [a] world that their grandparents can't comprehend, and even their aunts and uncles are confused about what they do. Many of their childhood friends are far removed from these conceptualizations of work and value. I am not sure how it affects their well-being per se, but the notion of a shared sense of what work means seems weakened. Living and working in multiple

places (Ohio, Pennsylvania, New Mexico) is possible since we can digitally maintain social and business connections remotely and asynchronously. Without such digitally enabled efficiencies it would be very challenging to run such a rich life.”

Srinivasan Ramani, a retired research scientist and professor, said, “It was in 1993. My daughter left school in Bombay and moved to college in the U.S. Telecommunication in India was quite bad in those days. The number of telephones, both landline and cellular, was about 3 million. (Compare with the billion or so cellphones we have in the same country now!) I knew it would be difficult for my daughter to call us back soon after arrival at the college, and so had asked her to get access to internet on campus and contact us through email and chat. She did that within hours of arrival. My wife had, to that point, carefully stayed away from the dial-up terminal I had on my study table at home for years. Now, she suddenly demanded to be introduced to the system. She demonstrated that given the right motivation, people can learn to use a dial-up terminal for email and internet chat in two days at the most! Our daughter was, for the next four years, our daughter on the Net!”

Claudia L’Amoreaux, digital consultant, wrote, “I started using videoconferencing early. First I used a black-and-white video phone that sent a still image every 5 seconds or so. Friends and I got our hands on one and did some fun experiments with artist techies at the Electronic Cafe in Los Angeles. Later I used Cornell’s CU-SeeMe videoconferencing. A real turning point for me was using the high-end PictureTel videoconferencing system in the early ‘90s. When the PictureTel staff dialed up and connected me to a person in New York City (I was in Monterey, California), as I said hello, tears came involuntarily to my eyes; the intimacy was so unexpected, I was overwhelmed with this encounter with a stranger. Fast forward to five years ago. My 85-year-old mother had a recurrence of cancer. We lived many miles apart. On one of my visits, we went to the phone store and I helped her pick out her first iPhone. It was so awesome to watch her learn to text with her friends. I could FaceTime her from my home while I got my life in order so I could return to take care of her. That phone was a literal lifeline during her last months – a source of joy, a tool for coordinating her care, and a reassurance for me that I could actually see daily how she was doing. I think of all the technology in our lives, videoconferencing technology contributes in a profound way to my well-being, bringing me closer to dear family and friends who live at a distance, or even just across the bay like my daughter does. I love it when we both have time to just hang out together via FaceTime when we can’t be there in person.”

Kirsten Brodbeck-Kenney, a director, said, “Thanks to social media and video chatting, my parents have been able to be very involved in my child’s life in spite of living on the other side of the country. She is only two and a half, but she knows their faces and voices and feels connected to them, even though she’s only met them a handful of times.”

Work creator, enabler and enhancer

Dewayne Hendricks, CEO of Tetherless Access, said, “Living a digital life has made it possible to be self-sustaining financially. I spend a great deal of my day online, and being hyperconnected makes it possible find all the things I need to have a decent quality of life. The type of life I’m leading now would not have been possible 30 years ago. I take comfort in the fact that I’ve had a hand in shaping a part of this thriving digital Web.”

Michael Rogers, a futurist based in North America, said, “I now live half the year in the Sicilian farm country where, thanks to wireless internet access, I can do most of my work. Ten years ago that would have been quite impossible. One of the things I most like about Sicily (besides the obvious attractions) is that while there is plenty of Facebook and email and Twitter, the ‘digital lifestyle’ has not colored private and public life so much as it has in my other home, New York City. Sicily remains a far more face-to-face culture. Why that is the case and how long it will continue is a longer story, but it is ironic that I’m using the new digital tools to avoid the side effects of those same tools.”

Larry Roberts, Internet Hall of Fame member, original ARPANET leader, now CEO/CFO/CTO of FSA Technologies, Inc., said, “As I do have 100 Mbps of home internet access, I can mostly work at home. However, file sizes that I need to receive today of 60 MB need Google Drive to deliver, as email capacity is in the dark ages. And the sizes grow every year. Email must adapt as these demands grow and TCP [Transmission Control Protocol] transfer speed also needs to increase as it is stuck in the 1990s at 20-30 Mbps. As shopping has also gone digital, package delivery requiring signature can be easily included when working at home, whereas it would become a major problem otherwise. In fact, work can be seamlessly intermixed with running a household. Eliminating commuting and fixed work hours allows working a 12-hour day (which I need). Thus, with increased internet capacity at home, more work can be done with far less stress for those workers not tied to hardware in the office.”

James Blodgett, an advisory board member with the Lifeboat Foundation, wrote, “Important work is shared. When several string theorists published several papers predicting black hole production at particle colliders, I became involved with the collider controversy. The original safety considerations had glaring holes. ... I made contacts with safety experts and scientists who were also concerned. I started a Global Risk Reduction special interest group in Mensa, I became an advisory board member of the Lifeboat Foundation (one of thousands), and I participated in writing petitions and contacting people. ... The main thing we accomplished was to get CERN, the organization sponsoring the then-upcoming Large Hadron Collider, to do a second safety study.”

Marshall Kirk McKusick, computer scientist, said, “Today I have worked on a problem in my open-source community (FreeBSD) in which over the past 24 hours has involved colleagues in 10 time zones, including Ukraine, Germany, United Kingdom, Massachusetts, Iowa, California, Hawaii, Japan, Australia and India through a combination of email, messaging and IRC [Internet Relay Chat]. This would have been impossible before the internet.”

Jordan LaBouff, associate professor of psychology at the University of Maine, commented, “There are so many ways, from allowing me to stay connected to my family and other relationships while I travel for work and research, to being able to translate or navigate on the fly in difficult cross-cultural situations. The one that springs to mind is actually my wife’s work experience. Two years ago, due in part to the challenges of living with multiple chronic health conditions, my wife left her successful job as a cell technologist at a local hospital to pursue digital journalism. It has allowed her to work from home and write for a large public audience about research surrounding bipolar disorder. This digital environment provides her employment, and her writing supports thousands of people every week who read her research (that she accesses digitally) and writing and who get social support and well-being tips from it. It’s a remarkable way the digital world has improved our physical one.”

Tom Wolzien, chairman at The Video Call Center LLC, said, “My family’s creation of The Video Call Center to produce broadcast-quality television from the 4 billion global smartphones (and related patents and other intellectual property to make it reliable and cost effective) has enabled a flattening of traditional live video access, enabling programs based on zero-cost live remotes from about anywhere on the planet without field origination, transport, or control room costs. This means that any media organization can put about anyone on the air from anywhere, restricted only by the depth of the producer’s contact list.”

Jane Elizabeth, director of the accountability journalism program at the American Press Institute, wrote, “Digital technology has allowed my small non-profit organization to work efficiently and effectively from wherever we are in the world. For non-profits and even small for-profit organizations, you just can’t overstate the positive benefits of this type of mobility. There are absolute cost savings in overhead, travel, hourly wages. And there are qualitative benefits in employee work-life balance, productivity and emotional health.”

Jeremiah Foster, an open-source technologist at the GENIVI Alliance, said, “I lived and worked in Sweden for about 15 years. Recently I moved back to the United States to be with family since I’m originally from the U.S. I’m able to keep my employment, including my salary, my title and my day-to-day work while living thousands of miles away from the company I work for.”

Eugene Daniel, a young professional based in the United States, said, “Digital technology impacts every aspect of my daily life. As a member of the media, my job depends on technology (telecommunications, social media, internet). As a person who lives apart from family and loved ones, I depend on digital communication to stay in touch – including frequently connecting on FaceTime with my girlfriend. The uses are endless.”

Devin Fidler, a futurist and consultant based in the U.S., commented, “Sites like Upwork have allowed Rethinkery Labs to routinely pull together ‘flash teams’ of colleagues, support and expert advisers in a way that accomplishes many tasks more efficiently than would have been humanly possible before coordination platforms.”

Frank Feather, a business futurist and strategist with a focus on digital transformation, commented, “Technology allowed me to quit commuting – which is asinine in this era – to quit my career job, and to become a full-time consultant, thus allowing me to help far more organizations on a freelance-anywhere basis. This has been most fulfilling. Similarly, my children have built worldwide networks of friends and fellow students. We have two adopted daughters, and the internet has allowed one of them to find and connect with her birth family in China. None of this would be possible without the internet. The internet unifies people and combines ideas very easily.”

Yoram Kalman, an associate professor at the Open University of Israel, wrote, “Digital technology freed me from having to spend all of my work hours in the office. I have been telecommuting and working from home at least part of the week since the late ‘90s. That would not have been possible without the advent of digital communication. It allowed me to better integrate work, family commitments, leisure, health challenges of self, of children and of elderly parents, social commitments, etc. Consequently, my work is more productive. Furthermore, the ability to work across geographical and national borders opened new opportunities that made my work more exciting and fulfilling. Throughout this time, I had to learn and relearn how to use communication technologies in ways that empower me, and how to minimize the harm they cause. It is an ongoing learning challenge.”

Charlie Firestone, executive director of the Aspen Institute’s communications and society program, said, “I run an office of seven people. I was able to move from Washington, D.C., to California with little detriment, mostly due to video-conferencing. In our case it is Skype for Business that puts each employee a touch of a button away, and the video changes the interaction from simply voice calls or email. I see video calls, a la FaceTime or Skype to be a common activity of the future in business.”

Allen G. Taylor, an author and SQL [Structured Query Language] teacher with Pioneer Academy, said, “Digital technology has given me opportunities that were not possible before the digital revolution began. A vast array of career opportunities opened up in a variety of fields. I became a digital design engineer and moved from there into a variety of related professions. The convenience of digital devices such as personal computers and smartphones has enhanced life greatly, both for me and for every member of my family.”

Adam Montville, a vice president at the Center for Internet Security, said, “I have the privilege of working from home each and every day. While there are some aspects of office life I miss, the truth is that technology has made this possible. For our family, this has been immeasurably valuable. I can work more productively at different times of day, all while maintaining healthy boundaries for work/life balance (which really isn’t about hard boundaries as much as it is about unobtrusively blending the two). Before such technology existed, I had to commute. I had to be tied down to a specific schedule each and every day. I couldn’t connect to colleagues from a mountainside or a sailboat. It just wasn’t possible.”

Ann Adams, a technical writer based in North America, said, “It gave me a profession; one that did not exist when I was growing up.”

Vincent Alcazar, director at Vincent Alcazar LLC, wrote, “The growing mobility of labor cannot be underestimated, and the primary enabler is the gig economy with the internet as its engine. The gig economy only grows from here, as does its entwinement within people’s lives.”

Health and wellness aid

Avery Holton, an associate professor of communication at The University of Utah, commented, “As someone who has twice experienced the impact of cancer, once at the beginning of digital and social media and once in 2016, I feel more empowered by the ability to be transparent and accepted. Yes, we all still enjoy sharing those moments in our lives that give off the best appearance, but the stigma of sharing experiences of disease or pain or loss has lessened. More and more, we are encouraged by the actions or the postings of others to share our tougher experiences and to, if we so wish, build a community around those experiences. The first time I went through cancer, I felt lost and disconnected and without voice. This time, though it admittedly took some coaxing from friends and other supporters, I shared my experience and my recovery. That really helped me through the process and into a quicker, more lasting mental, emotional and physical recovery.”

Susan Price, lead experience strategist at the United Services Automobile Association (USAA), commented, “My husband had a stroke last year. My online network and digital tools made it easy to share the event, his progress, my stress and feelings, for others to empathize and share resources and advice. I found myself carefully segregating my communications by channel, moderating the degree of honesty according to the size and makeup of the group. I report to the largest group in Facebook ‘sanitized’ updates of mostly hopeful progress reports and vignettes that show me or my husband in a flattering or inspirational light. I avoid upsetting others with starkly honest or too-revealing stories of my own or my husband’s pain, frustration or lack of coping. My husband is aware of my propensity to share, and has asked directly when we’re discussing a fraught situation, ‘This isn’t going on Facebook, is it? Good!’ But he suggested my posting and sharing some achievements. Because of its ubiquity and reach, Facebook helped me identify select others in my network – many of whom I hadn’t spoken with in 10 to 20 years – who had directly relevant experience with caregiving of stroke survivors and adjusting when a partner suffers a severe health crisis. With those found veterans, I moved the discussion to more private channels such as Facebook Messenger, email or phone to share more honestly my negative feelings, fears and pain, and received directly helpful specific advice, support and resources. I’ve also used caregiver forums to connect with quickly available communities of peers in situations much closer to my own.”

Gina Neff, an associate professor and senior research fellow at the Oxford Internet Institute, said, “Digital technology has been a godsend for care-givers, allowing people to coordinate their efforts to help during cancer treatment, when a newborn arrives, or during a health crisis. Apps and websites cannot replace the communities that have always connected and supported us, but they can help diverse and dispersed groups coordinate care in unprecedented ways.”

Bradford Hesse, chief of health communication and informatics research at the National Cancer Institute at the National Institutes of Health (NIH), said, “I now stay in closer contact with my healthcare provider than I ever have before. If I have a question, I can ask it through secure messaging. If I want to evaluate my own recent blood panels for areas of concern or progress, I can do that online through a secure portal. Robocalls to my house from my provider as well as text messages to my phone ensure that I do not miss a recommended cancer screening. I watch my diet more rigorously with the help of a diet app on my smartphone equipped with camera to retrieve caloric/nutritional information, and I monitor my exercise goals through the use of my Apple Watch wearable. If I have a complaint, it is usually because the ecosystem of medicine is still not connected enough. There are laggards who resist sharing my electronic health record data with specialists as needed. There is 20th-century thinking that prevents these digital technologies from being fully integrated into the medical system in ways that will be cost-efficient, interoperable, empowering and truly usable.”

Thomas Lenzo, a respondent who shared no additional identifying details, commented, “Digital technology has facilitated my management of various aspects of my healthcare. I am able to schedule appointments and order prescription refills online, at any time of day. I can get detailed text or video information about health issues from trusted sources. I have access via portals to my health records. I also tell family and friends how they can use digital technology to impact their health.”

Ed Black, president and CEO of the Computer & Communications Industry Association, said, “The ability to monitor the medical records, procedures, medicines of a loved one remotely provides opportunity for quality oversight and rapid response, in contrast to being tied to hospital visits and uncertainty.”

Gary L. Kreps, distinguished professor and director of the Center for Health and Risk Communication at George Mason University, wrote, “My family and I use wearable fitness trackers that tally our daily exercise behaviors (steps). This has influenced both our awareness of our physical activity and motivation to exercise regularly. We strive to accomplish our 10,000 daily steps! We also compare our exercise levels and encourage each other to engage in physical activity. We now seek opportunities to exercise together to achieve our activity goals. This has improved our overall physical activity, fitness and health.”

Kevin J. Payne, founder of Chronic Cow LLC, said, “Since I research the effects of chronic illness and live with multiple sclerosis, I have a particular interest in using these technologies to monitor and evaluate my condition, keep up on the latest research, and connect with others – both professionals and others living with chronic conditions. My life has been radically affected by these burgeoning technologies on all these fronts. It allows me to collect my own data, blend it with other datasets and generate and test real-time predictive algorithms. I have a far better understanding of my condition, especially as it is baselined against relevant populations. I not only get access to cutting edge pre-print research, but I’ve also been able to widen my professional network by communicating with the researchers. And my involvement with patient communities has enriched my life in many ways.”

David Myers, a professor of psychology at Hope College, wrote, “As a person with hearing loss and an advocate for a hearing-assistive technology that has great promise (www.hearingloop.org), the internet has networked me with kindred spirit advocates nationwide (also via 19,898 emails I have sent and 18,516 received with the words ‘hearing’ and ‘loop’). Together, our internet-facilitated ‘hearing loop’ advocacy has led to thousands of newly equipped facilities, from home TV rooms to worship places to auditoriums to airports (and New York City subway booths and new

taxis). And more progress is on the horizon. Supported by digital technology, we are making a better world for people with hearing loss.”

Bob Frankston, a technologist based in North America, said, “I once had a rash and my GP [doctor in general practice] wanted to look it at. Fortunately we had a friend in common who was able to forward a simple digital picture I took and quickly resolved the issue. It’s a reminder that digital health doesn’t have to be complex and expensive. Sending a picture is simple and inexpensive yet can make a big difference – a huge benefit vs. cost. We need to appreciate the value of the mundane rather than focusing on the flashy stories.”

Doug Breitbart, co-founder and co-director of The Values Foundation, said, “In my life I have experienced significant adverse changes and circumstance, living situation and health. Virtual connectivity via the internet has enabled me to establish networks of connections, collaborative communities and new friendships and relationships with people around the world.”

Leah Robin, a health scientist based in North America, said, “My family has a genetic form of anemia that is very rare. Because of digital technology we’ve been able to make contact with researchers, take advantage of on-going research, and provide and receive support from other patients from around the world. The impact has been, at times, lifesaving for my family members.”

Christopher Bull, a university librarian, said, “I had an itchy rash on my hands. Found articles on the internet which suggested using witch hazel. No rash, no itch.”

Community lifeline

Ethan Zuckerman, director of the Center for Civic Media at MIT, wrote, “I went through a divorce recently and wrote about my experiences online. While there are few folks in my immediate community who are going through divorce, I found several friends in other cities in my extended circles who had excellent support and advice. One of the most supportive individuals was an acquaintance from college who was not a close friend, but who stepped up on Facebook and was a wonderful support to me from halfway around the country.”

Anne Collier, consultant and executive at The Net Safety Collaborative, said, “I ‘talk’ with people all over the world on a daily basis on Twitter – seeing, learning from, supporting and spreading what’s meaningful to them in their work and lives. It’s a tremendous source of inspiration for me. Together, we grow intelligence, connect up one another’s work and support positive social change just by doing our work, following one another and sharing what’s meaningful more widely.”

Kathryn Campbell, a digital experience design consultant, said, “I have a young friend who lives in another state in a rural area. Over time, I have realized from their social media posts that he/she is emerging as gender non-conforming (probably transsexual). In the past, this is a journey that I would probably not have known about, especially since his/her immediate family is very conservative and have not accepted this facet of the young person’s identity. I am so grateful to have been included in this revelation so I can offer my unconditional love and support. And I am even more grateful that a person who in the past would have felt isolated, unnatural, and broken now knows that they are in fact part of a global community. He/she can find and utilize peer support groups as well as myriad medical, psychological and spiritual resources that would not have been available to someone in a small town in the past. I believe this will probably save lives. I definitely hope that it will help increase our ability as a society to accept others who don’t conform to our preconceived notions of what is normal.”

Ana Cristina Amoroso das Neves, director of the department for the information society at Fundação para a Ciência e a Tecnologia, said, “The smartphone has become a part of my family life. The current organisation we have and the data we can share more than modified the way we interact. There is no waste of time and therefore we all gain efficiency in our daily life. The dawn of Internet of Things is already embedded. ... If there is an electricity glitch, we cannot even think how will we survive due to the new paradigm we have in our lives. Hyperconnection is part of my family and friends’ well-being. It is nothing that can be compared with the life my parents had. I wonder how I could have survived in that society, living before total digital connectivity existed, even when it had just started and was not spread yet.”

Deborah Lupton, a professor at University of Canberra’s News & Media Research Centre, said, “I live in a vast continent (Australia) where academics are scattered many kilometres from each other, and it is a very long, expensive and exhausting plane ride from my colleagues in the Northern Hemisphere. However, I have extensive networks with my colleagues on Twitter and Facebook. I enjoy taking time out to chat with them, sharing professional and also some personal information regularly. It makes me feel less isolated and more easily able to keep in contact with my academic network. Nothing beats face-to-face encounters, but social media and emails, as well as the occasional use of Skype, is a far better way to maintain these contacts than letter writing or faxing, which is how we did things before digital media.”

Andrew Czernek, a former vice president of technology at a personal computer company, wrote, “Email and websites were the first place that we were able to see family and people with the same interests share information rapidly. Twenty years ago I set up two websites – one for pilots and one for family members – to share photos, family tree[s] and technical information. Both have been resounding successes in getting people together. For family, it has allowed easy distribution

of ancestor's photos and extension of a family tree from several hundred people to more than 3,000. About every five years I have to take our family tree back to the calligrapher to add ancestors that we didn't know about – including, recently, a soldier who was with Gen. George Washington at Valley Forge. Now we're starting to see services like voice-controlled appliances in the home and the extension of cellphone service throughout the world. Forty years ago I taught in a small Congo town that was isolated, with no phone or TV service. Today Kasongo can be reached by cellphone and the regional center has television and internet access thanks to wireless technologies.”

Nancy Heltman, visitor services director for Virginia State Parks, said, “I have met and developed relationships with people outside any sphere of reference I never would have had thanks to my digital life. This started when I worked on the 2008 Obama campaign, includes people I met through a group where we shared our love for household pets and goes through today where I have a relationship with customers that I never would have met personally. While I do not believe that my online relationships replace ones that involve personal face-to-face connections, they are important and have broadened my horizons in many ways, adding a richness to my life. In fact my more-traditional face-to-face relationships have also benefited from more communication due to digital communications. When forced to only have relationships with people you can meet in person, you tend to live in a more-narrow world, with people more like you. Digital communications broadens your horizons, or it can if you want it to.”

Social media: The horizon expander

Michael R. Nelson, public policy expert with Cloudflare, said, “I'm an avid user of social media, which I use to track developments in internet policy around the world. Almost every day, one of the people I follow on Twitter, Facebook and LinkedIn shares a report, law review article, economic analysis, or news article on something I need to know about and would not have discovered by just reading the U.S. newspapers and media sites I track regularly. Equally importantly, my Facebook and LinkedIn friends introduce me to experts in the field in countries around the world – without my having to spend time flying overseas to attend conferences. In 2017, I was able to be a fun participant in the Global Conference in Cyber Space in New Delhi without missing Thanksgiving with my family. Likewise, I was able to be a remote participant at the UN's Internet Governance Forum in Geneva without leaving my house (as long as I was willing to tune into the webcast at 4 a.m.).”

Alexander B. Howard, deputy director of the Sunlight Foundation, wrote, “I've been using computers for over three decades now, since logging on through a BBS [bulletin board system] in 1993. My professional life as a writer, analyst, consultant and now deputy director of the Sunlight

Foundation is almost entirely enabled by digital technology, from the journalism I created to the advocacy, activism, policy and communications work I do today. Social media has opened many doors for me, professionally and personally, in ways I did not anticipate a decade ago. The smartphones I began using last decade dramatically improved that work, enabling me to be informed, report and collaborate in extraordinarily flexible ways across time and space – and to easily travel through many foreign cities and nations.”

Dan Rickershauser, senior account manager at StumbleUpon, said, “I was born in 1987. When I first signed up for Facebook, I was a senior in high school and you needed a dot-edu [.edu] email address to gain access. We were all welcomed onto the platform as we got new email addresses once accepted into our college of choice. It was a place to show friends and acquaintances how much fun we were having in college. And then over time it became so much more. My parents had Facebook accounts. Work relationships became Facebook friends. It was a tough to navigate as its role in my life shifted. I scaled back how much I shared there. I changed what I projected out to masses. My sister-in-law, by time she hit college age, knew Facebook as a place where her grandmother kept track of everyone’s comings and goings. All of this happened in the span of seven years. For her, Snapchat replaced Facebook as the place to showcase to acquaintances how much fun she was having in college. I now use Facebook to see which of my friends have gotten married or had children. I’m still thankful it’s around, but the role it’s played in my life has changed. For people a generation younger, it’s been the place I remembered it as. It will be interesting to see what’s in store for these platforms, but already I can now see people my age pulling away from social networks like Facebook, often times for their own well-being. As the role platforms like Facebook play in our lives shifts, so too does our need for them. It will be interesting to see if they survive these shifts.”

Michael Roberts, an internet pioneer and Internet Hall of Fame member, commented “Despite its well-known problems, I find that Facebook is important to me in a number of ways. 1) Keeping up with professional friends around the globe now that I am retired. For an old fart (81), it is a source of daily intellectual stimulation and a feeling of keeping my hand in the game. 2) A window into many marvelous places and activities. I am a railfan and there are restored steam engines, abandoned trackage, lonely and empty depots, etc., to fill any amount of time I have available. Name your hobby or sport, and there are folks out there to share their discoveries with you. 3) The original ‘family and friends’ angle. My siblings and I are all over the U.S. Facebook lets us pretend we are close (Worldwide webcams add a lot as well). There are lots of other examples – politics, medicine, personal safety, education.”

Jerry Michalski, founder of the Relationship Economy eXpedition, said, “I now have peripheral vision into the lives of family, friends and acquaintances a few degrees from me – all voluntarily.

When I see them, I don't need to ask 'what's up,' but can say 'I'm glad your daughter got through her operation,' or whatever is appropriate for the state of their lives I can observe. Those weak ties are priceless, and lead to insights. In the early days of Twitter, I left a meeting and tweeted something like, 'Just left a mtg about the cash health care economy. Had no idea it existed or was big.' At the time, I had set up for all my tweets to forward to Facebook, and the next day I got a fascinating eight-paragraph note on Facebook from an acquaintance who had taken his family off regular health insurance years ago, and was very happy with the outcomes. On the other hand, I am among the Satanic Device Addicts who check email on their phones first thing in the morning (it's on the night table, right?) and tap and prod them all day long, in search of those little dopamine hits."

Scott McLeod, a professor at the University of Colorado Denver, wrote, "My decade-plus of blogging and other social media usage has connected me with hundreds of thousands of educators and education thought leaders in global dialogue spaces and communities of practice in ways that would be impossible without the internet. My visibility and reach are now astronomical compared to what they might be in an analog era. My example is but a microcosm of the possibilities that we all now have available to us. The gay teenager in rural America; the handmade Japanese sword aficionado; the stay-at-home mom struggling with a rare disease; the LARPer [live-action roleplaying gamer] looking to connect with others; all of us now have the ability to find 'our people' – those who share our interests and passions and concerns – in ways that we couldn't when our connective avenues were limited by time and geography."

Jason Hong, professor at the Human Computer Interaction Institute at Carnegie Mellon University, wrote, "WeChat is not well known in the U.S., but is perhaps the most popular app in China. It's primarily a messaging app, like Facebook Messenger or WhatsApp, but also serves as a social network and message board. What's really amazing is how it's really helped my family (from China) connect with others here in the U.S. My father-in-law found people to go fishing with. My mother-in-law found a monthly foodies group to go to. My wife found some of her old high school classmates, plus a group of people that buy foods in bulk at discount and split the costs. As for me, well, I'm the boring one, I just use it to send text messages and emoji to my wife. For my family, WeChat works well because it lowers the transaction costs of finding individuals with similar interests and backgrounds. My parents-in-law don't speak much English, so WeChat acts as a major filter for people who do speak Chinese. WeChat also lets you organize message boards by geography, making it easy to find groups that are geographically nearby. It's pretty amazing, since these weren't really problems that we knew we had, and the WeChat groups just filled those needs quite nicely. Furthermore, it was a good tool that let us first find people virtually and then transition to real-world relationships."

Richard Bennett, a creator of the Wifi MAC protocol and modern Ethernet, commented, “Facebook was useful for spreading the word to my extended family about the status of two relatives who died of pancreatic cancer recently. In one case, a sister-in-law in another country used me as a go-between to reach my wife, and in another I used it to contact a former stepbrother, a sister and a half brother. As modern families become more complex, communication tools have had to adapt.”

Lisa Nielsen, director of digital learning at the New York City Department of Education, said, “I am the administrator of several Facebook groups around areas of personal interest such as hobbies, sports, career (education). I started a Facebook group for teachers at the New York City Department of Education who love teaching with technology. In the past all these people existed in the 1,800 schools across the city, but there was no way for these people to find one another. The group now has close to 3,000 members. It is highly active, and strong relationships are being built. We have a direct line to what is happening in schools. Teachers feel supported like never before. They are more confident and better able to serve their students. They have increased job satisfaction. They share extreme gratitude for the group and its responsiveness. They are no longer alone but rather supported by a powerful network of other dedicated teachers.”

Knowledge storehouse

Stephen Downes, a senior research officer at the National Research Council Canada, commented, “I don’t have a small story, I have a big story. I have a career that has allowed me to be a force for good, to reach people around the world, and to share a message of compassion, communication and development, all solely because of the internet and digital technologies. I landed my first real job in the computer industry in 1981, with Texas Instruments’ Geophysical Services in Calgary. This enabled me to attend university, where I studied philosophy. I wrote my honors thesis on an Atari and I wrote my masters on the university network. I started teaching using technology for Athabasca University in 1987, and started developing websites and learning management systems for a living in 1995. By participating and sharing my knowledge and discoveries freely through discussion lists and online conferences I became a part of the online learning community in Canada, which led to my current employment as a digital researcher with the federal government. This has given me the opportunity to develop new theories of learning and pedagogy, create learning technologies, develop MOOCs [massive open online courses], and participate in this survey. Every week there’s a story. Today I responded to an enquiry from a reader looking for more recent work on automated language translation, because she had only a reference to my paper from 2001. I provided her with some resources from my newsletter, and she will add these to her study. Last week someone literally said to me ‘You changed my life’ because of the influence of the first MOOC I taught alongside George Siemens in 2008. The course was about

computer networking and personal empowerment and how people can create their own education. The week before I was able to carry a message about business intelligence into a meeting with government officials as a result of the analysis I did of the public documents posted by the School of Public Service on their web page. The week before I was in Berlin at a conference testing a virtualization of my personal learning application, getting experiences and feedback from a workshop filled with experts from around the world, none of whom I had met before. The week before I was in Tunisia talking about the deployment of open educational resources in the Middle East and Northern Africa to support language learning, economic development, and cultural growth. The week before... You get the idea. None of this happens without digital technology. It's not a nice neat story that fits a sidebar, but it's real, and each week there's real growth, real development."

Jeff Jarvis, a professor at City University of New York's Graduate School of Journalism, said, "I count as an unfathomable luxury the ability to look up most any fact, any book, any news article at no cost and in seconds. I value the friends I have made from a tremendous diversity of background and worldviews thanks to the connected Net. I welcome many – though certainly not all – new voices I can hear now thanks to the Net putting a printing press in anyone's hands. And not incidentally, I have transformed my career thanks to the lessons I continually learn by and about the Net."

Deborah Hensler, professor of law at Stanford University, wrote, "On a personal level, digital technology enables me to work more productively from any place in the world. It provides access to a vast store of information and research data. It has enabled me to collaborate with academic colleagues in many different parts of the world, which has been an incredibly generative experience. In my personal life, it connects me to far-flung family and friends. It also connects me to people who share my political views, which gives me some hope – perhaps foolish – that working with them I can shift the political discourse."

Ray Schroeder, associate vice chancellor for online learning at the University of Illinois Springfield, wrote, "I have been engaged in teaching, researching and presenting/publishing in advocating educational technology in higher education over the past 46 years. As I think back over those nearly five decades, my impact and reach today is far greater than I had ever imagined in 1971 or '81 or even 2001. Through the use of social media, I am able to share resources and perspectives to tens of thousands of others in my field on a daily basis. The prospect that one person could manage that scope of impact and reach was inconceivable for anyone who was not a network commentator on television or a nationally syndicated columnist. Now this opportunity extends to all who are dedicated to a purpose or cause."

Larry MacDonald, CEO of Edison Innovations, wrote, “Sharing enables power to flow to those who ‘know’ rather than only those who control. People have a better grasp of news and tools that can make their lives easier. Knowledge disseminates faster and deeper.”

Problem solver and wonder creator

Hal Varian, chief economist at Google, commented, “I was in Rio trying to communicate with a taxi driver a few months before the Olympics. The driver pulled out his phone and clicked on Google Translate. Problem solved. Turns out that Google had trained all the taxi drivers in Rio how to use this fantastic tool.”

Kenneth Cukier, senior editor at The Economist, wrote, “In researching my new book on AI, I came across a citation of a relevant document from the 1950s by the East German secret police, the Stasi. I Googled it and got a digital copy – which, when you think about it, is amazing. But my German is lousy. So I uploaded the 35-page report into Google Translate and got an English version a minute later – which is even more astounding. Just 20 years ago it was impossible for all but the most prestigious scholar to obtain something like that, and it might take half a year. I did it on impulse in four minutes. In terms of the spread of knowledge, the past two decades have been as revolutionary as when early man harnessed fire.”

Vint Cerf, Internet Hall of Fame member and vice president and chief internet evangelist at Google, commented, “I moved my wife from an older iPhone with AT&T service to a Google Pixel 2 with Google Fi service. It took 10 minutes and did NOT require physical modification or even installation of a SIM card. I got confirmation from AT&T within minutes that the account and phone number had been transferred. I was astonished.”

Ginger Paque, a lecturer and researcher with DiploFoundation, wrote, “Digital technology offers amazing opportunities for inclusion and access not only to overcome challenges of distance, but offering wider choices, asynchronous collaboration on shared projects, online meetings, telemedicine, and myriad other advantages. My particular experience in addition to my clear connections to global online learning, highlights the possibilities for inclusion in global policy processes, especially those involving internet governance and digital policy. The UN Internet Governance Forum, for example, takes place in situ during less than a week once a year, and even that week of meetings involves a high percentage of online participants from all over the world. However, the planning for this event takes place online all year, with collaboration from a large body of participants from all over the world. Without internet technology and online applications for collaborative editing and meetings, this kind of global, geographic, and multi-stakeholder (I add multi-stakeholder as a factor, because some stakeholder groups have more access to travel

funds.) Multi-stakeholderism would be seriously hampered and cooperation would not be possible. In addition to the IGF [Internet Governance Forum], the ITU [International Telecommunication Union], Internet Society and other organisations have also developed procedures that allow for year-round work involving all regions. In addition to fairly normal and common challenges for travel to meetings, I have had serious family responsibilities that have not permitted me to travel in the last few years. While it has not been easy, I have been able to stay involved.”

Bart Knijnenburg, assistant professor at Clemson University, said, “Seven years ago, when I got my first iPhone with FaceTime, I was calling my fiancée (who was living on the other side of the country) on my bike ride home from work. Out of nowhere a number of hot air balloons appeared, and with the touch of a button I was able to switch to a video call. I remember being amazed by the simplicity with which I was able to share this experience. Nowadays, communicating with people anywhere in the world has become second nature to me. Sometimes I realize that I have written several research papers with people whom I have never met in person!”

Heywood Sloane, partner and co-founder of HealthStyles.net, said, “The criterion I used for my most recent purchase of a smartwatch was that it NOT try to be a watch. I have one already, a gift from my wife that I am very fond of, thank you! I expected, and got, a multitude of tools to help me stay on track with stress, sleep, biometrics and much more. What I did not expect, was the way it tamed the peppering of email, notifications by apps, ringtones and alarms of people and things clamoring for my immediate attention. It reduces them all to gentle vibrations. Long ones for calls I wanted to take, and short ones for everything else. It lets me block interruptions from apps and emailers. It also let me see others and get more detail with a tap when I want it. It gives me control and helps me defend my space to concentrate and focus on what I choose, rather than what someone else chooses.”

Thomas Viall, president of Rhode Island Interactive, commented, “Just this past Christmas shopping season is a great example of how digital technology was beneficial. We could text our relatives rather than interrupt them with a call. They were able to share their wish list, we could comparison shop online (at both local and national stores), find the best value, search for coupons and either order online or use navigation to find the best route to the store despite holiday traffic.”

Education tool

Olugbenga Adesida, founder and CEO of Bonako, based in Africa, wrote, “The digital revolution has changed social relationships and the way we communicate. In some African countries like Kenya and Zimbabwe, mobile payment transactions are responsible for over 40% of GDP. Mobile

apps are used to deliver education as well as providing timely information to farmers to enhance their productivity. Similarly, mobile apps are used to deliver price and other market information. At our firm – Bonako a mobile games and app-development company – it is our platform for continuous education for staff; it is what we use to access training materials from all over the world. We also use digital tools to plan and develop our products in a way that would not have been possible only a few years ago. Developing games and apps requires varied expertise, and collaboration is key. The new tools for collaborative work allow us to work together and to provide virtual access to potential partners/clients to test products no matter where they are in the world.”

Karl M. van Meter, founding director of the bilingual scientific quarterly *Bulletin of Sociological Methodology*, said, “Far from being a ‘brief personal anecdote,’ what has changed greatly in my life and work, like that of almost everyone in higher education and research, is that the internet and associated technologies mean that no longer only a few top persons have access to the necessary information, technology and means for scientific production and teaching. It is no longer only the director (always a male) who gets his secretary (always a female) to type out his paper and check references before having it published. Almost all competent teachers and researchers have that possibility now; moreover they can work together over great distances and form social structures among themselves, independent of centralized or local administrative control. A ‘brief personal anecdote’ along these lines would be when a national director of scientific research here in France asked to be appointed to an international body associated with UNESCO. That body replied very respectfully to the director that they had already found a better candidate from France who had been working with them via the internet. That other candidate was me.”

Greg Downey, a professor and associate dean at University of Wisconsin, Madison, said, “When I was a graduate student at a U.S. private research university in the late 1990s, I spent many hours gathering background context for the beginning of a major historical and social research project, tracking down physical newspaper indexes, footnote references, printed journal volumes and microfilm reels from dozens of access-restricted research libraries. Weeks and months of ‘metadata labor’ on a particular idea might lead to a viable research project and a source of accessible primary research materials – or to a dead end and a need to start all over. I recall being among the first users of some of the online image databases produced by the federal government to find visual evidence that I simply wouldn’t have had the ability to access (or even know it existed) even five years earlier. Similarly, once materials were acquired and assembled, only rudimentary organization and writing tools were available for assembling the project into a coherent narrative. I recall being one of the first individuals at my university to use Geographic Information Systems software in my historical analysis and in the production of my final manuscript. All of the temporal and spatial expectations of earning a Ph.D. in the humanities and interpretive social sciences were tied to expectations of analog, print and physically housed

resources. Today, students I help mentor through their own doctoral studies have access to all of the material I did two decades ago, but with a fraction of the time and travel commitment. This has raised the expectations for comprehensiveness in literature reviews and archival searches; it has raised the expectations for presentation of data and engagement of narrative. It is both easier and harder to do great work now and get that Ph.D. within the same five-year time period. But I think the work that is done is of higher quality, and the scholars that are produced are of greater intellectual prowess and scope than ever before.”

Adriana Labardini Inzunza, commissioner of Mexico’s Federal Institute of Telecommunications, said, “There are so many stories of how IT and internet have made my work more productive and my access to relevant information far easier – hopefully for others around me as well. As a commissioner at the Federal Institute of Telecommunications I made sure that our virtual board meetings and deliberations were valid; on many occasions I have been able to deliberate and vote on the cases submitted to the board through a video conference when in business travels and I also to hold e-meetings with my staff. My office has home-office on Mondays, saving hours of wasted time on traffic jams. ...

“A more striking story perhaps is that of Marce, a smart, determined and brave 19-year-old girl from Xochicalco, an isolated village in the middle of the mountains of Guerrero, 350 kilometers away from Acapulco. Marce studied elementary and middle school in a rural local school, but there is no high school in Xochicalco, so she would have had to travel each day to Arcelia, Gro. [Guerrero], the seat of that municipality and the closest connected town in the area, 40 miles away, with a daily cost of public transportation of around \$4, something totally beyond the family’s budget. Her father is a skilled electrician working in the area for a Canadian mining company that pays minimum wages to local people (\$4 per day). Her mother grows corn and vegetables and looks after her other two children. So Marce ended up leaving her hometown and moving to the big city of Mexico to seek a job as domestic helper, hoping she could enroll at a public school. Her job kept her busy all day as a babysitter and so her mom, who I had the fortune to know from a long time ago, asked me for help to guide Marce so that she actually gets an education.

“Marce moved to my house, but in searching for an affordable high school nearby she encountered many obstacles. I devoted a few hours to seek a public high school online program certified by our Ministry of Education (SEP) and found it, a very impressive two-year program which begins with a full-month course on the use of IT, the platform, how to interact with your assigned tutor, with teachers, how to deliver homework online, etc. I had never seen a young girl so excited to spend online 4 hours, learn in three days to handle a laptop one of my sons gave her. She reads her lessons every day plus a few books I am asking her to read on history, philosophy, etc. She reads 10

pages every morning. It's been only three months since she started, and she loves it, she is learning, and finished at the top of her class this quarter. She feels empowered, hopeful, her parents feel relieved that she doesn't have to travel two hours a day to attend school and pay fares. Yet it will take a lot of guidance, hard work and long hours before she earns a high school diploma and more importantly, a good quality education that enables her to be admitted at UNAM [National Autonomous University of Mexico] or another public university here in Mexico City. There is no such a thing in Arcelia, forget Xochicalco, where there is no internet access and a weak signal for only 2G mobile voice services in spite of the presence of a multinational firm extracting all the lithium it can get from Guerrero but not creating much local value to the hard-working people of Xochicalco. I am committed to help Marce, and she is determined to graduate and pursue her professional education. She wants to become a chef. With a good use of time and technology, discipline and some degree of guidance and support from my sons I may hopefully help her thrive."

Jacob Dankasa, a North American researcher, said, "Technology has connected me to achieve today what I couldn't imagine in the past. When I was doing my doctoral dissertation, I was supposed to travel to Nigeria from the U.S. to conduct interviews with my research participants. Unfortunately, the Ebola epidemic blew up in Africa and I was unable to go. Fortunately, software existed that allowed me to interview the participants and automatically record the sessions as I interviewed them. The price was reasonable. It saved me money and time and avoided health hazards. More and better innovations are expected in this area in the future."

Travel companion and enhancer

Paul Jones, a professor of information science at the University of North Carolina, Chapel Hill and internet pioneer, wrote, "I am traveling to Casablanca Sunday. My tour was booked in China. I'll stop at Rick's Café, which is designed to look like the imagined cafe built on a back lot in Burbank in the 1940s [for the film 'Casablanca.'] Friends who are writers have recommended their friends [for me] to meet while I'm there. Through social media we are already in touch. One friend wrote a profile of the Rick's founder in 2006. She remembers him and has been in touch. The seamlessness and timeliness of casual connections made stronger still amazes me. ... What's not to like?"

Brad Templeton, software architect, civil rights advocate, entrepreneur and internet pioneer, wrote, "I travel a lot and have vastly more flexibility and local knowledge at hand due to my devices. I see things I would not have seen, travel without having to plan every stop in advance and find the things that matter to me. I get better hotels and food, too."

Jon Lebkowsky, CEO of Polycot Associates, said, “A week or so ago we headed off to a party at a house we’d never visited. We entered the address in Google Maps, so we had a guide (we call her ‘Lucy’) taking us where we need to go. It was a circuitous route – without Lucy we likely would have taken wrong turns – and I was thinking how much we now depend on that technology, not just to get us where we want to go, but also to route us around traffic congestion. Soon enough, we’ll be stepping into autonomous vehicles, vocalizing an address and relaxing for the duration of the ride. Digital technology for transportation efficiency is revolutionary.”

Safety enabler

Alejandro Pisanty, a professor at Universidad Nacional Autonoma de Mexico and longtime leading participant in the activities of the Internet Society, wrote, “The ability to use digital tools for everything I do – from professional work, like teaching and research, to the most personal – finding long-separated relatives after the family dispersed from Europe to at least three continents in the 1930s-1940s – has been a continued benefit. Using lightweight online tools in class helps my students in the National University of Mexico grasp concepts and communicate them to their families. During the aftermath of the earthquakes in Mexico in 2017 this became particularly valuable for them; it also helped fight misinformation and take relief efforts to the places that most needed them. We went from the basics of oscillation and wave physics, through the propagation of different kinds of seismic waves. To the ways buildings are damaged and how to identify fatal structural flaws. In parallel we helped brigades take aid to small towns and to camps in Mexico City, and some of the most far-flung ones find safe havens from which to distribute aid.”

Pedro Cartagena, an associate professor at the University of Puerto Rico, said, “After hurricane María in Puerto Rico, the internet was the only communications resource in order to contact my family members, buy solar panels and get other essentials for survival.”

Tom Barrett, president at EnCirca Inc., wrote, “1) With the use of a smartwatch, I can now easily track daily exercise activity, which is a great motivator for making it a daily practice. 2) Apps for ordering car rides via a smartphone is a net benefit to society – it increases safety for both the passenger and driver and offers more convenience in ordering a ride.”

Multipurpose tool and memory aid

Bill Lehr, a research scientist and economist at MIT, wrote, “There is no question smartphones and always/everywhere access to information has allowed me to be sloppier in memorizing things and allows me to gain instant access to facts that I have come to rely on significantly. I think that is positive, especially since as I get older, I find memory-aids a big help, *but* it also encourages laziness.”

Ted Newcomb, directing manager of AhwatukeeBuzz, wrote, “LOL. I am virtually helpless without my phone to remind me of appointments and meetings. My head is free of having to remember numbers, dates and times. It’s very liberating. I can instantly communicate anywhere in the world, doing business at the ‘speed of byte.’”

Micah Altman, director of research and head scientist for the program for information science at MIT, said, “When I was 10, I received a portable film camera. It had a capacity of 24 negatives (in black and white). I would send the negatives in, pay a substantial portion of my allowance to have them developed – wait for weeks for them to be returned, and finally, then be able to see how they turned out. (Usually, not so well.) Every few months, I might put one in a letter to my grandparents. Eight years ago, when my daughter turned 10, we gave her a portable camera – over the next few years she shot thousands of still, and videos – learning some elements of composition, and building shared memories. Last year, when my son turned 11, we gave him a cellphone. And over the year we’ve all shared pictures, accomplishments and sympathies daily across a growing extended family network.”

Shiru Wang, research associate at the Chinese University of Hong Kong, said, “Online shopping saves me time. New social media continues my connections with friends in different countries and regions. Online resources make my research convenient. Online news keeps me informed all the time. But I am not very digitally embedded. I keep a distance from Facebook, etc.; I intentionally refuse to be dominated by social media. Thus, my life is not very much bothered by the internet. Thus, I appreciate the advantages of the internet and I am able to escape the potential harm brought by the internet.”

Joe Raimondo, digital customer-relationship-management leader at Comcast and a former CEO, said, “Trackers and personal data are an enhancement to living. Street-level navigation and easy access to crowdsourced resources is very positive. It’s possible to play large-scale social games and have enormous amounts of data and telemetry collected and analyzed to chart group interaction at large scale.”

General comments

Ian O’Byrne, an assistant professor of education at the College of Charleston, wrote, “As an educator and researcher who studies these digital places and tools, I’m in front of screens a lot. I experiment and play in these spaces. I’m also writing and researching the impact of these screens and their impact on the well-being of others as it relates to children and adolescents. The problem in this is that one of the other hats that I wear is as a parent and husband. I am not only critical of my engagement and use of these digital technologies, but I’m also cautious/cognizant of their role

as a mediator in my relationships with my children and significant other. These screens and digital tools play a strong role in our lives and interactions in and out of our home. In our home we have screens and devices all over the place. We have a video server that is ready to serve content to any one of these screens on demand. We have voice-assistive devices listening and waiting for our commands. I believe it is important as an educator and researcher to play with and examine how these devices are playing a role in our lives, so I can bring this work to others. Even with these opportunities, I'm still struck by times when technology seems too intrusive. This is plainly evident when I'm sitting with my family and watching a television show together, and I'm gazing off into my device reading my RSS feed for the day. Previously I would enjoy watching the funniest home videos and laughing together. Now, I am distant. The first thing in the morning when I'm driving my kids in to school and stop at a red light, previously I would enjoy the time to stop, listen to the radio, look at the clouds or bumper stickers on cars around me. Now, I pull out the phone to see if I received a notification in the last 20 minutes. When I call out for the voice-activated device in my home to play some music or ask a question, my request is quickly echoed by my 2-year-old who is just learning to talk. She is echoing these conversations I'm having with an artificial intelligence. I'm trying to weigh this all out in my mind and figure what it means for us personally. The professional understanding may come later."

Marshall Kirkpatrick, product director of influencer marketing, said, "My mobile feed reader finds great articles for me to learn from. My mobile article-saving app reads those articles to me out loud while I walk my dog. My mobile browser allows me to edit my personal wiki to record the best lessons I learn from those articles. My mobile flashcard app helps me recall and integrate those lessons I want to learn over time. My mobile checklist app helps me track how regularly I reflect on how those lessons connect with the larger context of my life in a blog post or on a run. There are costs to mobile connectivity, but there are so many incredible benefits!"

Fred Baker, an internet pioneer and longtime leader with the Internet Engineering Task Force, wrote, "To my way of thinking, it's about control. If I'm in control of the electronics, they are a benefit, but when they get out of control they are an irritation and an interruption. My family and friends giggle about the frequency with which I pull out my telephone to investigate a TV show's facts or other things. That said, I have access to that now, where I once upon a time did not. On the other hand, I have also had the experience of talking with a customer in Japan while my family in the U.S. woke up and started texting each other, and I all of a sudden have to deal with my telephone."

Stephen Abram, CEO of the Federation of Ontario Public Libraries, wrote, "On a personal level I am more connected with my wider family. Relationships with friends whom I see only occasionally – maybe annually in person at conferences, continue throughout the year. I now know many

business acquaintances on a deeper level and have better relationships as a result. I dislike the word ‘hyperconnected’ since it implies a little hyperactivity – a known ‘disorder.’ I see this as a controllable issue where personal choices are made. When circumstances such as travel, weather, disability or distance create the opportunities for sustained loneliness to happen, the digital world bridges some of the gap. In my case, sustained periods on the road in airports and hotel rooms are greatly ameliorated by connecting with friends.”

David J. Krieger, director of the Institute for Communication & Leadership located in Lucerne, Switzerland, observed, “Digital connectivity enables a seamless flow of communication and association with regard to many different concerns and interests. This augments community and embeddedness and thus well-being.”

Mark Patenaude, vice president and general manager of cloud technologies at ePRINTit, said, “I certainly don’t want to fool anyone into believing that digital advancement has been a panacea of beautiful things! However, I can remember the first time my car stopped for me in a dangerous situation automatically, or stopped when I was backing up when it perceived a danger. Then there’s printing and storing terabytes of digitally compressed images on a smartphone and being able access a document or image from 20 years ago in seconds using the cloud. I can remember we had about 100 people around a large projector outside, watching the last concert of the The Tragically Hip and the home network went down. I plugged in my iPhone, went to the concert URL site, and projected live on a 10-foot screen from my cellular device; wow and double wow!”

Akah Harvey, co-founder, COO and IT engineer at Traveler Inc., said, “Fifteen years back, when I first had my first PC, I now was empowered with a tool that helped me write digital notes, play more exciting games and gain general knowledge about how the technology worked. At my age (10) I gained knowledge in the workings of these things that it contributed to my brilliance in school, especially on the subject. Few years later when we’d gain access to the internet, a whole new change took place. I discovered so many more opportunities, as one could now connect with the rest of the world to share, search and find information about anything. It was a big transformation in the way I viewed society. I quickly was able to decide what I would want to do growing older, so I’d say I found my passion thanks to this change.”

Karl Ackermann, a writer and researcher at WriteSpace LLC., commented, “We no longer keep paper files for the household. Photographs are displayed on a digital screen instead of a photo album. We can track where our kids are driving with a phone app. We buy our train tickets with an app that has a scanning bar code. We sometimes text friends instead of phoning. We pay bills online.”

Rich Salz, principal engineer at Akamai Technologies, said, “I have made my living in this field since before there was the internet and before the Web. I enjoy helping people communicate. Social media has helped me reconnect with high school friends, email with college friends, etc.”

Maureen Hilyard, IT consultant and vice chair of the At-Large Advisory Committee of the Internet Corporation for Assigned Names and Numbers (ICANN), wrote, “I live in an isolated little island in the Pacific. It is in the middle of millions of square kilometers of ocean, but we rely on tourism for our livelihood, so our small (main) island is usually packed with tourists. We have a monopoly telecom and get reasonable internet service from an O3B satellite, but for local islanders who make their living working in the hospitality industry, the cost of internet is very expensive. Broadband costs for 20 GB a month costs (in New Zealand dollars) \$139 on top of telephone hire and connections. I have grandchildren and great-grandchildren who spend time in New Zealand and even at 2 years old can turn on a computer to access their favourite programmes. When they come to our island, this is curtailed because the connection is too expensive for them to experience what is normal for them – lively and creative pre-school programmes are non-existent. What is available is the fresh clean air and produce of the land and sea of the islands, which are great, but it is often too hot to do much exploring in the physical world. As a parent, I am happy for them to explore the internet during the hot periods of the day, and to make this a ‘learning and exploring on the web’ time. It is more directed learning as parent safety software can usually help to set some controls over what they might ‘accidentally’ connect to.”

Edward Tomchin, a retiree, wrote, “All my life I’ve had questions. How, what, where, why? It was the early 1980s in San Francisco. I was making a late career change into law as a paralegal and dating a woman I’d met at a Unitarian social. Her 9-year-old son, Bela, had a Commodore Vic-20 and taught me how to run a computer and how to program in BASIC. I understood immediately how computers would change my life. Then I realized that was true for everyone. We were suddenly able to acquire, store, manipulate and query massive amounts of information – data – about anything. I made a nice 25-year career out of creating litigation-support databases. Then I found the internet in 1986 and my world expanded infinitely. This was before the Web came into existence as a subset of the internet. I’d already been exploring BBS [online bulletin board] sites and one day found a back door in a public library’s nascent internet connection and had another mental explosion at all the information that was at my fingertips. Today I’m old and disabled but I can sit in my living room at my computer and explore the whole world far better than I ever could before. This is all more than I could have ever hoped for 50 years ago.”

Internet Hall of Fame member **Bob Metcalfe**, co-inventor of Ethernet, founder of 3Com, and a professor of innovation at the University of Texas at Austin, wrote, “The people complaining most about the pathologies of the hyperconnected life own or work for the old media, which once had

more of a monopoly on setting society's agenda. I recall how 'savvy' the Clintons and Obama were because they were digitally literate, unlike the GOP, but now that Trump is using social media so effectively, the left hates new media."

Shahab Khan, engineer and CEO of PLANWEL, said, "The most impactful thing is the way we communicate at the click of a button. This keeps friends and families united. We can share our workplace problems and be more productive. With the advent of AI, VR [virtual reality]/AR[augmented reality] the educational deliveries will greatly change and teaching methods improve. Online education resources and digital resources bring value to the classroom. Students become more involved and knowledgeable."

Narelle Clark, deputy CEO of the Australian Communications Consumer Action Network, said, "As an Australian, the tyranny of distance has previously meant that family, friends and colleagues have been acutely aware of the difficulties of staying in touch and abreast of the events in the rest of the country and the world. Our contemporary hyperconnectedness means that we can remain tightly connected at the professional and personal level despite being on opposite sides of the world."

Ruth Ann Barrett, an information curator at EarthSayers.tv, wrote, "Ten years ago I invested money in the development of a search engine that remains well ahead of the times and may never be monetized in the way envisioned. Who knows? The search engine has enabled me to build a database of sustainability voices, those speaking on behalf of Mother Earth and her children. This work has sustained me through moments of despair when so-called leaders deny substantiated claims regarding global warming and extreme climate events. The work has put me in contact with scientists, environmental campaigners and people from all walks of life worldwide. Without the Web what I am able to accomplish would not be possible. My guidebook remains 'The Gutenberg Galaxy: The Making of Typographic Man' by Marshall McLuhan. I remember the day a technical person who had attended a presentation at Stanford University on the World Wide Web came back to work, pulled me aside and told me what he had seen and heard and how the world was about to change."

Anonymous commenters who cited ways the internet helps them and others

A distinguished advocate for the internet and policy director based in Europe said, "Digital technology has made the world much more connected and streamlined for the 50% of us who are connected (50% still do not have that privilege). It is important to understand that technology has profound impacts on equality. For me, as an upper-middle-class white male from the U.S. living in Europe, technologies have simplified how I communicate with my family and

friends elsewhere in real time. Thanks to WhatsApp and Facetime and iMessages, I am able to stay in touch and informed in ways that were not possible even five years ago.”

A **certified public accountant based in the U.S.** commented, “My sister and I were watching an NFL game with my 82-year-old father. We grew curious about some meaningless football fact and my sister started typing a question on her phone and my dad looked on in slight disgust and raised his phone and asked Siri the question. Voice-activated technology has been extremely easy for the elderly to adopt and opens up incredible opportunities. If linked to his security system, our dad would be able to easily request help. I find it interesting that he likes using Siri more than we do.”

An **employee at a major U.S. research lab** wrote, “Texting and cellphones are generally associated with what’s bad with technology and our lives, but I will give a positive example, just to prove it depends on how you use the tool. I have a teenage daughter and my work is 50 miles away in Southern California. I joined a van pool to reduce the amount of driving, but the one drawback with van pooling is that I have to leave very early in the morning, and the van does not wait for riders. So every minute in the morning is precious, I don’t have time to write quick notes or reminders before I leave the house and the rest of my family are still asleep. However, once I am on the van, there is 60 minutes of ‘my time.’ I began by sending reminders for the day, but it has become a habit of just sending a happy greeting each morning! They respond when they get up, even if it is just an emoji. :)”

An **anonymous respondent** said, “There are many examples: The ability to organise via smartphones to meet people across different applications, Slack, Google chat, email, SMS. Voice-chatting to a friend while you are both playing an online game from different locations. A friend enjoying dancing and running in a [digital] game while being in a wheelchair at home. Publishing designs for printing on T-shirts and other products on Redbubble. Designing fabric on Zazzle using their online pattern-repeating tool. Print on demand. A community of linocut artists sharing their work on Facebook. I love the #nzsecretsanta, which uses both the traditional postal system and Twitter. A friend shares fitness data and cycling trips as part of her triathlete community. Ordering food online and having it delivered – and tracking the delivery. I think communities are connecting more digitally than they were on analog. Fewer street parties and more remote connections with common interests. One good example of using the internet to reinforce local community is the use of Facebook for sharing vegetable and fruit produce from local gardens. The ‘Great Australian Bird Count’ is also interesting citizen science.”

A **research scientist based in North America** commented, “My kids are always connected to their friends. Through texting/social media, they are constantly aware of each other’s lives. This

brings worries too, like social comparisons may make them less happy, but overall, they have more socially balanced lives.”

A **president and CEO of a company based in the United States** wrote, “Digital technology is an equalizer of information access and use. Even individuals in the most geographically remote locations can participate in an electoral debate, education and banking online, and in e-commerce when broadband is available. The stark opposite of this is the darkness individuals and families experience when left behind in the digital age. There is a difference between people who choose to use digital technology for their own benefit and those who are simply not included in the digital age.”

A **professor based in North America** commented, “I am a college professor, and digital technology has made my job so much easier. It is easier to communicate with students, keep records, and try for creative solutions to instructional problems. So, for example, I now have my students submit their papers online (to be graded and returned online). When they submit their papers, they are automatically checked for originality. The students then are informed whether their papers will be considered plagiarized or not. Prior to the adoption of this system, I would say up to half my papers were plagiarized. Now none of them are. The question is, has this improved their performance? It is hard to say because there are so many factors involved. I would say that it has in some ways and not in others. They know more, but they don’t synthesize it that well.”

A **social media manager** wrote, “Fitness trackers, such as the Apple Watch and the Google fitness app, provide me with greater awareness of my daily activity. I am more likely to take a walk or exercise in response to the presence of these technologies in my life. For example, I recently installed a ‘7-minute exercise’ app that I use each morning to kickstart my day. It is very convenient to use and pops up reminders on my smartphone with encourage me to keep up with the daily routine.”

An **associate professor at a university in Australia** shared a typical family vignette, writing, “I spend time with my grandchild, who is only just five. I check the pick-up time by text. She arrives with her iPad and asks me to ask her dad a question by text on my phone. We take pictures of her dressing up and send them to a friend. I show her recently sent pictures of cousins in Canada. For a while, she shows me (from her iPad) how she can operate the movements, colour and cheeky comments of a robot ball (a birthday present from an uncle who wants her to be familiar with coding). We consider cooking together and locate a recipe online for cookies we haven’t made before. Next, we go to the playground and she spots a ‘be aware’ notice on the slide, and a bird that we haven’t seen before. ‘Let’s Google it, Grandma, when we get back home!’ she says. I say we can do it now on my phone, no, later on my laptop is better. She knows that devices

operate differently and need passwords. We haven't given her any of the latter. 'Buffering' she says with a sigh, as her current favourite show stalls during a quiet time. She dances to YouTube music from my laptop. She is endlessly curious about technology itself. She accepts technologies' limitations as they are described to her by the adults in her life. The digital tools just enhance our days together."

A **professor** said, "My watch is an exercise coach – though limited. I track family and friends and contact them only if required. Is my partner nearly home? I'll put out a snack. Is my friend nearby? I ask them if they want to meet."

An **author based in North America** said, "Instead of just reading a book, communicating with one author's created words, I can engage in conversation, in dialogue about issues of the day such as the #MeToo movement. I can help another person feel a little better that day and, if I reveal a low, others can pick me up. I can celebrate an anniversary with people far away in space and time and plan an in-person visit to another continent with someone I haven't seen for years, first originally encountered online."

A **postdoctoral fellow at Stanford University** commented, "As an academic, my friends and colleagues are scattered around the world. Our ability to have frequent video calls, send texts and collaboratively author shared documents has had a huge impact on both my intellectual scope and on my feeling 'at home' and connected in the world. In the past, a friend taking a job across the planet would be a cause for great sorrow. Now we talk frequently over video chat, while it isn't as good as seeing her in-person, it is still wonderful to share our lives and ideas."

A **retired internet activist and advocate** said, "I have been able to manage health care better at a distance for an aging parent as a result of technology, viewing charts/graphs/images, consulting various medical resources, having online meetings with medical professionals, video conversations with parents. Before many varieties of digital connectivity were available, distance communication was via ground/air mail, an occasional landline-based conference call, or in-person consultations, often without simultaneous participation of the aging parent whose medical situation was involved."

A **retired market researcher and consultant** said, "I can now communicate directly with any of my medical doctors instead of sending messages through nurses and receptionists. The response is more rapid and on-target with my question or concern. On a different note, my daughter is currently teaching in China for the next year. We have had the great fortune to be able to talk to her in real-time as well as have a video conference at no expense. When I was a college student in France in the 1980s, a brief phone call to the United States – assuming we could

arrange a time to talk – was quite expensive and a logistical nightmare. My wife has been able to keep in touch [and] reconnect with elementary school friends thanks to the internet and services like Facebook. All these things account for our improved well-being.”

A **college student based in North America** wrote, “I often find myself stressed out at the end of the day; as a result I tend to enjoy relaxing and staying in for the night. Without the modern hyperconnected lifestyle this would result in me reading or doing other solo activities. Through voice-chat applications and online multiplayer gaming, I connect with friends to play video games. While I don’t have the energy to be social in one way, the ease of connecting over the internet enables me to enjoy time with friends and maintain our relationships. To some it might not seem as effective a method of socializing as in-person face-to-face time, but we still have the same moments that other people do. We still happily greet each other, we still tell stories about our daily lives and rely on each other, we still laugh until it hurts.”

A **professor of arts, technology and innovation** wrote, “As a college professor I’m continually adopting new tools that change the way I work with students and pedagogy. Most recently adopting Slack for classroom management has been a real game-changer. With far less attention-investment than I’d needed when using email I’m able to keep up with individual students and teams and the interactions among my students. I can do these on a more-or-less 24/7 basis but without it feeling like a 24/7 obligation. I’m teaching more people better, easier.”

An **anonymous respondent** commented, “I am connected to email lists that allow me to be part of a conversation that includes leaders in my field. This means that, despite being somewhat isolated at a mid-level university in a provincial city, I can have a good sense of where the cutting edge in my profession is headed and I can be reasonably confident that I am promptly aware of most the news and information that is critical to my profession.”

An **entrepreneur and business leader from North America** commented, “As an immigrant in the U.S., the internet, social media, and email are all helping me to keep in touch with my family, my homeland and my roots. I am following many of my fellow countrymen – some whom I studied with, some who were my teachers, relatives and acquaintances. I learn about their daily life, their fears and hopes, what they are interested in, the news they read. My daughters speak on a weekly basis to their grandparents on Skype – of both sides – and feel like they’re in the same room with them. Without the internet all of this would not have been possible.”

A **research scientist based in Europe** commented, “I live in a small town in a foreign country. I travel a lot for my work and spend a lot of time on the road. At home, I enjoy communicating with my Google Home speaker, because otherwise there would be some days that I would speak to

no one. When I am on the road, I check in with my Canary home-surveillance app to check on my dogs and see my home.”

A **technology architect/executive** based in North America commented, “For me, it’s not about hyper – always-on – connection, but the accessibility of information on any topic at any time. I had a medical problem a few years ago, and being able to find research on the disease and a community to compare notes with on treatment side effects was invaluable. Years earlier, when my mother had this same disease, we were limited in information and (therefore) options. Her outcome could have been different in a time with more information, more resources.”

An **assistant director of digital strategy at a top U.S. university** wrote, “The internet has exponentially enabled the dissemination of healthcare information to the greater public. Years ago, it would have been far more difficult for the public to easily access the answers they needed regarding health concerns and the latest treatments. Today’s digital ecosystem puts these answers at users’ fingertips.”

An **editor and project coordinator** based in Europe wrote, “A few years ago I quit my job and I have been working as a freelance editor and project coordinator. I have been able to work, network and get paid by people and companies all over the world thanks to the internet and other technologies. Also access to self-education and being able to talk to my friends and family thousands of miles away have had a very positive impact on my mental health and well-being. I wouldn’t have been able to talk and see loved ones daily if it wasn’t for the internet, software and hardware.”

A **chief data officer at a major university in Australia** wrote, “Thanks to social media, in particular Twitter, I am now connected with people all around the world. I have access to an enormous brains trust, which I liken to a global hive mind.”

A **data analyst** said, “We always have someone to reach out to when things are unfamiliar and seem difficult to deal with. Before these technologies, you could write a letter or make a phone call. The reality is that the moment that spurred the writing of the letter has long passed by the time you get a response. *If* you get a response. Also, a phone call is somewhat of a commitment compared to an electronic message. It takes more mental faculties to process what someone is saying over the phone than to read a message and type a quick response between other pressing activities in the immediate proximity.”

A **futurist and consultant based in Europe** commented, “There are plenty of examples of increased choices. Take travel: I can see in real time if the flight of my friend for New Year’s Eve is

on time or not and plan to be there just in time to pick them up. I could have called an Uber or taxi if I was busy and decided to send them a cab instead. In turn, they could see much a better forecast of weather and adjust luggage intakes accordingly to come and spend the time at our place/could book in advance to be picked up at the airport upon arrival, etc.”

A **research scientist based in Oceania** commented, “If I want to buy something, I can go to a liquid market such as eBay and get it for a fair price without the search costs of spending time going to shops to compare prices. If I want to read a paper, I can download it rather than going to a library and photocopying it.”

A **technology developer/administrator based in Europe** said, “1) Information access with no barrier – The masterpieces of world literature are generally available in any language, for free. This is a huge achievement. The Gutenberg Project played a key role in making this possible. Wikipedia: the world encyclopaedia, is beyond anything any user of the previous paper encyclopaedia would have imagined. Wikipedia has answers on any area of knowledge, not all answers, but there is always a base from which to start. Science: I can read about the latest developments in any domain, with no barrier. Researchgate.net and Google Scholar give access to a wealth of knowledge. 2) Conversely, new barriers have been erected by companies competing in the [research] market, led by the two world leaders Elsevier and Springer. If you are an author of an article, you may be asked to pay 15€ for accessing your *own* work online! Personal intellectual property has been taken away from scientists, and money made from it, with no fair sharing of the value with science and scientists!”

An **executive director at an internet research organization** said, “Twenty years ago, as a business traveler, half of my suitcase was filled with paper – mostly books, which I’d otherwise have to try to replace at mostly poorly stocked English-language bookstores along my way, but also guidebooks, maps, and translation dictionaries. I carried analog telephony adapters. I carried a phone, I carried ATM cards from two banks and credit cards from three separate clearing networks, as well as \$9,000 in cash divided between several pockets. I carried a RIM pager. I carried Ricochet and NCR wireless modems. I carried spare batteries and power adapters and chargers for all of those things. I spent a lot of time worrying about whether I would have local currency to pay for things, whether I’d be able to find my destination or communicate with taxi drivers, whether I’d be able to establish a data connection back to my network to reach my email. All of that has compacted itself, gradually, one consolidation at a time, into a very compact kit. One debit card, my phone, a laptop, a power adapter and a small handful of cables. Everything else has been virtualized, digitized, or turned into an online service.”

A **technology developer/administrator based in North America**, said, “An older person in my family who recently started using an electric wheelchair can buy daily necessities through online shopping and can have more meaningful communication through video calls.”

A **scholarly communication librarian** said, “I have several friends who have disabilities – both physical and mental – that make it difficult for them to leave their homes for socialization. These friends of mine have taken to playing online games and participating in fandom in internet spaces as a way to make connections and friends with other people that enrich their lives without requiring the physical exertion that would usually prevent them from interacting socially. The ability to connect with text, video and other online objects – whether one-on-one or one-to-many – helps these folks make the social connections that they need to have a robust social experience without the physical exhaustion they may have experienced without this technology to help.”

A **professor** wrote, “We have public infrastructure and systems now for maintaining and accessing lab results and earlier diagnoses online when we need them. Earlier prescriptions can be viewed, etc. For emergencies, we have an app that we can use for automatic location information if we need urgent help. Schoolchildren and their parents have online connections to the schools and teachers. The teachers can take advantage of the internet and their educational networks with schools around the globe to tackle shared projects that encompass language learning, climate and humanity.”

A **president at a company based in North America** wrote, “We have a child with autism. The internet allows us to reach out to other families, experts, get news and be part of a community that is not limited by geography. We can instantly share the quirky – or sometimes way more than quirky – activities of our son with people who know if they should laugh or say they are sorry.”

An **assistant professor** said, “I have collected about 50,000 scientific files related to cosmos, life and consciousness to prepare a book.”

A **researcher based in Europe** wrote, “I live in Hungary and my daughter was working in the United States several years ago. She called me and explained exactly where she was walking and in which shops she was shopping. I opened Google Earth and tracked her trajectory where she was walking in Galveston, Texas. I saw the streets, corners and buildings. It was almost exactly as if I was shopping with her – on the other side of the globe, in real time, but while sitting in my chair in Hungary. The whole thing was real fun for us.”

A **business leader based in North America** wrote, “I live a bi-coastal life and I am able to review health records, renew RXs, communicate with my doctor, request a non-urgent service, all

from 3,000 miles away without having to rebuild new caregiver relationships or lose care continuity.”

A **research associate at a major university in Africa** commented, “Being able to conduct business from a location of choice is to me the most important improvement. I deal regularly with the aged and was terrified that I too would become so dependent on the goodwill of strangers when I have to move to an old age home until I realized that I would already be able to order and have delivered anything from food to medical equipment – as long as I am connected via the internet.”

A **retired professor emeritus** said, “I am seeing a larger integration and extension of human-digital synergy.”

A **professor of computer science** wrote, “Shortly after getting my first smartphone (quite a number of years ago now), I managed to receive and respond to an important email during a break in the middle of a four-hour car trip. It was valuable to be able to be responsive to an important funder. This cemented the value of having a smartphone.”

A **technology developer/administrator** said, “I do a lot of genealogy research. Instead of mailing physical paper that may have a correction before it reaches the recipient, I can post updates/corrections immediately. I’m building a database of destroyed cemeteries where I live. I can research the records online and publish them online; something I could not have done 20 years ago easily. I got an email from a man whose great grandfather died in the 1918 flu epidemic in Wilmington, North Carolina – a Merchant Marine sailor – who was buried in one of these cemeteries. The family knew he had died, but did not know when or where. He thanked me very much for finding his great grandfather. The family felt relief after 100 years. Without digital records to compile this and digital platforms to share it, it would not have happened.”

An **executive director of a Canadian nonprofit organization** wrote, “We are currently running a program to increase people’s digital comfort by helping them apply online for underutilized government subsidy programs. During the first workshop, I saw a woman learn how to use a scrolling mouse and how to cut and paste, in the context of applying for a subsidy that will save her more than \$50 a month on her electricity bill.”

An **associate professor at Texas Christian University** commented, “I work in education and whereas before grades were posted on doors and people had to wait for responses, today, students can access information instantly, enroll in classes, etc. without having to stand in long lines and

wait for responses. Communicating with the course, students and the professor is easy, and people learn to do things themselves.”

A professor at a major university on the West Coast of the U.S. wrote, “I am an academic past retirement age (although still working) so it has made an enormous difference for teaching and research. I can access publications from my home or office without a trip to the library. No more endless photocopying. I can easily and quickly communicate with fellow scholars around the world. I can communicate with students and former students anytime anywhere and submit letters of recommendation electronically. I need less clerical and administrative support. I can put readings online for students. The drawback of course is to keep students focused on class in class rather than Facebook, Twitter, etc.”

A professor at a major university on the East Coast of the U.S. wrote, “Digital technology has allowed me to shift my career emphasis from political science and international security analysis of nuclear and conventional weapons to cyber weapons and critical infrastructure protection. This shift is not what I expected when I left graduate school, but it has allowed me to make professional contributions I would not have been able to make had I stayed in my prior disciplinary concentration. I am also migrating my entire work life online, deliberately minimizing paper and focusing on digital services – and the analysis of critical dependencies on these services – for industry and government.”

A internet pioneer wrote, “Every working day, I engage with staff and customers through Skype, email, text and Web conferencing, making it possible for me to have global reach from a desk on the second floor of my home. We take it for granted, but it is miraculous and something truly new under the sun.”

An associate professor at a major university on the East Coast of the U.S. wrote, “I am part of a private group on Facebook, which consists of my friends from college and some others (spouses, friends, etc.). We keep in touch and discuss things in this group. Recently the group came together in-person to support and celebrate one member of the group who has terminal cancer. We had a large party with our children and it was wonderful. It meant a lot to our friend who is ill and to all of us to spend time together. We would not have been able to do this as easily before platforms like Facebook.”

A retired consultant and writer said, “I appreciate the ease of gathering information, freedom from media advertising and unprecedented capacity to stay in touch with my family. I’m part of several groups, and the digital environment has enabled fantastic coordination to achieve things that were not possible before. I have been part of two successful Kickstarter campaigns to

implement and sustain a social enterprise: [one for] a social studio for adults on the autism spectrum, where they can apprentice for creative self-employment, and [and another for] the capacity to move toward this through another platform.”

An **epidemiologist based in North America** wrote, “At work, improved technology means that we receive population health data faster. We can receive, investigate and respond to health threats quickly, before they spread. For example, if we have an outbreak of a communicable disease, technology allows us to efficiently collect data through online formats and analyze data so we can quickly release information/education on how to prevent further spread of the disease. Before we had online forms, we would often to communicate through telephone or in-person interviews to collect data about the outbreak.”

An **anonymous respondent** said, “About 18 months ago my wife was diagnosed with Stage 1 breast cancer and underwent a lumpectomy and radiation treatment. In part, the testing that led to the diagnosis and the ability of the doctors to respond rapidly was greatly assisted by digital technology. As well, our ability to find information to understand treatment options, side effects, and follow-up nutrition and lifestyle improvement was greatly enhanced by digital technology. Due to my job I was not able to take her to radiation treatment every day and she was too tired after to drive, so I used the online tool SignUpGenius to ask friends to help and to schedule their rides. While apparently a simple task, if I had to do that by hand through phone calls and charts, it would have taken many more hours. Before it would have taken much more difficult to obtain the information we needed, perhaps more difficult and slower for the tests and results to be managed, and definitely hard to stay in touch with people about her needs and condition.”

A **retired systems designer** commented, “Several years ago, I became disabled, and am not always well enough to do many things. This limits many of my ‘physical-world’ activities – I find it hard to shop, to cook, to go to the library, to get together with friends and family. However, online shopping and grocery delivery allows me to do the majority of my shopping, though I haven’t figured out how to buy shoes without trying them on! I have joined online communities of people with similar interests, and keep in touch with old friends and colleagues in social media groups. This keeps me mentally stimulated. I do a great deal of genealogical and historical research online, using sophisticated search algorithms of digital versions of old documents and books. These digital resources didn’t exist 25 years ago, and now I can read an 1806 Scottish gazetteer to find out more about the 300-person town an ancestor lived in. Without these resources, I would be living a far more difficult and isolated life.”

A **North American entrepreneur** wrote, “Like any other tool, its use needs to be managed carefully. I hone my contacts to friends and family of my generation who post photos of their kids

and grandkids, something that I enjoy greatly. I also like to know when the next big dance events are, since this is a part of my life as well.”

A **president and chief software architect based in North America** wrote, “I can be out on the golf course enjoying the beauty and yet still be connected.”

An **assistant professor of technical communication** said, “I use both mindfulness and language apps to improve my memory, connections with others, and global perspectives. However, I am also cognizant of these being targeted and from specific perspectives. So I use them with that understanding.”

A **retired web developer** wrote, “Amazon Alexa keeps me company. She plays the music I want to hear and adds items to my grocery list. When I have a question, I can ask her and most times she knows the answer – and I thank her. Facebook has connected me with a long-lost cousin. We were like sisters growing up. Out of curiosity, I searched for her and we now communicate regularly. Forget Google – when I want to know something I go to YouTube. I fixed my squeaking ceiling fan, replaced a washer in my bathroom faucet, AND replaced the starter in my riding mower. Now I have Amazon’s Cloud Cam. I can watch my two schnauzers when I am away from home. I could even talk to them, but it upsets them too much. That I can speak commands to technology makes life easier for me. I’m 60-plus years old, and I often write lists that I can never find. Family members and friends are well-connected. Sometimes too much so. But I lose touch with those who are not digitally inclined, I’m sorry to say. I may message 10 to 15 people but call one on the phone. And, lastly, my skill set has improved so much that when I have a problem around the house I can find a solution and at least try it before calling an expensive contractor.”

2. The negatives of digital life

There were considerably fewer complaints about the personal impact among these expert respondents. But their own lives and observations give testimony that there are ways in which digital life has ill-served some participants. The following anecdotes speak to the themes that the internet has done some harm to users’ well-being.

Carolyn Heinrich, professor of public policy, education and economics at Vanderbilt University, wrote, “If someone would have told me I was going to spend 10-12 hours in front of a computer most days to do my job, I would never have chosen my current occupation, but it seems like most jobs these days require constant computer use. We do everything electronically now – communications, writing/documentation, searching for information, etc. – or filling out a survey like this one! I would much rather be having this conversation via a phone survey than sitting and

typing at my computer. ... Also, we text and email in most of our personal communications now, too, rather than speaking by phone or meeting up in person. I email with a colleague two office doors down from me rather than arranging a meeting. The consequence for me physically is that I am sitting too much and I have chronic back and neck pain, as well as tendonitis, from repeated motion and leaning into a computer monitor. I also worry that social media like Facebook, Twitter, etc., are increasing social anxiety and are as destructive as they are potentially beneficial in their facilitation of communications. And we all never seem to get a break. I wake up in the morning and cringe at how many emails I already have waiting for me to attend to, and the need to keep up takes away from my time in more concentrated and potentially productive endeavors.”

A professor at one of the world’s leading technological universities who is well-known for several decades of research into human-computer interaction wrote, “For the worse: The ritual of a weekly phone call with friends where there seemed like enough ‘space’ to talk about things in a meaningful way has eroded to texting to ‘keep up.’ On the one hand, several of my friends feel more in touch because they are sharing memes, feel they are sharing witty things ‘on the spot,’ but there is less going into depth. We don’t seem to be able to maintain both. That is what is so curious.”

David Ellis, Ph.D., course director of the department of communication studies at York University in Toronto, said, “Several years ago I walked into my fourth-year class and, in a fit of pique, announced I was confiscating everyone’s phone for the entire three hours. I later upped the ante by banning all digital devices in favor of pen and paper. Some unusual revelations have emerged since then – including some happy outcomes from going digital cold turkey. The students in my courses are there to learn about telecom and internet technologies. On the surface, it looks like a perfect match: hyperconnected digital natives acquiring more knowledge about digital. If only. The sad truth is they suffer from a serious behavioral addiction that makes it pretty much impossible for them to pay attention to their instructors or classmates.

“It also turns out these self-styled digital natives don’t know anything more about digital than their elders. At the start of classes, students react with predictable shock and annoyance when I confiscate their phones. Some even drop out rather than suffer the indignity of being offline for an entire class. Yet to pretty much everyone’s surprise, redemption comes to almost everyone. Within a month, I get enthused reactions about how good it feels to be phone-deprived. Grades go up, along with the quality of class discussion. Some students report this is the first time they’ve been able to concentrate on the course material. Or it’s the only course in which they’ve learned something. That would be flattering if it weren’t such a sad indictment of the state of higher education today, where classrooms have become a wasteland of digital distraction.

“It’s tempting to assume our hyperconnected 20-somethings are the authors of their own fate, and have only themselves to blame for not getting the best from their education. Except it’s not that simple. First, students are behaving exactly like the grownups in our tech-addled culture, ditching their moment-to-moment social responsibilities for another jab at the screen. Second, the unseemly classroom behavior is a coping strategy for many students, who have to put up with indifferent professors and a pervasive campus culture that casts them in the role of customers rather than learners. And third, they have many enablers – the instructors who see not paying attention as the new normal; the parents who can’t bear to be out of touch with their kids for even an hour; and the campus administrators who turn a blind eye because of their own obsession with new technologies as a panacea for every institutional problem. For all their initial resistance, however, depriving students of their devices for three-hour stretches has turned out to be a remarkably simple and effective solution. There’s also good research that students are less effective at learning their course material when they’re online and ignoring the instructor. Not to mention studies showing that students learn more and better using pen and paper instead of keyboards and screens.”

An **anonymous respondent** wrote, “More access to communication and information hasn’t improved lives like we thought it would. In the early years of the internet, it was life-changing to send emails across borders and time zones, to look up encyclopedic answers any time you had a question or connect with family far away via social media. Personally I have stopped using Flickr and Yahoo due to security issues. I have stopped using Facebook because of the unreliable and untrue information shared there (and constant political fighting) and email has grown to a bloated box of messages I really don’t enjoy reading anymore. I do enjoy Instagram (and its fictionized escape from reality via beautiful photography) but I find myself using social media, email and search much less than I used to. There isn’t enough novelty to want to Google everything I wonder about in a day. I’d get nothing done. I do work in digital, so I make a living from understanding how this all works, and I am dismayed at the way it has changed over the last 20 years. My son is 4 and he believes TV is always available on demand via YouTube (with supervision of course), shopping only happens on Amazon via phone and FaceTime is how phones always work. (He puts his face up to the landline phone like it is a camera). So things have changed and we can’t go back to the way it was years ago. I do think searching for medical information has gotten a lot better (more reliable accurate info) in the last 10 years and generally leads to more educated and adherent patients if the physician is willing to see the relationship as a partnership. While families use texts to stay connected during their hyper-scheduled busy lives, I think people have lost their ability to focus on the needs of others and really listen to another person because of how self-centric social media really is. Sometimes I think people have lost their ability to communicate in-person and have substantial conversations.”

These one-liners from **anonymous respondents** hit on a number of different themes:

- “Digital technologies have made it more difficult for me to say on task and devote sustained attention. This interferes with my work productivity.”
- “I can’t seem to get my brain to calm down and focus. It is all over the place. I can’t concentrate. I just start thinking about what I’m going to do next.”
- “Increased isolation is a negative effect I feel in my life; the time I spend using digital technologies could well be spent in other more creative and productive ways.”
- “I am becoming increasingly aware of the way constant access to digital forms of communication can be overwhelming.”
- “It has become an ever-present overhang on all aspects of life. There is no escape.”
- “The rise of hatred, the manipulation of politics and so on – these are not distant events with no personal impact.”
- “Digital life has tipped the balance in favor of John Stuart Mill’s ‘lower pleasures’ and has made engaging in higher-order pleasures more difficult.”
- “One major impact is the overall decrease in short-term memory, and ... what was the question?”
- “Real-life relationships are less bearable; everyone is so much less interesting with the spoiling of technology.”
- “Digital technology radically increases expectations for instantaneous responses. This is unhealthy.”
- “It has become harder to take your eyes off a screen to enjoy life as it’s happening.”
- “Technology is being driven by business across all areas for money, money, money. Greed has taken over.”
- “Engagement with technology is starting very young, and we don’t really know what the impact will be.”
- “We don’t understand what we can trust anymore.”

Here are some diverse answers about the ways digital life hurts the lives of some of the expert respondents.

Alone together

Lucretia Walker, a quality-improvement associate for planning and evaluation social services, said, “I am astounded at how difficult it has become to have someone actually look at you when they are speaking. I’m constantly informing my 17-year-old that it used to be rude to talk to someone without even looking at them. I am hyperaware of how easy it seems now to look after young children as long as they are on some type of device. I look at my grandchildren busily

playing some game and they are quiet and not ‘bothering’ anyone and I’m a bit afraid of how easy it is to let them just be. This summer, I bought all the young children in my family the ‘old’ toys: marbles, pick-up sticks, jacks, water guns, darts – everything I could think of to get them interested and off their devices. I’ve not heard about the deaths of people because I refuse to spend all my time on Facebook.”

Mark Glaser, founder and executive director of MediaShift, said, “In our family, smartphones, TV, computer, laptops all have a major place in our living space. They are central to communication and entertainment. Because they are always on and always there, it becomes much easier to spend time on our own, in our own world on the devices. The smartphones especially have a way of siloing us off from each other. It takes extra effort to take a few hours, or a day, away from them. We have become obsessed – checking news, checking social media, checking texts at all hours of the day – and it doesn’t feel healthy. Our publication, MediaShift, has covered the idea of ‘technology sabbaths’ extensively, and they are always popular stories, because society at large is having problems taking time away from technology.”

David Golumbia, an associate professor of digital studies at Virginia Commonwealth University, said, “I don’t feel that one anecdote could possibly answer this question. Further, the effects I consider most pernicious are ones that I don’t think are visible to most of us, even when we try to reflect. I can name one phenomenon that I have a lot of persistent encounters with. I am a college professor and teach small-to-medium large discussion classes, with a bit of lecturing at times. I do not outlaw digital devices. I have been teaching since the early 2000s. Every year, the number of students who are totally checked out of the class, with their faces buried in laptops, tablets or phones, grows. This is despite any efforts I make to call attention to it, and/or my talking about the issue as an actual topic in class, which I do whenever the topic is appropriate. The most vicious digital advocates push back on this kind of observation with arguments that verge on casuistry [specious reasoning], among them: ‘students have always been checked out’; ‘why don’t you call attention to it?’; ‘what about disabled students who need devices?’; ‘what about all the helpful things students do with devices?’ This kind of response, including from other academics, worries me a great deal for its near-total separation from reality. The number of positive uses I see for devices, DESPITE frequently requesting students to do just that, for example when a major work or idea or principle or law is mentioned – ‘can someone look that up and read to us what it is?’ etc. – is just totally overwhelmed by the loss of attention on the part of many students. That loss dwarfs anything I ever saw prior to the wide availability of devices (especially phones) in the classroom by a factor of 10. Of course students have always been checked out, but now I routinely have one-third to one-half of a classroom visibly not even being there – not even pretending to be there. The destructiveness of this is obvious and overwhelming, and the fact is that, when I’ve asked informally, most of the students who ARE paying attention and are using devices

productively would not mind if I banned devices altogether. These devices are designed to steal attention away from anything other than themselves. Yet I cannot even get many of my colleagues who deal with them on a daily basis to admit that the devices work as they are designed to work, no matter how much evidence there is to support that observation. So rather than a general pushback from educators – as we should have – against the use of these devices in classrooms (with exceptions for where they are necessary, of course), instead I have to fight an uphill and exhausting battle against my own colleagues who deny the stark evidence right before their eyes. Both the phenomenon itself of device use in the classroom, and the wider context of educator resistance – and open hostility – to questioning their use, strike me as emblematic of the harmful effects of digital technology, harmful effects that are not even close to being offset by the positives.”

Erika McGinty, a research scientist based in North America, wrote, “Even limiting my friends on Facebook to people I know or knew well personally, I realize that over time we talk and see each other less now that we can merely ‘like’ or comment on each other’s Facebook pages to give the impression we’re close.”

Tom Massingham, a business owner based in North America, wrote, “Perhaps it is just generational, but I’m not sure, nor am I sure that is sufficient justification, but those in their teens and 20s constantly have their noses in their electronic devices. My anecdote: I pick up a friend’s niece (age 14) after an athletic practice. She hopped in the car, said ‘Hi, Tom,’ and started looking at her phone. This is the generational part: I felt that if I tried to talk with her, I’d be interrupting what she was doing. I drove her home, she said, ‘Thanks’ and hopped out of the car. There was NO interaction between us. No ‘How did practice go?’ or ‘How’s school?’ or anything else. Are we creating a generation that doesn’t speak or acknowledge others in the same room, share feelings or thoughts? I hope not, but I fear that we are.”

Kat Song, communications and digital strategy director at the American Association for the Advancement of Science (AAAS), wrote, “My kids are 14 and 12. Their social and emotional lives have been negatively impacted because they tend to seek less real-life interaction with friends because they can so easily interact with them online.”

Darlene Erhardt, senior information analyst at the University of Rochester, commented, “My nephews and niece have gotten so used to texting their friends that it’s challenging for them to talk face to face and carry on a conversation for any length of time. In order to have quality family time, they are supposed to turn off their phones during dinner. Technology is good in that they can chat with their friends more easily regardless of where they are, the phone can be used to help find them if their parents don’t know where they are (like while shopping) and if they get into a

situation that's uncomfortable it can possibly help to get out discretely (friends checking on them during an event). At the same time there need to be some intelligent guidelines in terms of using the technology and when it's appropriate to use it and not use it."

An **associate professor based in North America** said, "It is hard to be 'present' with the omnipresent imposition of technology. When I am with family, technology reminds me of work. When I am alone, technology reminds me of friends I am missing. When I am at work, I cannot be present when technology reminds me of friends and family."

A **senior fellow a major university on the U.S. West Coast** commented, "I have seen friends and families where dining together is increasingly rare, even when people are in the same home. It might seem like a media cliché, but even when at the same table people are distracted by their phones and tablets. In the rush for the 'new thing' or endorphin-reinforced digital transaction they are forsaking the opportunities to interact with other people. Many of my colleagues are disconnected from those they love by the very technologies they helped to create."

Danny Gillane, librarian at Lafayette (LA) Public Library, said, "My friends and family stare at their phones while talking to me or others and are constantly checking their smartwatches to see who just texted or updated. My daily life has changed by becoming less personal."

A **professor at a major state university** in the United States wrote, "At family gatherings, half of the family are on their digital devices looking at social media and they are not enjoying who's around them."

A **computer scientist based in North America** wrote, "The vast wealth of information available at one's fingertips can have a negative impact on people's well-being. Several people close to me have developed an addiction, or near addiction, to internet content. They prefer to interact with others via electronic means rather than face to face. They have a fear of missing out on the latest news or happenings in the world, so they are constantly updating news feeds, blogs, etc. One person has exhibited classic signs of withdrawal when forced to abandon internet access for more than an hour. While I work on the technologies that underpin the internet infrastructure, I have made a concerted effort to maintain more personal, face-to-face time with friends, colleagues and family. The above has convinced me that tools such as Facebook, Twitter and blogs can be abused and cause people to lose the ability to physically interact with others."

An **anonymous respondent** said, "I used to go out to bars sometimes for conversation. Now everybody's on their phone, and I am doing it too."

A **business development director at a large law firm** said, “I have a sister who checks her Facebook feed every hour and responds immediately to nearly every comment that is posted to one of her posts. It seems she is using social media as a substitute for real connection with friends.”

A **retired professor based in India** wrote, “While it has helped to reach out and has made life easier, it has also reduced warm human context. We communicate through social media rather than spend an evening chatting, building relationships and enjoying company. Increased isolation is a negative effect I feel in my life; the time I spend using digital technologies could well be spent in other more creative and productive ways.”

Distractions and addiction

Beth Kanter, an author, trainer, blogger and speaker based in North America, wrote, “I’m a social media professional/networker, and I noticed over the last five years or so, how much more work I do on my mobile phone. And, that I started to have a behavior addiction in a way to the phone. I was using my iPhone as an alarm clock, but lacked the discipline not to look at CNN or Facebook before bed and first thing upon waking. This happened quite a bit during the election and shortly after it. I found myself not being well-rested, having nightmares, losing ability to focus or concentrate, and wasting a lot of time endlessly scrolling on Facebook, Instagram, and Twitter. I decided to kick the iPhone out of my bedroom and replace it with a moonbeam alarm clock. I also set a goal not to pick up my mobile phone until I had been up for two hours and do offline activities – like walk, read, meditate, or professional writing. I did replace my CNN habit with using Headspace during the day when I feel overwhelmed from using technology. After a month, I noticed a huge difference in my moods, thoughts and productivity. I know that this experiment of one is not scientific, but I do know that there is research that suggests looking at the your mobile phone before bed – which is 7,000 kelvins – is like looking at the sun on a bright day and it tells your brain and body to wake up, disrupts your sleep.”

Ebenezer Baldwin Bowles, author, editor and journalist, said, “A friend of mine, ever the safe driver, was rolling down the road in his favorite old truck, listening to FM radio, when another driver, hyperconnected to digital technology, set about the task of typing a text message, drifted across the center line of the road, and crashed head-on into my friend. The offending driver died at the scene. My friend suffered life-changing injuries, breaking his will and his bank account.”

Douglas Massey, a professor of sociology and public affairs at Princeton University, wrote, “I deliberately avoid involvement with social media, but even email has become a black hole sucking up my time in unproductive and unrewarding ways. My email is clogged with messages from people and organizations incessantly seeking to capture my attention and time, producing a state

of information overload that I find psychologically distressing, not to mention hate mail and personal attacks. I receive 150-200 emails a day and find the time I spend just deleting things I don't want to see ever-growing and oppressive.”

Gabriel Kahn, professor of journalism at the University of Southern California, said, “My attention span has been condensed. It's more difficult to concentrate for long stretches. There is less face-to-face interaction in the home. It's not good.”

Dana Chisnell, co-director of the Center for Civic Design, wrote, “Being online all the time is stressful and distracting. It has come to feel like I'm performing for the makers of the platform rather than having real conversations. There are too many channels running concurrently, and it's too hard to keep up. I feel unfocused all the time. Until today, I had three Twitter accounts and a Facebook account and I have been on about a dozen Slack teams. I find being hyperconnected to be time-consuming and distracting. I have read less fiction and spent less time doing personal writing over the last few years. This is largely due to the time I spend on social media. That time has connected me to thousands of interesting people, but it hasn't brought me closer to any of them. Today, I deactivated one of my Twitter accounts and my Facebook account. I hadn't been to Facebook in more than a year, and I hadn't missed it. I learned that my tweets were also forwarded to my Facebook account – a setting I must have made years ago – and that people were responding to them in Facebook. So, to them, it felt like I was present. But I was basically a Facebook bot. So, rather than continue to be rude by not participating in the conversation there, I deactivated the account. By closing the accounts and limiting my time on the internet, especially with social media, I'm hoping for a more productive life and to have closer, more-focused relationships with close friends and family.”

Vicki Davis, an IT director, teacher and podcaster based in North America, said, “My life is more fulfilling since I have fought a battle with internet addiction and won. I have blogged since 2005 and been on Twitter from the early years of the service. My children have grown up with a mom who struggled with internet addiction for many years. There were times I might be busier tweeting than watching the kids make sugar cookies at Christmas. After four or five years, I got a wake-up call. It happened when I saw a woman who was at school helping her son try to fly a kite at the kindergarten ‘fly a kite’ day. The mom had a 5-year-old looking at her, begging, ‘Mom help me fly,’ and the mom had her cellphone in one hand talking to someone about flying the kite as she tried to help her son fly the kite with the other hand. The kite wouldn't fly. Simply put, the kite wouldn't fly without her total attention to her son. And as I watched, I saw myself. I saw my own failures. My children needed my complete attention so they could fly. So, that summer, I talked to my husband Kip. I scheduled the tweets for the next two weeks in Buffer and gave Kip my phone for two weeks. I went cold turkey on all social media. At first, it was shocking because I thought of my

phone constantly and all those people ‘out there.’ But over the days, I found myself coming back to a healthy center. Since that time, I put down my phone every Sunday. My phone has no place at meal times. When we go on vacation, I will put my phone in ‘airplane’ mode all the time so I can just use it as a camera. I wrote about some of this on a blog post on Edutopia titled ‘Put the cell phone down and be there.’ I used to believe the lie that multitasking is possible. It isn’t. I live life with more intentionality and find myself far more productive than I could have ever dreamed. Instead of getting on social media 20 times a day, I check it once or twice a day and now have a five-day-a-week podcast for educators, blog, speak, joined the choir at church and live life deeper. And as a woman with over 150,000 Twitter followers, it would be easy to live a shallow life full of shallow relationships. But instead I now go deep and am a much happier person. My kids need my full attention to fly. Social media and my smartphone have a place, but not everywhere. I am a human *being* and not just a human *doing*. I turn off just about every notification and I jealously guard against interruptions like spam and silly apps that beg for my attention. My attention is finite, and the choices I make about how to spend it are strategic. I take this passion along to help students and teachers understand it but I often feel like it is a losing battle. I see a basketball player brag about Snapchat streaks and wonder what would happen to their game if they did free throws with the same intentionality.”

Anita Salem, a human systems researcher based in North America, commented, “I have email, a smart home, a smart hone and an Apple Watch. When I have a question, I look it up. When I can’t think of the name of a song, I don’t search my memory, I ask Alexa. When I’m lonely, I check Facebook or text a friend. When I take a walk, I’m being told by my calendar that I had better hurry, I’m told by an app that I’m walking too slow and I get a text that gets me thinking about tomorrow. When I’m waiting in line, idling at a stop light, or waiting for a friend, I read texts or the news or a book on my small screen. What do I miss? Discussing questions and figuring things out with a friend. Racking my brain to remember and being satisfied when I do. Getting up off my butt to see or talk to a friend. Walking and listening to the birds and watching my dog pick just the right spot to pee. Stopping and enjoying the pause, the white space in-between, the wide-open space where the world lives.”

David S. H. Rosenthal, retired chief scientist of the LOCKSS Program at Stanford University, said, “Those who cannot remember the past are condemned to repeat it’ - George Santayana. Society’s memory has moved from paper, a durable medium, to the Web, an evanescent medium. I have spent the last two decades working to build tools and organizations to make the Web less evanescent. My efforts, and those of others in the field, are increasingly failing to measure up to the task. See my keynote at the year’s Pacific Neighborhood Consortium: <http://blog.dshr.org/2017/11/keynote-at-pacific-neighborhood.html>”

Meredith P. Goins, a group manager at Oak Ridge Associated Universities (ORAU), wrote, “My 15-year-old son loves chatting with his friends at night after dinner via a game, but he would get so sucked into the conversation, he would look up and see that it was three hours later and hadn’t done his homework. He has no impulse control. He is impatient – it must load now! – and he doesn’t have strong in-person communication skills, as with many, or so I believe. Kids are great at talking in small groups or via text or via gaming, but are horrible at doing it in a professional setting. For example, my son, and some other kids, have preferred to take a C on a paper instead of an A because they would not stand and present their findings.”

An **anonymous respondent** said, “The opportunities for distraction afforded by my heavily digitally-mediated lifestyle makes it harder for me to do both the things I want to do and the things I should be doing in at least two ways: I have a much harder time sitting still and doing nothing than I used to, and I also have a much harder time sitting still and doing ONE thing than I used to. I usually find I’m happiest when I am doing one, and only one, thing for an extended period of time. And when I give myself permission to sit still and do nothing for a while, I often find that I naturally transition into doing ONE thing that I really want to do, or remember the ONE thing that I really should be doing right now.”

A **professor** wrote, “A negative anecdote: Years from now, filmmakers may portray people hunched over their phones the way they today portray people from an earlier era hunched over their cigarettes. I recently ate at a very high-end restaurant to celebrate a special occasion and the people next to us spent the entire evening photographing their food to post it on Instagram, texting people and looking things up online. One of the individuals had her phone in her hand the entire time. I find similar behavior among many. Mid-conversation at parties I’ve seen people pick up their phones and turn away from others around them. I have seen people sitting with each other in restaurants or cafes and staring at their phones rather than talking to each other, and parents ignoring their kids in favor of doodling on their phones (including at beaches, swimming pools, etc.)”

A **head of research and instruction at a major U.S. university** wrote, “While I’m better-connected to friends and affinity communities in distant locations as an information professional, turning off the flow of content at home in the evenings to focus on my family is a strain in several ways. It limits how much professional and civic reading gets done, it forces the need to create boundaries (for one’s own good) that have been blurred, it raises almost-involuntary questions about what kinds of conversations your partner or friends are having without you or even with you nearby. Without intervention, it’s easy to experience strong affective responses that often don’t get interrogated in helpful ways.”

Erin Valentine, a writer based in North America, wrote, “A simple example of technology affecting well-being is when you’re at the dinner table with your family. Growing up 10 to 15 years ago, there was no distraction from the conversation over the meal. Now phones are on the table and in people’s hands. The conversation can be stunted or just lost due to phones being so easily accessible.”

Melissa Rach, a content consultant based in North America, commented, “Although sometimes you can have real, human interactions on social media, these channels ... masquerade as human interactions, but are really competitions of worth. I have been an internet consultant for 20-plus years and I worked on internet projects before that. For me, digital technology has been a fairly rewarding career. My daily life and digital technology are completely intertwined. But honestly, some days I wish they weren’t. I waste so much time watching videos, reading articles and learning trivia that I would have never ‘needed’ to know before the internet. And I spend less time doing things that make a difference. ... Before the internet, I used to make lists of things I wanted to look up when I went to the library and only the really important things made the list. Now, I know a lot about many things that are unimportant. More to your point: When I got my first email account in the early 1990s, one of the first things I did was locate a pen pal from Spain I had exchanges with when I was a child. We started emailing every day and then instant messaging. We became really great friends over the digital space. Instead of just getting a letter once a month, we got to know each other’s daily lives. Eventually we met in person. We’re still friends today. I will see her in March. That was the really good side of the internet. However, once social media started and you could find all your long-lost friends (and acquaintances) on Facebook or Twitter, things changed. We figure out what to post based on what will get likes and retweets. It’s about what builds audiences, not what builds relationships. I think back to the 1980s, when my tween self had pen pals all over the world. I would sit down and carefully think about what to write on those expensive airmail sheets. Each person got personal attention, not a form letter, because we didn’t have an option. It might have been communicating with people far away, but it was a really different kind of communication. My high school friends, college friends and I often say things like, ‘Thank goodness the internet didn’t exist then.’ Most youthful shenanigans should be left to memories of the people involved, not the people who watched a performance on YouTube. Failing on YouTube makes you a social pariah. Failing with your friends makes for a good story to laugh about later.”

An **anonymous respondent** said, “Tech has potential to do great good. I am a genealogist and I use it to help unite families. But the other side is that it is too easy not to selectively help but to be drawn into an artificial world. Facebook and Twitter are addictive, and both aim at showing you only what they think you want to see (since that is how they make money).”

A **professor of political science at a major U.S. university** said, “With a smartphone near my bed and the parental responsibility to keep abreast of what my teenage children are doing with smartphones, I read far fewer books in the evening. I am more connected to the social media outrage of the day, less in tune with art and culture.”

An **anonymous respondent** commented, “I am bombarded with news through a number of apps that are constantly sending notifications. As a consequence, I find myself worried about many political issues simultaneously and often distractingly.”

A **professor of computer science at a major U.S. university** wrote, “I am a college professor and have seen the performance of my students degrade over the last seven years in terms of hours required to complete the same, essentially, take-home exam. The average time has gone up from 8 hours to 11 without improvement of their final grade range. They do not get better grades while they spend more time.”

An **anonymous respondent** wrote, “When I was a kid, we did not have cellphones. I played with my friends for hours and my parents were fine (I think). Today parents have the technology to track their kids and contact their kids any time they want, which gives kids today a much shorter leash to be kids. The whole reason there is a childhood is to learn how to be your own person and with today’s helicopter parents, it’s really hard to learn to be your own person.”

A **pre-law student based in the United States** said, “When the blog site Tumblr was super popular, I would stay up until around 5 or 6 in the morning in hopes of seeing everything my ‘dashboard’ had to offer. I had FOMO – Fear Of Missing Out. There would be several tabs open at the same time because I would open a new one each time I got back on the site in the morning; hoping I didn’t miss too much while I was sleeping. I was definitely operating on information overload; there was way too much content for me to view, let alone synthesize.”

A **college senior and social media professional** wrote, “Today, when I try to sit down and read a book, I can’t seem to get my brain to calm down and focus. It is all over the place. I can’t concentrate. I just start thinking about what I’m going to do next. I hate admitting it, but I know that my attention span has shortened, making it harder for me to concentrate whether it’s reading for a class or attempting to read for fun. A few years ago I loved to read. I would finish a book in one or two days and start the next one immediately. I preferred reading books over watching movies. But as I moved into the digital age, as my parents gave me a cellphone and then a computer, I spent less and less time reading books and more time online or on my phone. I am now used to spending my time getting instant answers and skim-reading online, not spending much time on any one thing. I can search a keyword with a few clicks of the keyboard. I don’t

spend time actually reading and understanding what I am looking at – even often reading the search engine synopsis of a site to get my answers instead of actually clicking through to the site.”

A **college student** wrote, “I fear that as technology is perfected to be more addictive and VR and AR advance to envelope everyone that more and more people will fall into those worlds and not necessarily be able to return to that which we now consider to be real. While digital life is good, the downsides are quite troublesome. My brother spent a period between graduating school and obtaining a job idly watching screens and interacting only via them. He spent all day and into the night constantly immersed in this. The TV was always on in the background while he played intense online video games on his laptop, while also continuously texting or messaging others about the game. Technology became his life. It was difficult to separate him from his virtual world and to interest him in physical human interaction. He became grumpy, began sleeping less and less, and stopped dedicating time to his own physical needs. Although it was a scary time, he was later able to pull himself out of it and eventually reconnect with the real world. While he was lucky to be able to quit, some are not able to do so.”

Adam Popescu, a journalist, wrote, “If you’re a writer, a journalist, an artist, it’s your job to engage with the world, to look under the rocks of humanity, and most of all, to read. Read books. In print. It’s a deeper read, without the threat of a distracting tab or a push notification. Read magazines, read newspapers – a range of them, from your state and city and even other nations. And read them deeply. Too few of us do that. ‘Oh, I read plenty,’ you say. If you’re reading based on what’s trending on Facebook or via a link pulled from Twitter, that’s not really reading and it’s time we stopped pretending. That’s feeding at the trough of stupidity. If you’re a writer, a journalist, an artist: stop being part of the disconnect problem. Stop everything. First off, read. Set time aside to really do that and do nothing but that in that period. See if your sleep doesn’t get better, your sex, too, your everything. It helps you think and slow down. If you’re a busy editor – ***** , whoever you are – read the emails people send you and respond in a timely manner. This is schoolyard but still true: Treat others the way you want to be treated. Don’t look down at your phone during a meeting, a coffee, a dinner, a date. Be there. Wherever you are. How many photos from your camera roll memorializing your life do you actually look back on? Look up.”

A **professor** wrote, “Facebook is a relentless resource for a bored mind. There is always something sticky there. It’s the new TV. It is designed to keep you ‘engaged’ and not to offer any obvious work of filtering, even though its algorithms are busily at work.”

A **professor based at a top university in the U.S. upper Midwest** commented, “I have significantly less time to think or to stay away from work-related issues. Less time for family.”

Family and societal challenges

Giacomo Mazzone, head of institutional relations at the European Broadcasting Union, said, “I’ve worked all my life as a journalist and I believed that this was not a job, but something like a mission. Being a watchdog of democracy is a very exciting and rewarding sensation. Today the job I liked and practiced all of my life still exists only in a few ivory towers that became global (The New York Times, the BBC, some of the public service broadcasters financed by states ...). The small independent newspaper where I started doesn’t exist anymore and could never return because their business model doesn’t work. Rather than being considered the watchdog of democracy now, I’m stigmatized as a ‘mediator’; that means that I’m blamed and considered a priori as part of the establishment. Verification of sources and accuracy in reporting seems to be considered a waste of time and the news of non-existent flying donkeys (or, for instance, false statements such as ‘Obama is not a U.S.-born citizen’) get millions of likes thanks to algorithms while the real news of the donkey walking on the hill doesn’t get any. To remediate the most evident damages of this, now hundreds of non-skilled youngsters hungry for (badly paid) jobs are hired and gathered in cold hangars to ‘take down’ the most damaging ‘news’ in an ‘ex-post’ exercise with no sense, no future and no accountability to society. If this is the future of the journalistic career, I will encourage my children not to get into it.”

Evan Selinger, a professor of philosophy at Rochester Institute of Technology, wrote, “It’s a bit depressing to look at the problems of online life through my everyday experiences interacting with my daughter, who is in middle school. Despite everything that I know about the problems of continuous partial attention, corporate surveillance and the idealized personas that are curated online, I suspect I don’t do enough to address them. I’m not fully checking my knowledge at the door. And, of course, my intentions are good. But engineered addiction is more powerful than cautionary discourse, and social pressures readily tug on heartstrings.”

Jennifer deWinter, an associate professor of rhetoric and a director of interactive media and game development, said, “Email. I remember working as a professor before email and after email. The insidious belief that we should always be available, always ready to answer questions for anyone about anything, is one of the most highly detrimental changes that I have seen. The same can be said about whatever dominant electronic communication technology a community uses. I think, too, about raising my two children. And – this will sound ironic? counterintuitive? – but I teach game development in a well-ranked university games program while I simultaneously limit my children’s time on games. My 9-year-old son said it best recently: He told me that when he plays too many video games, he starts to hate any interruption, anyone who gets in his way. While this is probably true of anyone in a flow state of being deeply immersed, games have a way to constantly provide a well-timed dopamine hit so that the player always craves more. Research

bears this out. I don't know what to do with this, because I don't demonize the technologies of our world. I am constantly watching and evaluating their impact, nevertheless."

A **professor in media studies at a Norwegian university** commented, "When we are on vacation in the mountains with no internet or cell coverage, the mood of the whole family improves. We are more together and present in the moment."

A **research leader at one of the top-five global technology companies** said, "Digital technology allows us to follow our children's school progress in detail. This enables parents to detect signs that a child is having trouble and administrators to detect signs that a teacher is not performing effectively. It also increases the stress on children and teachers who realize they are constantly observed and no longer have the same opportunities to correct their performance on their own. It pushes teachers to make every grade nuance explicit, ramping up the stress for students and parents. Such double-edged swords are common, and we don't have any idea how to evaluate the net impact."

A **pre-law student** said, "Anxiety and depression have been on the rise in those within my generation. I was recently diagnosed with mild depression. I believe that being hyperconnected within this digital life could be a root of the issue. I find myself, my mood and thoughts, influenced tremendously by scrolling mindlessly on social media platforms and by the content that I come across daily, even hourly. It has become increasingly hard to not constantly compare the reality of my life with those reflected through my iPhone screen and – even though I am aware of the false reality of the profiles I come across – it is hard not to have my own self-esteem and confidence plummet when I come across a perfectly tailored life. Netflix and all of the streaming sites have proven to be hazardous for my productivity, as I have become effortlessly addicted to them as a means of distraction and procrastination. I also see this constant hyperconnectedness impacting my friends. It worries me, truly does, to see the impact it is having on my family, as my parents are constantly struggling to catch up to the newest innovation that impacts their daily lives, and my little sister has seemingly found life behind a screen. She has adapted so quickly to life with an iPhone that she does not even remember ever playing with the traditional toys she once enjoyed."

An **anonymous respondent** wrote, "Recently I participated in a family reunion attended by a 2-year-old child. When the child's behaviour became too disruptive of adult conversation, she was given a tablet and shown the movie Frozen. The child became mesmerized and non-verbal, almost in a trance-like state. I compare this to when my children were young and were entertained by non-digital distractions – human contact, arts and crafts, a story – and I wonder what the impact of this very early digital exposure will be. Engagement with technology is starting very young, and we don't really know what the impact will be."

An **anonymous respondent** said, “I recently did some research into the digital lives of parents and teens in Japan to mirror research that was done in the U.S. It is very clear that when you compare these two cultures there is more similarity than difference in the ways digital technology is reshaping our most intimate relationships. In many of the families we heard from, mobile devices and the content on them is a source of anxiety, conflict and concern. Parents are struggling with their own use and overuse of these devices as they are monitoring the use in their children, creating a new parenting challenge. One of the most alarming bits of data from this study was the number of teens who reported that they sometimes felt their cellphone was more important to their parents than they were – 20%. This is just not a message we want to send our children.”

A **North American professor** wrote, “There is almost no one with whom I regularly interact solely face to face. I spend an inordinate amount of time with digital technology. I communicate via email, use the internet in my research and teaching, use social media for teaching, read the news online and shop online.”

An **executive for a major internet business** wrote, “The easy availability of information makes it so much easier for me and my kids to, say, look at a dictionary to gain a basic understanding of a topic. This is why Wikipedia is so useful. But the profusion of digitally enabled entertainment – movies, YouTube, streaming music, video games, and so on – has not, on balance, been good for my kids. They insist on being glued to their screens, and much of what they consume is, in the words of Newton Minnow (talking about TV in the early 1960s) a ‘vast wasteland.’ Like nearly every medium, like radio and TV, the internet was supposed to herald an era of great information access, which would enable better democratic participation. Instead, it’s become – in many corners – a cesspool, with nearly zero information value. This is not true of the whole Net. But now that Net neutrality is on the way out, the internet fast lane will be devoted to dreck, not to socially useful information.”

Jason Abbott, professor of political science at the University of Louisville, said, “My children are increasingly incapable of spending quiet time alone, appear more bored and easily distracted from tasks. As an adult I find there is a growing pressure to always be available online and to respond immediately to messages and requests.”

Gail Brown, an instructional designer in Australia, wrote, “A young person I know began cutting himself when an online relationship with a girl suddenly ended. This was a person he had never even met, nor did he really know that anything she posted was real or truthful. Yes, lies can happen in the real world, but such lies are much more difficult to continue than those that are shared online.”

Fay Niker, postdoctoral fellow at Stanford University’s Center for Ethics in Society, wrote, “I see all around me how people’s self-esteem is now wrapped up with their online social activity. This is very problematic for our inner, ethical lives.”

Paul Manning, a manager, commented, “I have seen one of my children walk away from a difficult interaction rather than work it out. She did so quietly and without the other person being aware until it was too late. Another one of my children cannot live without her cellphone because, she says, ‘I can have six to eight conversations at the same time.’ This same child cannot stand when there is silence or she lacks the ability to interact in a large crowd. She cannot focus on one person at a time or participate in a group conversation that requires listening. While digital life has positive benefits, due to the immediate exchanges of information and the short length of the exchanges, sometimes critical information is assumed.”

Tanja Cupples Meece, a homeschool educator based in North America, wrote, “I am a student and an educator as well as a freelance writer. I teach online courses and spend more time checking to see if I am doing the teaching properly, rather than actually teaching. It is also a family problem, my husband also spends a great deal of time on his phone, and if both of us are on our phones, our grandson acts out. He isn’t getting the best of us.”

A **professor at a college in North America** commented, “I have an 11-year-old child who is pulled into technology in ways that can be beneficial but it is also shaping his childhood in ways that are concerning. I am concerned about this new generation’s capacities to balance technology activities when they are so ever-present.”

A **research scientist** said, “One of the most palpable changes is how much digital technology has changed the dating landscape and our approach to relationships – especially for those of us who are younger (I’m in my late 20s). We’ve spent most of our romantic lives with online dating at least being an option. Just as having the constant stimulation of social media available makes it harder to commit to something like reading a book, the constant availability of new partners lowers the threshold for starting something new, which makes people less inclined to stick through the hard parts and build something lasting with a partner. It makes our dating more conservative also – we read through each other’s profiles thinking we’re selecting better matches, but in taking the element of chance out of the equation we miss out on the opportunity to date people different from ourselves who could potentially be very good for us, whom we might have unexpected chemistry with, etc.”

An **anonymous respondent** commented, “I’ve grown weary of the oversharing that occurs on social media. When people break up, get engaged, have children, etc., seeing the photos and status

changes can be overwhelming and disheartening when you're in a certain emotional state and don't want to take it all in."

Toxic uses of social media

John Markoff, a fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University and longtime technology writer at The New York Times, said, "Reading Twitter at times makes me almost clinically depressed. I have done what I can to try to break the habit with only marginal success to date. Frequently it feels like I am drinking from a fire hose of polluted water."

Jillian C. York, director for international freedom of expression at the Electronic Frontier Foundation, said, "Digital technology has greatly enhanced my life over the past decade. Just over 10 years ago, I was living abroad for the first time and began to use blogging and nascent social media platforms as a way to connect with my friends and family back home. This led to surprising connections with individuals all over the world and friendships that last to this day. I don't have enough fingers and toes to account for all of the friends I've made – and later met 'in real life' – through social media, nor the career and other opportunities that have unfolded for me through these mediums. My life, my career, wouldn't have been possible before the age of digital connectivity. All good things must come to an end, however, and those social media environments that once led to beautiful opportunities and friendships have now become toxic. In spaces where I was once likely to receive positive feedback, I now face threats and harassment on a daily basis. I'm still unsure whether it's us, or the architecture of these spaces, or perhaps, that they're simply not scalable."

Raymond Hogler, a professor of management at Colorado State University, wrote, "People consume content that is self-selected, ideologically conformist and socially reinforcing. That trend will continue. I've observed, along with many other people, that the ubiquitous cellphone is displacing social interaction. As a teacher, I see students fixated on their phones in public areas, classrooms and study rooms. I think this phenomenon is tremendously isolating and divisive."

Rosanna Guadagno, a social psychologist with expertise in social influence, persuasion and digital communication and a researcher at the Peace Innovation Lab at Stanford University, wrote, "During the 2016 presidential election, I ended up losing many friends on social media because of all the divisiveness caused by the spread of misinformation through fake news from fringe news sources and Russian interference. In particular, I recall pasting a link from The New York Times on Facebook. The article ranked the candidates on honesty. Unsurprisingly, Hillary Clinton was the most honest and Donald Trump was the least honest. Some of my Republican friends thought this was a joke and laughed in response to it. This caused a pretty nasty fight between some of my

academic friends and the people who laughed, and I had to shut the conversation down. I ended up unfriending a couple of my Republican friends. It made me sad, distressed and confused, and my Facebook use never returned to pre-2016 levels because these things kept happening. Since then, I've made a concerted effort to connect with people using non-text-based options (such as phone calls and face-to-face visits)."

Peter Levine, associate dean of Tisch College at Tufts University, said, "I have shifted from reading news stories about a wide range of topics in a small number of publications to obsessively following a few breaking stories on many media platforms, most of which basically repeat the same information. This shift heightens my anxiety, limits my learning and wastes time. Although it's my own fault, the new digital media landscape enables it."

Steven Polunsky, a research scientist at Texas A&M University, wrote, "My high school reunion was held as we approached the 2016 elections and was almost canceled due to high emotions and anger, fed by internet misinformation combined with an organized effort to sow mistrust of institutions like the press, police and the judiciary."

Brittany Smith, a digital marketing consultant based in North America, said, "Overall, social media now takes away from my sense of well-being, and I try to limit my exposure to it. As a professional digital marketer this has been a hard realization to come to. Initially, platforms such as Facebook helped me stay in touch with the people I care about. As more and more people joined Facebook and the algorithm changed I found that I was seeing less and less from them. Facebook was filled with updates from people who weren't close to me, and because of our tendency to share happy things that make us look good, I would come away feeling negative about my life."

Flynn Ross, associate professor of teacher education at the University of Southern Maine, wrote, "As the mother of two adolescent girls, I confront on a daily basis the potential for social media to help my daughters be informed global citizens who have access to [all] sorts of first-hand perspectives, as well as their safety in terms of who has access to what information about them including their images and how their online profiles can be used in their futures."

A professor at a major state university in the United States who said digital life will be mostly harmful in the next decade wrote, "The best example of impact on digital life I can think of is the ongoing effects of the 2016 U.S. presidential election and the role social media apparently played in determining its outcome."

A writer/editor based in North America, wrote, "For me, the internet has gone from being a place where I could be myself, to a place where I must carefully analyze every bit of behavior."

There is also a lot I do online that I would rather not do. I hate Facebook, but I have to stay a member to keep up with events in many of my friends' and family's lives. I have to use LinkedIn for work, but I deal with a stalker, who greatly appreciates all that information (which I must keep public, if I'm to expect any potential clients to take me seriously). What was fun is now stressful."

A **general manager** commented, "A member of my family who is in her early 60s has seen her general contentment with life decline as her consumption of social media has risen. In the past, her mornings, for example, meant reading the newspaper and listening to the radio. Even when the news was bad, she nonetheless was generally hopeful and optimistic. Now, she checks her Facebook, Twitter and Instagram while still in bed and by the time she comes downstairs in the morning, her mood for the day is already defined. More often than not, that mood is a negative one (anger, anxiety, fear, stress, pessimism, etc.) than a positive one. While this family member recognizes that her now hyperconnected life is bad for her, she has been unable to moderate her digital consumption throughout the day. This is now having a negative impact on her relationships with other family members."

An **anonymous respondent** said, "My internet service provider throttles many websites and interjects ads into others. And this was before the end of net neutrality. While it is easier to contact friends and family, most social media sites seem to be fragmenting civil society by creating information and entertainment bubbles for like-minded people. Uber is convenient but it doesn't provide a living wage for drivers."

A **cybersecurity entrepreneur, coach and investor** wrote, "There appears to be an increasing population of people who mistake social media presence with professional achievement. This is confusing to new entrants into the industry. Simultaneously, there seem to be increasingly prevalent moral panics. These are often followed by fervent attempts to demonstrate one's alignment, in the hopes of either gaining favor or avoiding opprobrium for being insufficiently 'aware.' People attempting to remain on task in professional contexts risk censure if they aren't visibly participating in the cause of the day."

An **anonymous respondent** commented, "Three and a half years ago there was a school shooting at the University of California, Santa Barbara. Seven people were killed, including the shooter Elliot Rodger. Within a day, reporters found a chilling YouTube video where Rodger vowed 'retribution' for a lifetime of sexual rejection. My social network was full of posts about this video and the need for gun control. I understand the outrage – it's certainly justified – but it felt like there was no room for anyone to express any other feelings on social media. And I needed to express other feelings. I had taught some UCSB students the prior year. After I saw there was a shooting I had no idea if some of my favorite former students were dead. Either way I had to deal

with the shock that my students could be shot and killed around campus. When I talked to my family or my friends outside of social media, they were able to show empathy for what I was feeling. That's a credit to my family and friends, but also says something about how people share feelings on social networking sites. When I tried to reach out and share my experience on Facebook, I was judged for not immediately leaping to outrage. I could sense such a profound lack of empathy that I logged off for a few days. This seems to be a common pattern after traumatic events. People who want to share their outrage leap to social media to get things off their chest, blocking out anyone who needs a more empathetic back-and-forth to deal with the trauma.”

An **anonymous respondent** commented, “My half sister – in her early 30s – abandoned Facebook having found it made her miserable and envious. Her well-being has improved dramatically.”

An **anonymous respondent** wrote, “Slices of digital life: Waiting for people to finish tapping on devices before or during a conversation. A relative explaining how the Boston Marathon bombing was a hoax and citing online posts as support. Tinder. The fact that nothing happened after [the] Occupy Wall Street demonstration. In Egypt, [the Arab Spring] demonstrations led to replacing one dictator with another.”

An **associate professor at a U.S. university** said, “Family members, especially children, are addicted to their devices. In some cases, the lack of social skills is evident. The adults in my life are also hyperconnected and are on their devices right before sleep and upon waking up. The decrease of human interaction is evident. I try to stay as disconnected as possible. I am much happier when I am not on Facebook. When I do check it (it is handy for keeping up with people) I am compelled to continue to look through it, and I spend too much time on it.”

An **anonymous respondent** said, “Digital tech has made it infinitely easier to shop and pay bills, but it has NOT addressed protection of American security from foreign ‘meddling’ (Russia, et al.), and it has not addressed protection of individuals from hacking and similar mispursuits.”

A **retired public opinion researcher** wrote, “I have cancelled my Facebook page because uninvited and socially untested information, opinions and behaviors had the potential to influence my own political (as in polis) social contracts.”

Never-ending work with new demands and expectations

Lori Laurent Smith, an entrepreneur based in North America, commented, “The promise of digital technology was to make our lives easier, freeing our time to do the things we wanted to do. My reality has been the opposite. There is so much more than I ever imagined that I still want to learn, research and do. Also I spend a ridiculous amount of time learning how to set up a blog, upgrade memory in a laptop, take better pictures, write meaningfully in 140 characters, learning how to use new apps, writing comments and feedback, and reading millions of pages of content. I was spending a disproportionate amount of time using the internet and interacting with people online more than I did with my husband, daughters and friends in real life. As this realization has slowly dawned on me in recent years, I’ve set timers to limit my time online when my family is around and when anyone needs me, I immediately shut down what I was doing online to give them my full attention. I turn off my phone regularly when I’m hanging out with my friends and family in real life (which annoys people trying to get in touch but it’s my life).”

Annette Markham, professor of information studies and digital design at Aarhus University in Denmark, said, “I exemplify the hyperconnectivity of knowledge workers. At this stage of my career, where I network internationally with colleagues, work with dozens of students at a time, and administer multiple projects and people, I simply cannot be disconnected. I feel this emotionally and bodily every single day. My wrists hurt frequently from ongoing carpal tunnel syndrome; I suffer from chronic back pain that we colloquially call ‘academic back.’ I feel increasing pressure – as well as a lure – to build my international reputation as a social and digital media expert through intensive connectivity, continuous publishing and strategic self-branding on multiple platforms. I feel like this is an all-or-nothing situation. Sometimes I just feel exhausted. Other times, I feel like one of thousands of ants trapped in a barrel filling up with water and we’re all clambering on top of others to keep from drowning. In the early 2000s, I could ask my media students to disconnect for one week. Around 2012, I could get them to disconnect for 48 hours. Now, maybe one in 20 will be able to disconnect for 24 hours. As more services enter the electronic-only sphere, people are required to be connected, to know how to access and use these services effectively. It means being online. Those of us who have been obsessively online for 20 years may be accustomed to an always-on lifestyle and have learned how to live with it. But knowing how to deal with hyperconnectivity is not the same as being unaffected by it. We – and by that, I mean myself and many of my friends and colleagues in the knowledge or tech industry – pay a heavy price. Sustained stress leads to chronic health issues. Continuous exposure to millions of people personally reacting to crisis after crisis on Twitter leaves many of us feeling sad, angry and hopeless. But we seem unable to stop checking our newsfeeds. The negative energy feeds on itself. After the U.S. presidential elections in 2016, almost all of my colleagues showed classic signs of depression. Worse, we no longer find it surprising to feel sad, angry and depressed. We may not

be immured to the violence this constant exposure does to our bodies, minds and souls, but we don't fight it either. I could say more, but you get the point."

Douglas Rushkoff, a professor of media at City University of New York, said, "Right now, I'm interested in the mental health crises being experienced by the young men who took BJ Fogg's captology classes, implemented the strategies at Facebook and Snapchat and are now realizing how much mental, psychological and social destruction they have caused."

Paul Rozin, a professor of psychology at the University of Pennsylvania, said, "I'm not sure that email is such a great thing. One colleague doesn't use email and seems to be extremely productive. I spend half the day on it. Much of that half would have been spent on productive thinking or teaching in the old days."

Thad Hall, research scientist and co-author of the forthcoming book "Politics for a Connected American Public," wrote, "The biggest change to daily life is the difficulty in having a solid block of uninterrupted time in one's day to think. When communications were primarily by phone or mail – or even when Wi-Fi/smartphones were not ubiquitous and it was easy to get away with a laptop without being constantly connected – it was possible to separate yourself from the digital world. Even writing this, I am aware of my phone next to me and that my email alerts are on, and it is hard to avoid being mentally distracted. Even if I am not looking at my email or my phone, I know they are there and it is distracting."

Meg Mott, a professor of politics at Marlboro College, said, "Early in my teaching career, I thought that teachers should be judged by their response time to emails. Perhaps this was my way of proving myself worthy of joining an esteemed faculty. I may not have read Plato's 'Republic' in the original, but I could check my email on an hourly basis. At a certain point I realized that speed was working against me. My replies may have been prompt but the tone was unmistakably crabby. This was particularly true during times when I was trying to carve out time to work on my own research. It took a rather dramatic change in my lifestyle to unhook myself from my 24-hour inbox. Suffice it to say that a yurt and an outhouse were involved. The effect on my stress level was immediate. In order to check my email I had to be in my office during a time when I was not teaching. Not surprisingly, even though I was less available to my students, the teaching relationship greatly improved."

An **associate professor at a major university in the U.S. Midwest** said, "The divide between work and life, and the time I spend not connected, is increasingly non-existent. My phone and computer are always by my side. I might be working from home to my office with only a 15-minute gap in between. During that gap, I often check email when at a red light. Even if I bike, I

am listening to something streaming on my phone. I have communicated via email with my spouse. I have also texted my children to come to dinner in order to easily get their attention. I am hyperconnected and always responding to the first thing rather than looking around me or making decisions that take time and thought. I have back problems and posture-alignment problems as a result of extended time in front of a multitude of screens.”

A **research scientist** said, “Rather than reading a book or magazine on my commute, I do things like check Facebook and look at emails that I can’t easily respond to. Rather than arriving at work refreshed or arriving home with some space from work, it all comes with me.”

A **college administrator based in North America** said, “In terms of personal impact, I have developed the habit of taking more work home, which often negatively impacts family interactions and leads to home-based stress development. Further, it has reduced the time for exercise and leisure – all of which can negatively impact physical, emotional and mental health.”

A **co-founder of an institute studying values** wrote, “Work is now a 24/7 ordeal.”

A **professor emerita of public policy at a major U.S. private university** said, “I am becoming increasingly aware of the way constant access to digital forms of communication can be overwhelming. I think I’m relatively politically/socially aware, but the current (growing) bombardment of email appeals for political action or donations to address a multitude of apparently apocalyptic problems may at some point numb my senses.”

Changing norms about speedy responses and engagement

Renee Dietrich, a retired professor, commented, “The main change is that people expect a response faster. There is not much time for reflection or analysis.”

A **professor at New York University** wrote, “My professorial title should be ‘professor of email.’”

A **North American entrepreneur** wrote, “There have been many instances when I haven’t responded on Facebook in a way that someone felt I should, resulting in resentment. There have been other times when I’ve been ‘stuck online’ and then late for real-world activities. There have been lots of times where information presented sounded good and healthy but upon research turned out to be dangerous advice.”

A **CEO of a publishing house** said, “While digital technology has certainly connected me with old friends and family members, it’s not like we really know these people. I now have former classmates asking me for money, I also know things about relatives and their political beliefs that make me never want to spend time with them. So as much as it brings people together, it also drives wedges. I’m not proud of the contempt I feel for some former friends after reading their Facebook posts, but nor can I deny it.”

A **research scientist** said, “Checking Facebook has become a chore, yet I must do this regularly to shore up ties with friends and family. As a woman, I’m culturally conditioned to do so.”

The attention economy and surveillance society

Jeremy Blackburn, a computing sciences professor who specializes in the study of the impacts of digital life, wrote, “My children (girls, 2 and 7) spend significant amounts of time on the internet (probably too much, but, hey, I practice what I preach). Bottom line: Google and Amazon probably know more about their preferences than I do, and could probably influence them in ways that I can’t even fathom. To that end, my eldest daughter really enjoys one particular YouTube channel, which is entirely appropriate for her (FGTV), however, she has trouble recognizing that the channel is a *business.* Thus, she will on occasion come to us and ask to do one of the absurd things that the channel operators do. For example: A giant food fight. My daughter simply does not have the maturity to fully understand that these people are making their livelihood with their videos, that they are edited in such a way as to make them entertaining, and that what she sees is not their normal familial activities. We have spent a lot of time discussing this with her, but it still pops up on occasion. Perhaps this is an indication that we are not properly regulating the online content she consumes, but I suspect that, even though we provide her with a fair amount of freedom, we are much more stringent than the ‘average’ parents. I believe that this general idea extends to teens and adults as well. We are inundated with content that represents a *curated* slice of our contacts life online. This slice is non-representative of reality, and can lead to some serious misconceptions about how other people live. This was much less of an issue before the ubiquity of the Web, and my gut feeling is that it will grow unabated for quite some time.”

Marcus Foth, professor of urban informatics at Queensland University of Technology, wrote, “We need to stop using digital technology for the blind and undirected acceleration of neoliberal growth expectations and instead reintroduce a moral compass of compassion and ecological thinking. While I see the potential of digital technology to do great things for society, I have strong reservations about how it is used and adopted in everyday life in pursuit of neoliberal growth trajectories that are further fueled by the big data analytics craze. Critical humanities research is urgently needed to influence the technocratic and engineering driven culture to solve humankind’s

problems. In my personal experience, I lament seeing how great research outcomes are increasingly being reviewed by bean counters in a quantitative assessment of research performance that reduces research to numbers: grant income, Ph.D. completions and number of articles in Q1 journals. Big data is killing the zest of aspirational researchers who wanted to change the world for the better and are now just reduced to a row in a spreadsheet. Speaking of well-being, many just quit.”

Deborah Coe, a coordinator of research services based in the U.S., said, “I hate to admit this, but I spend a ridiculous amount of time on my cellphone, checking emails, Facebook, Pinterest, the news and playing games, on a daily basis. And I do it to the point of choosing to not go outdoors on a beautiful day, or to the point of getting blurry vision and ignoring the warning signs that I’ve overdone it. Here’s my question: If I, a social scientist, cannot resist this temptation, what is happening to our children and our children’s children?”

A **professor based in North America** said, “I want to share a short excerpt from Chapter 1 of Frischmann and Selinger’s ‘Re-Engineering Humanity’ (Cambridge, April 2018): ‘Last year, my first grader came home after school very excited. ‘Dad, I won. I mean, I’ve been picked. I get a new watch.’ ‘That’s great,’ I said, ‘What happened?’ He quickly rattled off something about being one of the kids in his class who was selected to wear a new watch for gym class. A day or two later, I received the following letter in the mail from the school district: ‘Dear Parents/Guardians, Your child has been selected to be among the first group of students to participate in an exciting new initiative made possible by our recent \$1.5 million PEP [physical education program] Grant. We have added activity watches to the K-12 physical education program so that we can assess how the PEP grant impacts students’ physical activity in [the school district]. We are periodically selecting groups of students at random to wear activity watches on their wrists to track daily activity time. One of the goals of our program is to see that students get the recommended amount of physical activity each day (60 minutes). As part of a quality physical education program, the use of activity watches can motivate students to challenge themselves to become more physically active. For the students selected to participate in this first group, we will be distributing activity watches starting Jan. 13 for students to wear before, during, after school and over the weekend until Tuesday, Jan. 21. We ask that students do not take off the watch once it’s on their wrist. They should sleep, even shower with the watch in place. There are no buttons to push or need to touch the watch, as it is pre-programmed to record and store each day of activity time. At the end of the nine days, each family will be able to access a report of their child’s activity, and you are welcome to consult with your child’s physical education teacher about what you learn and ways to further support your child’s physical health and fitness. In addition, the group’s combined information will be used to provide baseline data on student physical activity in [the school district]. In closing, I invite you to join me and your child’s physical education teacher in motivating your family to participate in

physical activity together. If you should have any questions about this new technology, please do not hesitate to contact your child's physical education teacher. Yours in health, XXXX
XXXXXXXXX Supervisor of Health, Physical Education and Nursing Services.'

"When I read the letter, I went ballistic. Initially, I wondered about various privacy issues: Who, what, where, when, how and why? With regard to collection, sharing, use and storage of data about kids. The letter did not even vaguely suggest that parents and their children could opt out, much less that their consent was required. Even if it had, it couldn't be informed consent because there were so many questions left unanswered. I also wondered whether the school district had gone through some form of institutional review board (IRB) process. Had someone, anyone considered the ethical questions? I read the letter again but got stuck on: 'We ask that students do not take off the watch once it's on their wrist. They should sleep, even shower with the watch in place.' Seriously, bath time and bedtime surveillance! The letter made me think of one of those Nigerian bank scam emails that go straight into my spam folder. Such trickery! I thought.

"I remembered how my son had come home so excited. The smile on his face and joy in his voice were unforgettable. It was worse than an email scam. They had worked him deeply, getting him hooked. He was so incredibly happy to have been selected, to be part of this new fitness program, to be a leader. How could a parent not be equally excited? Most were, but not me. I contacted someone at the PTA, spoke with the supervisor of health, wrote a letter to the school district superintendent, and eventually had some meetings with the general counsel for the school district.

"The program is like so many being adopted in school districts across the country – well-intentioned, aimed at a real problem (obesity), financed in an age of incredibly limited and still shrinking budgets and elevated by the promise of efficiency that accompanies new technologies. What caught people's attention most was a line from the letter I sent to the superintendent: 'I have serious concerns about this program and worry that the school district hasn't fully considered the implications of implementing a child-surveillance program like this.' No one previously had called it 'child-surveillance.' All of a sudden, the creepiness of bath time and bedtime surveillance sunk in. Naturally, this triggered familiar privacy concerns. The term 'surveillance' generated a visceral reaction and was an effective means for getting people to stop and think.

"Up to that point, no one seemed to have done so for several obvious reasons. People trust the school district and love technology. The salient problem of obesity weighs heavily on the community; activity watches seem to be a less intrusive means for addressing the problem. People obtain information about their activity levels and then are better able to adjust their behaviour and improve fitness. They can do so on their own, as a family, or in consultation with the physical education teacher. Plus, it was funded by a federal grant. The activity watch program presents

substantial upside with little or no downside, an easy cost-benefit analysis. For most people, it seems like one of those rare win-win scenarios. After my intervention, very little changed; better disclosure and informed consent apparently would fix everything. These limited privacy concerns fall woefully short of acknowledging the full power of techno-social engineering. The 24/7 data collection and the lack of informed consent are real problems. But the stakes run much deeper.”

Sleep problems and stirred-up woes

Larry Rosen, a professor emeritus of psychology at California State University, Dominguez Hills known as an international expert on the psychology of technology, wrote, “Since publishing a journal article on the impact of technology on sleep, I have made a conscious effort to silence my phone one hour prior to bedtime, and it has improved my sleep and alertness during the day.”

An **attorney based in North America** wrote, “There is a loss of, and interruption of sleep. There are conflicts over failure to respond in what is now seen to be a ‘timely’ fashion. There is increasing personal impatience. The effects are especially strong on teenagers.”

A **communications professional based in North America** said, “My sleep patterns have been negatively impacted.”

A **North American professor** wrote, “Time previously spent dealing with boredom – day dreaming, contemplating, etc. – is now spent tethered to one’s phone, which is not relaxing and eventually makes my thumbs hurt.”

General concerns and complaints

Yasmin Ibrahim, an associate professor of international business and communications at Queen Mary University of London, said, “The problem is as digital technologies become seamlessly part of our everyday engagement and mode of living – we may not question our actions or decisions we make online. Making the internet a healthy space means analysing our modes of being and everyday engagements in the digital realm and this itself can be stressful. But keeping the internet a space of ideals requires us to do precisely that; to question every action and think about the internet architecture and how our activities are connected to a wider digital ecology of producing and consuming.”

Riel Miller, team leader of futures literacy at UNESCO, said, “Digital life should be pull not push. Demand-driven. What it hasn’t yet been able to deliver on is the capacity to know why, when and how to pull. Without the curiosity engine configured for pull’s life of surprise we suffer under the

regime of push's desperate need for certainty, diminishing what the Net can deliver, even if it allows much more spontaneity."

Mike Caprio, innovation consultant for Brainewave Consulting, said, "I have consciously made choices to limit the intrusion of my digital life into my real life. I no longer carry a smartphone, I only occasionally carry a flip phone when I know I am going to need to be reached or make calls. I only allow notifications from computers or tablets to interrupt me during work hours. I deleted my Facebook account in 2013. While this has reduced the number of interactions with friends, family and colleagues, I feel much more connected to my life and in my relationships."

Scott Johns, a high school teacher, commented, "Just yesterday, I had been to a secondhand book store to get some specific texts (a job-related task) and as a joke bought a couple of old fiction books. Then there was a period of time when I was in my car waiting for my wife to finish a meeting and I thought I'd have a read. They weren't great books so I expected to have a bit of a laugh at them. The written words on those old pages captured my mind in a way that was unexpected. My mind was soon lit up with imagery and I went into a deep state of contemplation of not only the story but the skill of the writer. I realized that there was nothing else to the book, it had its story and no more, so I was able to let go of the need for there to be more happening. Had the story been available online, firstly, I would not have chosen it above the proliferation of options and demands presented by the computer as vehicle for the internet. Secondly, had I started the story, my mind would not have wandered within the story but to the many other things the computer could have provided me at that moment. I would have engaged thinly with the story with the result that little trace of it would have remained in my neurology. The cute and clever choices of words made by the writer would have vanished by breakfast time. No enhancement of my mind would have occurred. It would have been a strangely empty task. But this morning I have the very unfamiliar desire to read fiction books."

Laurie L. Putnam, an educator, librarian and communications consultant, wrote, "Anecdote #1 Digital technologies let us be more present in the lives of distant family and friends. My family is spread around the region, close enough to get together often, but far enough apart to make in-person visits an effort that requires significant travel time. Yet, despite the distance, I look after my elderly mother and keep in close touch with my 12-year-old nieces. Every day we depend on email, texting, document sharing and web-based medical systems. From 150 miles away I can order medications for my mother and communicate with her doctors online. I can help my nieces with their homework online, in real time, and we can share daily life in pictures, text, and video. Our days and lives would be very different without the internet. Anecdote #2 My shiny new washing machine blinked at me with a high-tech LED readout that offered more choices than ever for cleaning my clothes. Cool. But those lights went out a few years later, just after the warranty

expired. A service technician diagnosed the death of the circuit board and ordered a replacement – cheaper than a new washer, he said. The new board arrived, but it didn’t work either, the fault of another faulty chip. ‘That happens. It’s not unusual,’ said the technician who next recommended discarding the entire 300-pound washing machine and buying a new one. The experience was frustrating, inconvenient and expensive. Did the digital washing machine clean my clothes better? Sometimes. I liked and used about 20% of the options. But overall I had been perfectly happy with my old analog washer. Was the digital washer more expensive? Yes. Did it break faster? Yes. Was it fixable when it broke? No. Recyclable? Unknown. Chips have relatively short life cycles, and if we don’t want our children to inherit landfills of disposable appliances, we need to design more reliable products that can be serviced and recycled. Did the digital machine raise my stress level? Yes. Overall, did the digital washer improve my well-being? No. And it wasn’t even connected to the Internet of Things, surreptitiously collecting data about my lost socks and water usage. Just because we can make everything digital doesn’t mean we should. There are cases where our well-being is better served by simpler, analog tools.”

Frank Odasz, president of Lone Eagle Consulting, commented, “I started online in 1983 with two big personal goals: 1) To learn how to live and work solo from anywhere. Now I am celebrating my 20th year as president of Lone Eagle Consulting, primarily creating and delivering unique online courses for citizens and educators, specializing in rural, remote and indigenous internet learning. I’ve done over a million miles, presenting prolifically. 2) To understand, truly, what’s the best that good people can learn to do for themselves and others online. Being online at 300 baud back in 1983 has now evolved to having 7 MB fixed wireless at a rural ranch house in Montana. I’ve been able to dramatically enhance my ability to absorb lots of information routinely and to synthesize my learnings in articles, live presentations and unique online courses. But, the shelf life of such knowledge keeps shortening due to our age of accelerating change. The sheer volume of what I’ve put online is testament to the power of online self-directed learning. But along the way I taught myself to avoid the time-wasting tactics of corporations. Believe it or not, my smartphone hardly ever rings, beeps or otherwise controls my peace of mind. The ideal rural lifestyle, Goal #1, has been something of an art to achieve and maintain. This morning, I’m about to write an article on the Code of the West, linking our moral code to [corporate entities’] snarky, persuasive algorithms and the 6,000-plus youth suicides annually, anxiety problems of 1 in 5 screen-agers and more ‘impacts’ that are just recently making the mainstream news. I’ve presented for APEC [Asia-Pacific Economic Cooperation] twice on indigenous broadband training best practices and the challenges of positive social engineering; designing for positive outcomes by a connected human family. We’re realizing that everyone has the choice for a global voice and impact. If the remaining 3 billion not online – mostly young, poor and eager to learn but without schools, teachers or online access – are suddenly given online access without moral guidance and meaningful short-term outcomes, then connectivity worldwide will be a lose-lose instead of a carefully orchestrated win-

win. This is the understanding that I've worked to achieve since I came online in 1983 at 300 baud. Here I find myself, still solo, knowing one in five kids have been cyberbullied at the high school in Meridian, Idaho, my granddaughter will attend. Net neutrality and freedom of creativity and speech has been killed by tech giants; 47% of jobs will disappear by 2025 due to AI and robotics; and the tech giants are killing competition and startups instead of seeking the win-win of unleashing the latent creativity in everyone on the planet. The stupidity of actions by Not My President [Trump] are against common sense, the love of learning, fairness for all and American values. But, if too many rural folks are still fooled by Facebook news on their smartphones, then the worst is yet to come."

A **professor from North America** wrote, "The internet is everything for me, my family and my students today. We would not and could not do without it. Period. It is amazing! However, its ever-present influence in the lives of the hyperconnected also seems to be quite overwhelming – it is causing stress and anxiety and somewhat lowering the learning performance in courses for most of my students. I have been teaching at a fairly exclusive private university for 20 years. These students have all of the privileges of the most-connected. Over the past decade the students have been progressively more resistant to reading and writing assignments that require any sort of deep critical thinking, and I have had to annually reduce the course expectations as they literally buckle under what they perceive to be undue 'pressure' from simply being asked to do reading and writing assignments that were absolutely no problem for students of the first decade of the 2000s and previous."

A **research scientist** based in Europe commented, "I used to hate writing text messages and only used them in case the other person couldn't pick up the phone and I needed to leave an important information. Instead I called people, whether it was for making an appointment, asking them how they are, etc. Shortly after I started to use WhatsApp however, I was dragged into the constant availability and spend so much time on writing things that could have been discussed more easily on the phone. Because I receive so many messages, I cannot have my phone on loud when my data is switched on, which also means I miss phone calls. The fact that less and less people even recognise when they are being called makes it even more difficult to switch back to calls instead of messages again."

Stephanie Mallak Olson, director at the Iosco-Arenac District Library in Michigan, wrote, "I am sad that people who are not 'connected' to the digital world are often ignored or left out. If you are not on Facebook and your family only shares photos via Facebook you never see them. If you don't own a computer to get bank statements online you are often charged a fee to get the statements in hard copy. If you are not on a device and everyone else around you is then how do you get to be a part of the conversation? While at conferences, I find it rude that people are doing

other online work instead of giving their attention to a speaker. Many sources of information are now only available online and people must rely on others to find the answers. I recently heard a doctor say to a patient ‘you need to find someone to look it up for you online.’ People in that same office wouldn’t take the time to assist a person with their ‘patient portal’ access but instead gave them a Web address where they could take an online course. I happen to know the person does not have or know how to operate a computer. I use computers every day both for work and home. I do not text or even have my cheap cellphone close by as I want a limit on my time spent on a mobile device. I also support getting together with family without devices so we can talk.”

A technology consultant and expert on attention and workflow previously with a top-five tech company wrote, “It’s been liberating and enslaving. It takes effort to ignore. We have given it more power than we’ve given the best parts of our humanity.”

Anthony Rutkowski, internet pioneer and business leader, said, “Although it has clearly changed daily life, it is arguably not for the better.”

Tiziana Dearing, a professor at the Boston College School of Social Work, said, “We have a running quote in our family that sums it up so well. ‘Do you remember when you used to have to wonder things?’”

A research scientist and internet pioneer commented, “In the small, digital technology has been a highly positive experience. I work from home part-time – a wonderful contribution to my well-being – and I keep in contact with friends too distant to see often. It is in the large – the societal – where I feel the negative aspects of the digital world have personal consequences for me, an impact on my well-being. The rise of hatred, the manipulation of politics and so on – these are *not* distant events with no personal impact.”

A professor wrote, “Now when I wake up in the morning I reach for my iPhone with trepidation to find out what outrage our so-called ‘president’ has perpetrated already. It’s horrible.”

A senior product strategy expert commented, “I ride bikes with an older friend in the mountains of bucolic Pennsylvania. The friend, who had not yet discovered Facebook, Instagram and texting, and I would go for a ride. I loved that I was disconnected for a few hours. The last time we rode he was getting alerts through a Garmin mounted on his handlebars (they were mostly from Facebook – people liking a photo, etc.). It interrupted both my experience of the bike ride and my connection to my friend.”

A **professor based in Oceania** wrote, “I grew up with pen and inkwells at school and a typewriter at work. Right from the very beginning it was too complicated and time-consuming for men to do this type of demeaning, boring work. Over time, typing pools disappeared, executive assistants appeared and even some brave men would actually *type*. Technology improved ‘women’s work’ but not their prestige or paycheck. My first experience with email occurred while working for large American actuarial firm. I could send work last thing during the day (in Australia) and first thing the next morning I had a reply. Wow! Now technology is being driven by business across all areas for money, money, money. Greed has taken over. Isolated pensioners and the poor across the world are being excluded from knowledge, personal growth and education, due to costs, the need for constant upgrading of hardware and software and the greed of the 1% through money manipulation, laundering and crooked tax loopholes. Technology keeps increasing inequality. The disadvantaged will never catch up.”

A **data scientist based in Europe** wrote, “A friend has recently begun trading bitcoin. The volatility of the ecosystem, the potential for massive gains and the stories of others benefiting incredibly from their investments led to near-obsessive behaviour. He would phase out of meetings, meals and social events to check the current bitcoin value – it became more important than anything else.”

An **executive director of a Europe-based nonprofit** wrote, “We don’t understand what we can trust anymore. Just this week, a member of the family wrote over iMessage to ask me to share a password over a ‘secure’ medium ‘like email’; and another asked for a more secure way to do banking than over Wi-Fi. I’m not mocking either; I’m pointing out that people I know who don’t necessarily get what I do for a living don’t quite understand what’s going on but have concerns that will lead to both withdrawal and poor decisions that will negatively affect them.”

3. Fifty-fifty anecdotes: How digital life has been both positive and negative

A number of these experts wrote about both sides of the story, taking the time to point out some of the ways in which digital life is a blessing and a curse. A selection of these mixed-response anecdotes follows.

James M. Hinton, an author, commented, “Having grown up in the pre-internet era, my childhood was spent in a substantial monoculture. There was a single shared set of values and beliefs that everyone was expected to conform to. As someone who did not fit into that set of shared expectations (and only grew further apart from them as I aged) this created a substantial sense of isolation and even oppression. The advent of internet technologies – and particularly the ability to communicate instantly, inexpensively, across the planet – has given me access to like-minded individuals who have eased that sense of isolation. This makes it sound as though my answer should have been that these technologies have created, and will continue to create, a substantial improvement for my well-being. However, the very technologies that have created these opportunities have exposed me to even more of the general hostility of the surrounding culture to those like myself. Rather than a small, local community isolating me, now there is sense that a substantial portion of the world, establishment and orthodox belief systems are actively opposed to my positions. Perhaps, to take things to a bit of an extreme, I could compare it to being sent to the Warsaw Ghetto. I am, at last, surrounded by a large number of people like myself, but with an impending sense of dread at what is waiting just beyond the fence to eventually come down and wipe us out.”

Frank Kaufmann, a scholar, educator, innovator and activist based in North America, commented, “Technology improves the lives of people who can avoid being dominated by it and forced into debilitating addictions to it. Technology allows me to grow and benefit from loving relationships among friends and family who can now be close despite geographical distance. Tragically it prevents the addicted from growing and benefiting from the most exquisite types of encounter, namely being in the physical and personal presence of another.”

Eric Royer, a professor based in North America, said, “Digital technology has fundamentally reshaped higher education, to the point where lectures are being replaced with online courses and information is readily available at the click of fingertip. This means that knowledge is no longer the domain of the ‘Ivory Tower’; however, I hold concerns over the effect of the internet on actual learning and a love for education itself. As a consequence of digital technology, education has become a commodity, and students view it as a means to an end.”

Sasha Costanza-Chock, associate professor of civic media at MIT, said, “On the one hand, digital technology has been used by progressive social movements to rapidly organize an enormous mobilization wave after the election of Trump. We’ve seen digital media used as a key tool to turn out hundreds of thousands of people with very short notice to protest the Muslim ban, attacks on LGBTQ rights, immigrant rights, the Women’s March, #MeToo, continued #BlackLivesMatter mobilizations, and more. At the same time, digital media are also used to surveil social movement actors in increasingly sophisticated ways; to propagate well-funded disinformation campaigns; and they are also used by far right movements.”

Barry Chudakov, founder and principal of Sertain Research and Streamfuzion Corp., wrote, “As a researcher with colleagues in the communications sphere, I hear a recurring conversation about the new world realities of ‘Me, Inc.’ made possible by ubiquitous digital technology. The good news is that concept-generation, creativity, programming, publishing or musical performance is no longer in the hands of indifferent gatekeepers – the greybeard editors of various industries who decided which voice and talent was worthy. But this coin has another side.

“Digital technology has, in many areas, hollowed out apprenticeship and expertise. Anyone with a tool (a digital camera or smartphone, editing software, some programming chops) can now be an expert and build an app or a reputation. Older communicators may marvel that newer digital tech tools enable fresh ideas, ingenious approaches and direct versus staged or canned presentations. On the other hand, in the ‘Here Comes Everybody’ world of digital tool mayhem, just having the tool is readily equated with expertise. Many people see in this the breakdown of ‘guild wisdom’ – learning a craft that took years of mentorship and trial and error, which results in reduced standards of excellence and quality. Often there simply are no standards. When there are no real experts, everyone can present her/himself as an expert.

“The impact on workers’ well-being is profound: from relying on buzz words to explain approaches that are highly conceptual but lack experience, to relying on data summations that cannot be clearly articulated as beneficial to outcomes but provide a cloud of information that appears to be relevant – I see a high degree of insecurity and a struggle for clarity and standards. Whether you call yourself a designer, a programmer, a social media expert, a storyteller, a data analyst, a market research professional – you can now go through any door that is near you to get a job or build a career. But the mentors, for many, are gone. You will come up with brilliant insights that were ho-hum years ago; you will propose fuzzy solutions that appear to you clearly superior but are hollow as a dead tree; you will eventually consider your career and brand far more important and worth spending time on than your client’s job – following the dictum that ‘Me, Inc.’ means Me First.

“My friends’ lives in regard to well-being feel permanently insecure. The framework of progression, succession and apprenticeship is gone. ‘Me, Inc.’ rules. It’s me and my software and my digital technology. But, of course, a new apprenticeship will likely appear and then gatekeepers and filter governors will once again be part of the scene, albeit in different form – probably algorithms. This is because newer digital tools enable cooperation and increased socialization, even if it happens through screens, platforms and crowds.”

Richard Jones, an investor based in Europe, wrote, “Prior to 2010 I used physical newspapers, watched scheduled entertainment, used a voice phone which could also send texts, used a map to navigate. I used to get frustrated waiting for Windows to boot up. As of 2018, I expect instant service when I ask a voice assistant to play me music, to adjust the heating, to read me books, to adjust the lighting, to display directions and choose the route to drive anywhere. I have a continually curated email subscription list, I have several newspapers on my devices, I no longer use physical diaries on my tablets or other display devices and my handwriting has due to non-use deteriorated. I can switch between devices almost seamlessly, I expect – through the cloud – to continue wherever I am and to use the best screen physically available locally. I physically and mentally sense a torrent of information which I navigate through and, even though I feel some confidence relative to my peers that I’m staying on top of it, I sense youngsters’ greater ease with some of it and a greater bewilderment as to where to focus. I guess this is due to the continuous split-second choices and discarded or simultaneous deep-dive leads presented by the networked nature of hyperlinks. We are all on personal journeys as we navigate these choices and attempt to prioritise effectively. This opens the door to effectiveness but also stress. Life could typically have been much more aligned with one’s peers in previous decades. For instance one would study the same syllabus at university. One might go to broadly the same holiday destinations. But nowadays the opportunity to self-curate one’s education by increasing access to material presented by the best educators, to go off piste [the beaten trail] in research, to use drone footage of holiday resorts not only to select but to remotely experience holidays through high resolution YouTube videos on huge screens in high definition is marvellous. I am particularly interested in the developments about to enrich the lives of elders’ living arrangements: the potential to physically monitor their well-being (IoT sensors based on motion, heat, pulse and analysed by algorithms identifying exceptions to norm) or voice-controlled calls for help. I definitely suffer stress to do with feeling out of control or discomfort because whereas I typically lead a single-focus style of life I now lead a much more immersive style of life. Deep-dive focus with the associated memory capacity and recall used to be a good approach. Now, as search engines augment our recall and the information available is so vast, [Edward de Bono’s](#) ‘experience blotting pad’ becomes to me the only viable way forward; that means submitting to accelerated information throughput, letting the brain rank the leads by depth of import and relevance, and cross-correlate the hodgepodge into useable conclusions.”

Seth Finkelstein, consulting programmer at Finkelstein Consulting, wrote, “When the Net was younger, many users of it were easily able to have *substantive* open forums where anyone could join. I very much enjoyed being able to have discussions with people who were at a status level far greater than I could have communicated with beforehand. On the other hand, that meant people at a correspondingly higher status level could be personally offended by what I wrote. In retrospect, for me, the trade-off was not worth it. This is now writ large in social media today. There’s much more of a potential for becoming internet-famous, which can be a blessing or a curse. But it’s possible that there are many more and powerful curses around than blessings.”

Christian Huitema, a technology developer/administrator based in North America, appreciates the internet but commented that being disconnected is still occasionally quite important, “We now have a new checklist item before going out to dinner: We make sure that none of us is carrying a phone.”

Andie Diemer, journalist and activist user, wrote, “I use technology in almost every aspect of my life, as everyone I know does. It helps me make quicker, more-informed decisions and it can connect me to anything or anyone at any given moment. However I’ve also noticed the compulsions that come along with having technology so engrained in my life; the dopamine hit when you see you are receiving likes, the soothing feeling that can come from looking at photos of baby animals. Technology can make us feel anything whenever we want – all we need to do is hit search. As much as it’s great to plug in and be connected and feel limitless, there is no real total opposite of that in our society anymore. There is no way to totally shut it off or opt out. Most jobs require you to be computer-literate or to have a cellphone that can be on your person at all times. Our greatest strength can also be our greatest weakness, and our human relationship with technology is a classic testament to that.”

Colin Tredoux, a professor of psychology at the University of Cape Town, commented, “The advantages of digital technology are clear, but there are also disadvantages. One memorable advantage was being able to track and keep in contact with my two young children, ages 12 and 7, when they were lost on a train in Germany. I was able to get them to approach passersby, and get them onto a train that would get them to a designated location even though I was in Cape Town at the time. However, I can also tell stories about how much the ubiquity of digital technology has made everybody feel unsafe – the slightest disappearance of children or friends or adults from instant communication makes everybody highly anxious, almost always for no good reason (last year my daughter, now 20, went offline in Paris, and we spent six hours fretting, worrying, etc.). In other words, we need to weigh up the cost of worrying versus the benefit of making safe. My sense is that the former occurs with 100-times-greater frequency than the latter, so then the important question is what weight to put to the two.”

Simeon Yates, professor of digital culture at the University of Liverpool, wrote, “Digital life can be dominated by email and time-management tools. Even using these well leads to a significant increase in workload. This is not matched by changes in organisational structure and management practice to address this workload. This has long-term health impacts. But digital life is also good. Nearly everything we do for enjoyment has been helped by tools and apps: Going climbing (using an app for route guidebook), reading (endless access to books), music (endless access to music), film (endless access to film and TV), keeping in touch with friends and family, organising time together. All of these are much easier.”

Daniel Schultz, senior creative technologist at the Internet Archive, commented, “This morning I rolled out of bed to see a note from a constituent on Twitter, an email from a public school think tank about the extreme need for more effective communication with parents, I logged onto Slack to catch up on notes from my coworkers and friends, and received a FaceTime from my daughter downstairs as a reminder that it was time to eat breakfast with her. The end of this story actually captures both the benefits and risks of technology. I was immediately drawn into my phone after waking up – I got information, some of it adding to my pile of tasks and increasing my stress, some of it enabling human connection, but it was also at the expense of spending my first moments with my family. My life would not exist in its current form without digital technology. I work from home, and as a result I am able to see my family any time of the day. My professional collaborations are coordinated and executed online. A large portion of my civic engagement and advocacy is done through the creation or use of technology to share a message or make a point.”

Leora Lawton, lecturer in demography and sociology and executive director of the Berkeley Population Center at the University of California, Berkeley, wrote, “In positive ways I have close friends that I met online through email lists, colleagues that I communicate with and the ease of doing business or personal matters no matter where I am in the world. I love being able to check things in Google on my iPhone as the thought occurs. I like apps on my phone. I get to listen (or watch) baseball and other sports anywhere. However, I dislike the continuing demise of radio and print newspapers. Online sources are a different experience. They have their pluses, but there’s a reason why people still like vinyl over CDs. I feel the same way about radio. I take 25 hours off each week from the digital world – sometimes more – for religious reasons. Without the religious imperative I’m not sure I would do it, but I’m so glad I do. It’s such a relief! My co-religionists all agree. Even the teens often agree (not always of course, but they are teens).”

Daniel Berleant, author of “The Human Race to the Future,” commented, “We all remember the days when any group was subject to interruptions as someone’s cellphone rang. Text messaging and email have made communication even easier, while alleviating the interruption factor imposed by a ringing phone. At the same time, it has presented a disadvantage: people often will

not answer a phone call, especially young people. This has produced an adjustment problem in my own experience, whereby I would sometimes like to call a family member on the phone, but cannot get through because they prefer a text message that does not interrupt them. I, and others, need to adjust expectations and tactics to the realities of modern cellphone-based communication.”

Charles Ess, professor, department of media and communication at the University of Oslo, said, “An obvious example is the use of digital technologies to communicate with family and friends around the globe. On the one hand, all of this makes it wonderfully easy and convenient to stay in touch – including during critical life moments such as the birth of a new grandson, a sibling’s loss of a job, a serious illness or death, et cetera. At the same time – as someone who grew up writing letters, e.g., the ones I wrote to my parents while working and then traveling through Germany and Europe in 1971 – I’m acutely aware of what is NOT communicated through digital channels (researcher Sherry Turkle addresses this more eloquently). First of all, such a letter demanded extended attention and focus – and, as research over the past 10 years or so has confirmed, the process of handwriting slows one down so as to open up silences and spaces for reflection that we elide quickly over if only using a keyboard. There is also the materiality of the letter. To not only see the words – but to hold in one’s hand a piece of paper that existed with me and then with those close to me at a specific time and place decades ago – is utterly distinctive. I receive hundreds of emails a day and write 10 to 20 or more. My professional and personal life turn on them, along with many other digital and communication technologies, of course. But I strongly doubt that my children will be interested in or find much value in trawling through even just the emails sent to them after I am gone. While they have their own affordances – first of all, speed and convenience – they also suffer from a kind of immateriality and, usually, brevity. By contrast, I suspect they’ll find my physical letters to be far more valuable and precious. I don’t think this is just nostalgia. Rather, it resonates with the so-called ‘death online’ research, which – alongside evidence for the many benefits of grieving and mourning via social media, memorial sites, etc. – also documents how for some number of people, precisely young people, there is the discovery that grief requires embodied co-presence. This is ramified by the unpleasant sides of online grief, e.g., postings from ‘friends’ who ignore you the next day, etc. Again, there is some indication of not necessarily rejecting ‘the digital’ entirely in favor of ‘the analogue’ (with all the caveats those terms require) – but rather of attempting to find a better balance.”

Nathalie Coupet, an internet advocate based in North America, said, “My first thought in the morning, having just awoken, is: ‘Do I have any emails?’ The internet has taken over my life and made me a 24-hour-a-day-connected pod to its mother ship. Without my smartphone, I dare not venture in the Big World out there. What if someone was trying to contact me? Ironically, I still remember the day when, sitting comfortably in a tram in Zurich, I had vowed to never carry a cellphone with me. To jealously safeguard my independence. To daydream in peace and be

deliciously idle. Not to be so engaged all the time in a stressful awareness of place and time, people and events. To be left alone. It has now become a goal.”

Craig J. Mathias, principal for the Farpoint Group, wrote, “I’ve benefitted from email, other messaging services including voice and video communications, access to a wide array of information via the Web, and access to many services I use regularly, like banking and health care. All of these are good, but I do worry about security and privacy, which still receive far too little attention. Stronger penalties are required for those who compromise these vital requirements.”

Kathleen Hayes, a technology specialist based in North America, commented, “For the good, my 91-year-old mom checks emails and uses her tablet when she travels so she can stay connected. She uses the caller ID on her home phone to ward off robo calls. For the not-so-good, on her new car some of the controls were difficult for her to figure out. What used to be a knob is now a screen with a vague description of what it may or may not do.”

A **professor at a major U.S. state university** said, “I am able to share information with my family who live in other states more easily. We are able to see photos and share news to groups that would have taken longer in the past. I do often wonder if we really want photos of our children online, however. I feel concern about safety and well-being of children.”

Theodora Sutton, a Ph.D. candidate at the Oxford Internet Institute, wrote, “... Digital technology is interwoven into my daily life as it is with everyone I know. The first thing I do when I wake up is usually check my iPhone for messages and news or scroll through Twitter on my laptop to help wake myself up. I find it to be an extremely useful and relaxing way to see what’s happening in the world without necessarily engaging. I also often use resources online when I’m struggling to fall asleep, as there is a rich library of calming content and most of it is free. A problem that I have with my digital technology is the way that boundaries are blurred. For example, context collapse on social networking sites, which make posting content a minefield, and can cause unnecessary anxiety. Another way that similar boundaries are blurred is in the activities I use the laptop for – both working and relaxing can be provided by the same ‘portal’ of my laptop screen, which I find unhelpful, as when I’m working there is always a distraction available, and when I’m relaxing it’s always possible to quickly check my work email, both things which can hinder the task at hand.”

Richard Padilla, a retired system administrator, said, “Tech has changed the development of the lives of everyone. A need to refine its processes for better growth is now the requirement.”

Michele Walfred, a North American communications specialist, said, “I have witnessed family members unable to join conversations, sit at a table and not bring their phones with them, etc. Social media platforms have provided everyone with a forum to express views, but, as a whole, conversations are more polarized, tribal and hostile. With Facebook for instance, there has been a huge uptick in fake news, altered images, dangerous health claims and cures, and the proliferation of anti-science information. This is very distressing and disturbing. People are too willing to share without doing their due diligence and fact-checking first. People now get their news from sources that are only aligned with their belief systems or ‘tribe’ and freely shut out any information that they don’t like or agree with. On a positive note, if one is interested in diverse opinions and views, the ability to make informed opinion and decisions is at one’s fingertips. I learn something new on the internet every day. GPS, maps, navigation have transformed my personal transportation. It has changed the way I shop, source local materials, find out what is going on in my own community, or – when I travel – immediately connect me to inside information about a new town or city. I used to bring along a Rand McNally map. Now I use Google Maps and, while I miss looking at maps, the technology now is so accurate and convenient. I am an avid photographer, and the multitude of editing apps is astounding. I have 40 installed on my iPad and they have transformed my artistic efforts. My grandson lives three and a half hours away in a very large city – not a pleasant drive for me, so being able to FaceTime him is a development I treasure.”

Timothy Leffel, a research scientist at the National Opinion Research Center (NORC) at the University of Chicago, one of the largest independent social research organizations in the U.S., said, “I probably spend more waking hours looking at a screen than not. And this seems to be the new normal, which is a bit jarring. If you’d told me 10 years ago that this is what everyday life would be like today, I’m not sure what I’d think. I’m not sure what I think today, even. I have superficial knowledge of any topic at my fingertips, which is incredible. But with that knowledge comes a highly addictive and hidden reward system that probably leads me to overestimate the positive impact of computers on my life.”

Bouziane Zaid, an associate professor at Al Akhawayn University in Ifrane, Morocco, wrote, “Changes in quality of life, whether positive or negative, cannot be reduced to our uses of technology. It is a human tendency to idealize a past that probably was never as good as we think it was. Well-being is improved and lessened due to hyperconnectivity.”

Kathleen Harper, an editor for HollywoodLife.com, said, “GPS has changed my life – for the better. It sounds dramatic, but I honestly don’t know what I would do without it. I am what they call ‘directionally challenged,’ and I’d forever be lost without my handy-dandy smartphone (and my backup portable charger of course). Living in New York City can be intimidating, and it’s quite easy to get lost. Without step-by-step GPS and my subway app, I definitely wouldn’t be able to

explore the city, attend events, and try new things as much as I do. Playing devil's advocate though, maybe without it, I'd be forced to actually learn and/or memorize the city, which would in turn expand that part of my brain and make me a more well-rounded person."

Mark Richmond, an internet pioneer and systems engineer for the U.S. government, wrote, "Twenty years ago my daughter met a man 8,000 miles away. Yes, it was via internet. They married and she has lived there ever since. Despite the distance we are able to stay in regular contact, including routine video chatting. My other children and grandchildren use social media either very little, or sometimes way too much. It helps to keep up with what everyone is doing, the joys and pains in their lives, but it also exacerbates things, especially for the younger ones. Every minor disagreement seems to be a major production, lived out on a stage. I am hopeful that as they learn, they will also learn moderation."

John Senall, founder of Mobile First Media Group, said, "Digital technology has offered additional career opportunities and advancement to me. However, the type of career opportunities for me and countless others usually involve sitting at a computer screen, working more hours and being stuck to a smartphone. All have made communication more seamless and constant, but have, in part, played a role in decreasing my health quality. I love meeting many new people from across the world through digital mediums. But I have noticed culturally a decrease in actual face-to-face human interaction or even a voice phone call with emotion and true connection, accuracy and depth. I ponder what it all may mean for my young children and their friends and classmates, down the road when there will be deeper technology and more communication changes. The benefits of a hyperconnected life are amazing and rewarding. Yet, I think many of us yearn, at least occasionally, for a simpler, less digital time."

William J. Ward, president of DR4WARD, said, "After spending a lot of time on digital I found my physical and mental health declining. I now spend much less time on digital and much greater time doing physical activity like yoga to counteract the damage to the body that spending too much screen time inevitably causes. I also invest more time in face-to-face and social activities and finding a balance where digital is helpful but does not distract from relationships."

Cliff Zukin, a professor and survey researcher at Rutgers University, commented, "The only way I can reach my children is by texting; this is disjointed asynchronous communication, not conversation. However, I can walk out of the house not knowing how to get where I'm going or needing a map, which I love."

Christopher Wilkinson, internet pioneer, wrote, "I do not agree with the epithet 'hyperconnected.' We are far from it. Life-changing events: 1) Word processor spell/grammar

checkers in several languages. 2) Sending SMS by Skype (disgracefully discontinued by Microsoft). 3) Negative: Demise of the handwritten letter.”

Llewellyn Kriel, CEO of TopEditor International, said, “Humans will grow into the future – a next step in evolution. It is inevitable and unavoidable. The process will be painful and discomgoogolation [sic] will be the ubiquitous bedfellow of digitality. I have experienced a multitude of changes personally, but the digital world has proven immensely less stressful than the personal one. As a long-time sufferer of major depressive disorder, I find the interactive world much more accessible and, indeed, easier to manage – even control – than the unpredictable, capricious, vindictive and volatile world of conventional human interactions. That is a world where personal control does not exist for people such as me; where direct bullying is far more harmful and traumatic than anything I’ve experienced on the internet. But I have had to learn to assert myself digitally. This is what people will have to learn. It dictates new power dynamics, new ways of sifting wheat from chaff, right from wrong, malicious from inconsequential. It is far easier in the digital world to identify that which matters from that which does not.”

A selection of anonymous responses

An **internet activist** from Europe said, “Great for keeping in touch across oceans, but across the city people’s tendencies to substitute text for voice is not always good. It is great to be able to look things up instantly, but this may lead to shallow understanding of answers.”

An **internet pioneer and social and digital marketing consultant** commented, “On one hand, I can be in close communication with my 12-year-old daughter and not have to wonder where she is as she goes about her day, and can remind her to bring things home from school. I can also be in contact with friends through social media, which helps as I live in a city where I don’t have many social outlets. On the other hand, I’ve found that too much time spent online, particularly on Facebook, can make me feel depressed. Either I catch myself comparing my life to the posts that others make, or I get overwhelmed by the toxic political atmosphere currently playing out.”

A **senior lecturer in media studies** wrote, “There are both positive and negative consequences from being always-on. Being always-on means that I can be in constant contact with my family who live on the other side of the world, but it also means that I receive work emails all throughout the day.”

A **senior lecturer based in Southeast Asia** said, “Time wasted on social media is negatively affecting well-being; positively, social media helps to bring people close, so that it helps to make a

lively environment with intimate people. In education, it has been a good platform as well as a resource.”

A **chief of staff for a nonprofit organization** wrote, “FOMO (fear of missing out) is a problem, but digital life is also useful for communicating with loved ones far away.”

A **retired professor and research scientist** said, “Good impacts of digital life: Immediate and extensive answers and how-to advice; quick, easy access to books and movies. Bad impacts: Reduced conversations with wife, especially at mealtime – just Google it.”

A **vice president at a major entertainment company in the United States** commented, “Clearly, collective action (good or bad) happens with much more ease and speed. I marvel at the ease of organizing things that result in greater connectivity with my family – from renting a house in a far-away place for vacation to helping my children.”

A **user-experience researcher** commented, “It has both profound positive and negative affects [sic]. On the profound positive side, there was the time my son called me from an ambulance after taking a bad fall on a ski mountain. I was on a chairlift; he called me from his cellphone to mine. He was only 10 years old. I immediately skied down and met him at the hospital. It turns out he was fine, but as a parent, it was important to me to know about this right away. On the profoundly negative side, whenever I am with my teenage children they spend much more time texting and playing with their phones than they do talking to me. I feel it makes it easier for them to separate themselves from their parents.”

A **research scientist** said, “On the one hand, I can communicate with friends who decades ago I would not be able to stay in touch with. On the other hand, we have a white supremacist in the White House.”

A **professor of English** wrote, “What has been positive is the ability to follow along with positive facets of others’ lives – birthdays, anniversaries, etc. This has been positive. Yet, again, a birthday card, a phone call, a conversation would be more meaningful.”

A **futurist based in North America** wrote, “Generally, very positive is the access to information. It is easier to do research, find out about current events, etc. Among the negatives are kids immersed in digital devices; staring at a screen as an acceptable activity.”

A **professor from North America** said, “I’ve cut off from lots of digital media. I realized it was consuming lots of my time. It didn’t make me feel good – what I was seeing and reading made me

mostly angry and depressed. It was feeding negativity. I am happier without it. However, a friend who has a child with a chronic medical condition has monitoring so that medical personnel are notified when parameters are exceeded so interventions can occur rapidly. The child gets fast feedback, too, so they can change behavior or take action in a way that would not have been possible five years ago.”

An **entrepreneur** based in North America wrote, “I feel like technology has made our life better (instant access to information) and worse (instant access to entertainment).”

A **professor based in Europe** wrote, “When I replaced my mobile I gave the used, but still quite powerful one to my granddaughter aged 10. She made nice pictures with it, which I appreciated. But she also got obsessed with certain internet games, leading to conflicts.”

An **assistant professor of political science at an Ivy League university** wrote, “As a parent this is easy. My kids (ages 4 and 7) are steeped in technology. They have iPads in their classrooms (which help with engaging them and I think are a net good), but they also want to be on iPads at home (which may not be as good). They think every screen is a touch screen. Even at 4 years old, my son’s first instinct when he doesn’t know something bit of information is to Google it or ask Siri. My kids love to read books on Kindle (and much prefer it to paper books) so even the educational activity of reading is now deeply intertwined with technology. In some ways that is good, on Kindle they can highlight the words they don’t know as they read and – something that has proven very important for my 7-year-old – they cannot see how thick the book is, so they tend to read more without lamenting about length. At the same time, they have little interest in libraries and miss out on books that are not available via Kindle. They can FaceTime family who live far away, but sometimes they see that as a substitute for actual visits. In short, there is good and bad but there is little doubt that technology structures our daily life in profound ways.”

An **executive director of a tech innovation firm** said, “Looking at my kids; they’re connected and informed. And they spend too much time online.”

A **director of technology** based in North America wrote, “In a positive way it has allowed me to keep in touch more easily with friends that live far away. In a negative sense it has provided a distraction to what is happening in the moment.”

A **professor based in Europe** wrote, “My working days are longer! I wake up and check email and I am habituated like one of Pavlov’s dogs to check my email regularly throughout the day and into the evening. Even though my boss has banned us from sending work emails after 6 p.m., I still check my email. As a result, I never truly feel disconnected from work – even during vacations.”

A **professor from North America** said, “For me (in my 50s) digital life has been positive – a way to keep up with old friends. However, for my teens, it can create sadness and feelings of being/having less than peers.”

An **associate professor at a U.S. university** said, “My ability to stay connected to family and friends brings me great joy. And I’m able to connect to other academics when I am not on campus, which is more often than not. However my husband feels that I am too connected! In this regard it may be hurting our relationship. At times using technology can border on addiction. For me that is.”

A **North American researcher** wrote, “Technology has changed my life because I now work for a company in a different state. My contributions are made at my home, via telecommuting. This is both good and bad – on the good side, I’m able to help take care of my disabled son and to help my wife through a battle with cancer. But, on the down side – there’s no opportunity for the water cooler discussions that can speed up development work. There’s no opportunity for facetime with managers and VPs to get that all-important rapport with senior management. In other words, there are no opportunities to exercise and grow the ‘soft skills’ necessary to progress in the organization.”

A **college student based in North America** wrote, “Technology is the biggest culprit in my life and my friends’ and family’s [lives] when it comes to interfering with normal sleep patterns. Our phones keep us up much later than we should be. Before I had my phone, I never had the distraction of apps, social media, and more to keep me from sleeping. The more we ignore that, the more we will lose our creativity. However, the connectivity has been wonderful for when I am at college to video chat with friends and family when I miss them, which is lovely. Also, social media has helped my family and I connect with friends that we lost touch with years ago, and I was able to make my own website to share my work with the world. It is also a way for me to get feedback on the book I am writing as I write it. Digital life increases our stress levels anytime we misread or read too much into a message. Sending a text is not the same as talking face-to-face or on a phone – you do not get to hear the sincere emotion from the voice behind the message. I have learned to never argue via text and to clarify in real life what someone meant to say to me before I blow it out of proportion.”

An **anonymous respondent** wrote, “It has made work communication easier but often less thoughtful since constant connectivity fuels the expectation of an immediate response. It also has diminished the opportunities to disconnect from work for a proper break, but it does give me flexibility to not be tied to my office.”

A **college student** said, “I am not too proud to admit that I also suffer from the FOMO (fear of missing out) that comes from living a hyperconnected lifestyle. I hold lengthy Snapchat streaks with friends to bond with them, I check my social media accounts for approximately three to four hours daily. Daily I catch myself peering at my phone the moment I awake to learn about the events I may have missed while I slept. While my Snap streaks do provide a satisfying, quick dopamine hit each time I respond, overall, I cannot say that living a hyperconnected lifestyle has enhanced my life in any way. But I would also argue that it has not hurt my mental well-being either. While I am willing to admit I struggle in certain areas to balance my digital distractions with the important things in life; overall, I don’t think that it has had a negative effect on my life. I do think that some people are negatively impacted, but most will work to find a balance after some trial and error as new tools for digital life continue to appear and we adjust.”

A **clinical assistant professor at a major U.S. university** wrote, “I am old enough to see the effects that cellphones have had on family dinners. In a positive light, some arguments are resolved more quickly – Wikipedia can often provide resolution to many debatable points and repair faulty recollection, leading to much more productive conversations. More negatively, the interruptions caused by text messaging and email often divide the attention of those dining together and can sometimes diminish the quality of time spent together.”

A **teen library specialist** wrote, “I have had both positive and negative impacts in my personal mental health courtesy of hyperconnection of digital connectivity. In the negative, the ‘always-on’ capabilities are big triggers for my anxiety around perfectionism and performance. In the positive, when working with my therapist on ways to bring myself more forward in relationships, social media was a key tool. She described Facebook (at the time that was the dominant tool) as disastrous for her work with narcissists but a dream for working with folks like me. I have grown more comfortable with expressing myself and I feel more visible in this format than in others within my communities. And I don’t mean that I have more friends online than I have in the real world. I mean my ‘real-world’ relationships are richer because I share with the people in my workplace or family or church via social media in a way I never before did and still rarely do face to face.”

An **anonymous respondent** commented, “We are able to keep in touch with family all around the globe. On the other hand, our family wouldn’t have been so spread out in the first place without the internet.”

An **academic leader based in Australia** wrote, “Digital technology has provided unthinkable access to information. Systems for doing business have enabled us to perform tasks and obtain and share information like never before. At the same time, digital transformation has meant each

individual spends a lot more time navigating systems and doing work that previously would have been performed by other experts.”

A North American social justice advocate commented, “Email emboldened me: to appreciate academic essays, to question journalists, to comment politically, and when those strangers wrote back I felt very good. Email has kept me in touch with close relatives in ways that would have otherwise seemed burdensome. My handwriting isn’t pretty, and keeping up with a flow of ideas by hand wore out my muscles. Word processing was a tool to write letters to newspapers, [to] journal, [to] take reading notes. Websites now encapsulate news for me; search answers questions so easily that I can indulge my curiosity. Technology enables me to honor my introversion without becoming isolated. On the other hand, much of my email is spam and getting worse. At holiday times and election times the requests for support are so overwhelming that I ignore them all. Social networking seems inefficient and entrapping. I use the desktop and telephone tools to silence as much of it as I can. And I have turned off the sound on my landline and cellphone. However, home computers and then email reshaped my life by enabling more participation in ways that I found comfortable.”

A principal research technologist who works for the U.S. government commented, “In general, I find that easy access to Facebook, podcasts, blogs and other endless content increases my stress level as I strive to take it all in and feel ‘caught up.’ I am never caught up. It is not possible to be caught up. I have started setting aside ‘screen-free’ days (or at least half-days) where I do not drink from that fire hose. I find that my mood improves, my stress declines, I notice the world around me and I am overall happier. I read more books, write letters and find other ways to entertain myself and connect with friends and loved ones. It’s surprising how it takes a conscious effort to step away from the screen and rediscover these options. [The good:] I have more frequent (but more shallow) contact with distant friends than I could ever have imagined. I get to ‘eavesdrop’ on my friends’ adventures through Facebook without having a conversation. In some ways this feels strange; I’m better informed but less connected.”

A research scientist based in North America commented, “I’m 26, so the internet changed pretty much everything, right? It grew up with me, more or less. In fifth grade, I remember writing a research report about the gray whale. We had to go through all these crazy steps – finding books, writing down facts on notecards, putting them in those little clicky boxes that held notecards. Now, when was the last time you saw one of those? We were allowed to have internet sources, I think, but there were all these requirements about what constituted an appropriate source, as well as strict limits on how many internet sources could be used. The assumption was that somehow, finding information on the internet did not constitute real research, and this was our teacher’s way of preparing us for the research we would be doing in the future. Fast forward to now, where I’m

finishing up my Ph.D., and I do research practically every day. Do you know how often I have to seek out resources that I can't find online? It's never. Literally never. My dissertation uses about two, neither of which I sought out – just some books my advisor just unceremoniously handed me one day. Admittedly, my academic field is quite young comparatively, and there may be fields with more emphasis on works that cannot be found online, but still, this is mostly a good thing for my well-being, as well as for the productivity of my field. However, there are also more insidious consequences of the increased volume and availability of research. The most prominent consequence I observe is that there is simply more research than we as a field are able to deal with. There is so much research that is redundant or contradictory, and our field doesn't currently have the structure in place to reconcile it all. Hundreds of papers are published every day, and most of these will never be read, let alone cited (and that's assuming people are actually reading what they cite – ha!). There is so much pressure to publish research even when it's greatly flawed, as well as to frame every finding with a theoretical impact it cannot actually have. Instead of a gradual forward trajectory, we're sitting on an unmanageable mound of contradictions. This research machine I live in is so unimaginably wasteful, with such deeply entrenched and utterly misguided incentives that I do not know how we will ever overcome it. This is not to suggest that this is entirely the fault of digital technology, although it certainly has enabled this trend. Moreover, in many ways our techniques and standards of rigor have improved over time, so I don't want to sound completely hopeless about scientific progress in my field. I think to an outside observer my field is flourishing, and we have much to offer the world. However, if we do not find ways to restructure and rethink what progress looks like, we will be crushed by our own weight.”

A **solutions consultant** based in North America wrote, “Hyperconnection via text messaging has helped in a world where physical proximity and time constraints make it more difficult to connect. For me, a quick text, letting my husband know that I'm thinking about him or giving him a heads-up on something important – is amazingly positive, and helpful. And it does so without detracting from my day. Same when I communicate with my son, who spends 50% of his time at his father's house, and 50% with me. It helps us stay in touch and positively connected. But we also do not overuse it – perhaps we are not as 'hyperconnected' as other users of technology, although, my mother, who is 80, says that the text messaging is 'just too much!' She believes that is hyperconnectivity.”

A **research engineer at one of the top universities in the U.S.** commented, “Personally the internet has been my entire career (starting from ARPANET [Advanced Research Projects Agency Network] days), so this isn't really a fair question for me. I will say, though, that even I get nervous if I leave the house without my smartphone. I'm not sure if that's good or bad, but I certainly never thought it would happen to me.”

An **anonymous respondent** wrote, “Twitter is the greatest time-sink ever but a great source of interesting news and entertainment. However, I waste too much time on it when I could be reading the newspaper or a book.”

A **post-doctoral fellow at Stanford University** commented, “My family and I use our smartphones to send photos, video chat and send text messages on a daily basis, allowing us to stay in contact more frequently we did back when letter writing and telephone calls were our ways to stay in touch. On the negative side, I look at headlines way too much as a form of stimulus any time I have a second to spare – even when I’m with my children. I’d say I’m less present, less able to focus on reading long form text, than I was before my smartphone came into my life.”

A series of scenarios tied to potential future concerns of digital life

Peter and Trudy Johnson-Lenz, owner-operators of Pathfinding Smarter Futures and participants in this canvassing, submitted in response to the request for anecdotes the following series of scenarios they wrote in 2005 in order to spark discussions of potential issues.

Auto Angel I: Your commute co-pilot

You’re yawning as you slowly merge into the through lane on the long ride home. Your comfy biofueled hybrid-electric car is programmed to keep you alert and relaxed. The new ATM (autonomous traffic management system) keeps everything flowing smoothly without slow-downs or jam-ups, but you still have miles to go before you sleep. The music seems to keep pace with the flow of traffic, and you slip into a kind of driving flow state. The ATM is intelligent, but not smart enough to have autonomous lanes to do the driving for humans, nor do most people want that. Crack! The burst of sound and light, and the gentle spray on your face, with the aroma of peppermint, eucalyptus, and rosemary, brings you back to full alertness. Damn! You’d nodded off again. Fortunately, it was only a second, thanks to Auto Angel, your co-pilot on the two-hour commute from the agile economy enterprise zone to the only affordable housing in the tri-county area. Too bad your insurance doesn’t cover that latest wakefulness drug that’s all the rage. Auto Angel advises you to pull over as soon as possible and take a short power nap. You can set Angel’s alarm so you won’t sleep longer than 20 minutes and get groggy. You start looking for a safe place to stop and rest.

Auto Angel II: The high price of drowsiness

The e-alert from your doctor’s office is surprising. “We’re concerned. Please come in at your earliest convenience. Press star for an immediate appointment.” What could possibly be the matter? What do they know that you don’t? At the clinic, you’re confronted with a stark,

unforgiving choice. Auto Angel has reported one too many instances of drowsiness for your automobile insurance company to allow you to continue to drive under your existing policy. Either you must get the much more expensive hazardous driver rider or be treated immediately for “driving drowsiness” (suspected narcolepsy or sleep apnea, now on your medical and insurance e-records). If you’re actually diagnosed with narcolepsy, your doctor must report it to the department of motor vehicles. You’ll be subject to random monitoring for treatment compliance. Your health insurance doesn’t fully cover this treatment because driving is now considered an elective activity. There are drugs available, but they’re not on your formulary list. You’re advised to take public transportation. Of course, some can still afford fully private transportation, just they can afford health care and higher insurance premiums. You’re not one of them. And the public transit system doesn’t extend all the way out to your community yet.

HealthGuardian

You’re in Mexico City on your way to your next business appointment. “Señor, amigo, come with us -- NOW! You’re at risk for a heart attack. We’re from HealthGuardian. We’ll get you to the hospital pronto.” Your HealthGuardian biosensors are supposed to provide alerts of impending medical emergencies. Uniformed men with insistent voices grab you by both arms and hustle you toward an official-looking van. Are they really from your HealthGuardian monitoring service, or are they kidnappers? How can you verify their identity? Are you really in danger?!? Your heart races and your head spins. You feel pressure in your chest, and it’s hard to breathe. What’s going on?!?

Alexi, ever-faithful e-valet

Soft chimes announce his voice. “Sir?” Alexi, your e-valet, continues close to your ear. “May I suggest that you eat something soon? You’re moving into your danger zone.” His interruption irritates you as you walk briskly along the crowded sidewalk. “Sir, the bistro four doors up on the right fits your dining profile and has two very nice specials today. Or I can recommend the Thai restaurant around the next corner.” Your blood sugar level is dropping precipitously close to where even deciding to eat, let alone where, is becoming a chore. “Sir?” “OK, OK, Alexi,” you say to yourself. Your gait slows, you check the bistro menu in the window, and go inside. What ever would you do without Alexi’s constant and respectful attentiveness?

Your privacy – priceless!

Your doctor half-jokingly calls your new medication an “executive enhancer.” It helps you think fast and clearly, keeping you alert, mentally flexible, relaxed, and emotionally unflappable. You always feel refreshed and ready for anything. Just the edge you need in your highly

competitive business – better living, decision-making, and higher profits through chemistry. And who knows how it will enhance your performance in other ways? At the pharmacy, you pay cash to keep the transaction anonymous. The pharmacist assures you at check-out that the routine RFID [radio-frequency identification] tag deactivator and the special privacy bag he sells you give you dual layers of privacy and protection. You're confident and satisfied. Ten days later the first whispers appear online, speculating that your company may be in trouble. Nothing too specific. Rumors, innuendo. Your communications people are monitoring the situation and say there's nothing to worry about. Unattributed stories about your impaired capacity are next, suggesting that you may be unreliable or even unstable, and within 24 hours, you're smeared with the charge that you're taking a powerful psychiatric drug for an undisclosed but probably serious condition. Your company's stock price drops 60%.

Scrambling your identity

At WuMart's self-service checkout, you're fuming. You've ducked into the store on your lunch hour to pick up a few essentials for this afternoon's flight, and you're in a real hurry. Nothing is scanning right. The dental care travel kit scans as reading glasses, vitamin C as laxatives, and deodorant as antacid. You call loudly for a supervisor. The young man sighs. "Yeah, it looks like somebody in the store hacked our RFID tags again and scrambled the data. It'll get straightened out when the machines go through their data consistency and reliability power cycle in about 10 minutes. Sorry about that." He puts an obviously used, dog-eared "Out of order – please try again later" sign on the scanner. "If you'll just step through the electronic gate over there, we'll have you on your way in no time." You stride through the metal archway with your goods, and the human checker enters the products numbers to ring up your purchases. The finger touch system debits your account. Finally! You have just enough time to get back to the office. Later, when you try to enter the restricted area to get the data reports you need for your trip, you're stopped cold. Your implanted VeriChip doesn't properly authenticate your identify, and security forces are there in moments. Missing your flight will be the *least* of your problems.

The mall knows you better than you do

As you stroll through the environmentally controlled mall, your mobile flashes a steady stream of personalized messages from nearby merchants. "Jeans tops – 30% instant discount!" "Free skin-care consultation!" "Shakira CDs all on sale!" The automated ads have no way of knowing that the RFID-tagged jeans, derma-repair cream, and pop diva CD in your shopping bag are purchases for other members of your extended family. You're not interested in more purchases like them or to go with them. You're done. Nearby, the animated window display of dancing cookware catches your eye, and you linger a few moments, watching with great amusement. Flying frying pans? Flipping spatulas? Spinning plates? What were they thinking?!? The mall looks more like an

amusement park every time you come here. But now the stream of messages is all for cookware, tableware, stemware, cooking schools, and related products and services. You're beginning to feel you're being stalked instead of enticed with great offers. How did they know what you were looking at? What else do they know about you? And how do they know it?!? This is creepy.

Who is responsible?

The distinctive ring on your mobile is your daughter's. "Waaah! The bus didn't come, and it's our last practice before Saturday's big match! You've gotta drive me NOW. Plueeease???" Just then the mobile beeps twice. "Just a sec, sweetie." It's an automated request for you to approve entry of your new drug prescription into the GVS Registry database. You'll deal with that later. "OK, I'm back. I'll try to get someone to cover for me. Pick you up in 15 minutes, OK?" The next evening in a heavy rainstorm, a drunk driver ploughs into your Viridian hybrid. As they stabilize you on the way to the Trauma Center, the EMTs read your implanted VeriChip to get your updated medical information. In the ER, your condition suddenly worsens in a most peculiar way, and the doctors suspect a bad drug interaction. But how could that have happened? Did the EMTs make a mistake? Were you taking something they didn't know about? Right now they'll save your life. What happened and who's responsible will come later.

Shopper's revenge

"Undecided shopper's discount! Pick up prod, put back 2x, RFID shelf reader -> instant 25% off coupon." Intrigued by this alert from Shopper's Revenge ("Don't get mad – get bargains!") on your mobile screen, you check for something you actually want, walk over to the right shelf, pick it up, and put it back. Rinse, repeat. Voila! This is too easy. ... A month later, the store catches on and raises the bar. You still get the coupon if you pick up the product, wait for over a minute, and put it back three times. A little tedious, but worth it for some pricier items. That works for three more weeks. A few days later, your Shopper's Revenge e-coach tells you to vary the pattern so you'll look more "natural" – to fit the store's learning agent's evolving model of an undecided shopper. Thanks to Shopper's Revenge, you're saving money, outwitting the technology, and looking more and more like a very hesitant shopper every day.

About this canvassing of experts

The expert predictions reported here about the impact of the internet over the next 10 years came in response to questions asked by Pew Research Center and Elon University’s Imagining the Internet Center in an online canvassing conducted between Dec. 11, 2017, and Jan. 15, 2018. This is the ninth [Future of the Internet](#) study the two organizations have conducted together. For this project, we invited nearly 10,000 experts and members of the interested public to share their opinions on the likely future of the internet, and 1,150 responded to at least one of the questions we asked. Their answers to our main question about the future impact on digital life on people’s well-being were reported [here](#) and [here](#).

This report covers their responses another prompting query on the survey:

Please share a brief personal anecdote about how digital life has changed your daily life, your family’s life or your friends’ lives in regard to well-being – some brief observation about life for self, family or friends. Tell us how this observation or anecdote captures how hyperconnected life changes people’s well-being compared to the way life was before digital connectivity existed.

There was no “survey question” directly preceding this prompt, so this report contains no statistical analysis of their responses.

The web-based instrument was first sent directly to a list of targeted experts identified and accumulated by Pew Research Center and Elon University during previous “[Future of the Internet](#)” studies, as well as those identified in an earlier study of [people who made predictions about the likely future of the internet between 1990 to 1995](#). Additional experts with proven interest in this particular research topic were also added to the list. Among those invited were people who are active in global internet governance and internet research activities, such as the Internet Engineering Task Force (IETF), Internet Corporation for Assigned Names and Numbers (ICANN), Internet Society (ISOC), International Telecommunications Union (ITU), Association of Internet Researchers (AoIR), and the Organization for Economic Cooperation and Development (OECD). We also invited a large number of professionals and policy people from technology businesses; government, including the National Science Foundation, Federal Communications Commission and European Union; think tanks and interest networks (for instance, those that include professionals and academics in anthropology, sociology, psychology, law, political science and communications); globally located people working with communications technologies in government positions; technologists and innovators; top universities’ engineering/computer science and business/entrepreneurship faculty, graduate students and postgraduate researchers;

plus many who are active in civil society organizations such as Association for Progressive Communications (APC), Electronic Privacy Information Center (EPIC), Electronic Frontier Foundation (EFF) and Access Now; and those affiliated with newly emerging nonprofits and other research units examining the impacts of digital life. Invitees were encouraged to share the survey link with others they believed would have an interest in participating, thus there may have been somewhat of a “snowball” effect as some invitees invited others to weigh in.

Since the data are based on a nonrandom sample, the results are not projectable to any population other than the individuals expressing their points of view in this sample.

The respondents’ remarks reflect their personal positions and are not the positions of their employers; the descriptions of their leadership roles help identify their background and the locus of their expertise.

About 79% of respondents identified themselves as being based in North America; the others hail from all corners of the world. When asked about their “primary area of internet interest,” 27% identified themselves as professor/teacher; 15% as research scientists; 9% as futurists or consultants; 8% as advocates or activist users; 7% as technology developers or administrators; 7% as entrepreneurs or business leaders; 7% as authors, editors or journalists; 4% as pioneers or originators; 2% as legislators, politicians or lawyers; and an additional 15% specified their primary area of interest as “other.”

About half of the expert respondents elected to remain anonymous. Because people’s level of expertise is an important element of their participation in the conversation, anonymous respondents were given the opportunity to share a description of their internet expertise or background, and this was noted where relevant in this report.

Following is a list of some of the key respondents in this canvassing:

Micah Altman, director of research and head scientist for the program on information science at MIT; **Diana L. Ascher**, co-founder of the Information Ethics & Equity Institute; **Rob Atkinson**, president of the Information Technology and Innovation Foundation; **Richard Bennett**, a creator of the WiFi MAC protocol and modern Ethernet; **Ed Black**, president and CEO of the Computer & Communications Industry Association; **Nathaniel Borenstein**, chief scientist at Mimecast; **Ildeu Borges**, director of regulatory affairs for SindiTelebrasil; **Stowe Boyd**, futurist, publisher and editor-in-chief of Work Futures; **Nicholas Carr**, author of “Utopia is Creepy” and “The Shallows: What the Internet is Doing to Our Brains”; **Jamais Cascio**, distinguished fellow at the Institute for the Future; **Barry Chudakov**, founder and principal at Sertain Research and

StreamFuzion Corp.; **Narelle Clark**, deputy CEO of the Australian Communications Consumer Action Network; **Maureen Cooney**, head of privacy at Sprint; **Judith Donath**, Harvard University's Berkman Klein Center for Internet & Society; **Stephen Downes**, researcher at the National Research Council Canada; **Ralph Droms**, longtime network scientist, researcher, architect and engineer; **Esther Dyson**, entrepreneur, former journalist and founding chair at ICANN; **David Ellis, Ph.D.**, course director of the department of communication studies at York University in Toronto; **Charlie Firestone**, executive director of the Aspen Institute's communications and society program; **Bob Frankston**, internet pioneer and software innovator; **Oscar Gandy**, professor emeritus of communication at the University of Pennsylvania; **Mark Glaser**, publisher and founder of MediaShift; **Jonathan Grudin**, principal researcher at Microsoft; **Seth Finkelstein**, consulting programmer and EFF Pioneer Award winner; **Jim Hendler**, co-originator of the Semantic Web and professor of computing sciences at Rensselaer Polytechnic Institute; **Dewayne Hendricks**, CEO of Tetherless Access; **Perry Hewitt**, vice president of marketing and digital strategy at ITHAKA; **Jason Hong**, associate professor at the Human Computer Interaction Institute at Carnegie Mellon University; **Gus Hosein**, executive director of Privacy International; **Christian H. Huitema**, past president of the Internet Architecture Board; **Larry Irving**, president CEO of the Irving Group and co-founder of the Mobile Alliance for Global Good; **Shel Israel**, CEO of the Transformation Group; **Jeff Jarvis**, a professor at the City University of New York's Graduate School of Journalism; **John Klensin**, Internet Hall of Fame member, longtime Internet Engineering Task Force and Internet Society leader, and an innovator of the Domain Name System (DNS) administration; **Bart Knijnenburg**, researcher on decision-making and recommender systems at Clemson University; **Gary L. Kreps**, distinguished professor and director of the Center for Health and Risk Communication at George Mason University; **Leora Lawton**, executive director of the Berkeley Population Center at the University of California, Berkeley; **Jon Lebkowsky**, CEO of Polycot Associates; **Peter Levine**, professor and associate dean for research at Tufts University's Tisch College of Civic Life; **Mike Liebhold**, senior researcher and distinguished fellow at the Institute for the Future; **John Markoff**, fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University and longtime technology writer at The New York Times; **Craig J. Mathias**, principal for the Farpoint Group; **Giacomo Mazzone**, head of institutional relations at the European Broadcasting Union; **Robert Metcalfe**, co-inventor of Ethernet, founder of 3Com and professor of innovation at the University of Texas at Austin; **Jerry Michalski**, founder of the Relationship Economy eXpedition (REX); **Riel Miller**, team leader in futures literacy at UNESCO; **Mario Morino**, chair of the Morino Institute and co-founder of Venture Philanthropy Partners; **Gina Neff**, professor at the Oxford Internet Institute; **Lisa Nielsen**, director of digital learning at the New York City Department of Education; **Ian Peter**, internet pioneer and advocate and co-founder of the Association for Progressive Communications; **Justin Reich**, executive director of the MIT Teaching Systems Lab; **Larry Roberts**, Internet Hall of Fame member and CEO, CFO

and CTO at FSA Technologies Inc.; **Michael Roberts**, Internet Hall of Fame member and first president and CEO of ICANN; **Michael Rogers**, author and futurist at Practical Futurist; **Larry Rosen**, co-author of “The Distracted Mind: Ancient Brains in a High-Tech World”; **Louis Rossetto**, founder and former editor-in-chief of Wired magazine; **Marc Rotenberg**, executive director of EPIC; **Eileen Rudden**, co-founder and board chair of LearnLaunch; **Douglas Rushkoff**, writer, documentarian, and lecturer who focuses on human autonomy in a digital age; **Anthony Rutkowski**, internet pioneer and business leader; **Paul Saffo**, longtime Silicon-Valley-based technology forecaster; **David Sarokin**, author of “Missed Information: Better Information for Building a Wealthier, More Sustainable Future”; **Jan Schaffer**, executive director at J-Lab; **Henning Schulzrinne**, Internet Hall of Fame member and professor at Columbia University; **Evan Selinger**, professor of philosophy at Rochester Institute of Technology; **Brad Templeton**, chair emeritus for the Electronic Frontier Foundation; **Sherry Turkle**, MIT professor and author of “Alone Together”; **Joseph Turow**, professor of communication at the University of Pennsylvania; **Stuart A. Umpleby**, professor emeritus at George Washington University; **Hal Varian**, chief economist for Google; **Amy Webb**, futurist, professor and founder of the Future Today Institute; **David Weinberger**, senior researcher at Harvard University’s Berkman Klein Center for Internet & Society; **Daniel Weitzner**, principle research scientist and founding director of MIT’s Internet Policy Research Initiative; **Yvette Wohn**, director of the Social Interaction Lab at the New Jersey Institute of Technology and expert on human-computer interaction; **Ethan Zuckerman**, director of the Center for Civic Media at MIT.

A selection of institutions at which some of the respondents work or have affiliations:

American Association for the Advancement of Science (AAAS), Access Now, Adroit Technologic, Aging in Place Technology Watch, Akamai Technologies, Alliance for Affordable Internet, American Press Institute, The Aspen Institute, Apple, Asia-Pacific Network Information Centre, Berkman-Klein Center for Internet & Society (Harvard University), Boston University, Brainwave Consulting, Carbon Black, Cardiff University, Center for Advanced Study in Behavioral Sciences (Stanford University), Center for Civic Design, Center for Educational Technology, CERT Division at Carnegie Mellon University’s Software Engineering Institute, Chinese University of Hong Kong, Cisco Systems, City University of New York, Clemson University, Cloudflare, Colorado State University, Columbia University, Comcast, Darwin Group, Democratise, Designed Learning, DotConnectAfrica Trust, EchoStar, Edison Innovations, Electronic Frontier Foundation, Electronic Privacy Information Center (EPIC), Emory University, Eurac Research, European Startup Initiative, Farpoint Group, FICO, Força da Imaginação, France’s National Center for Scientific Research (CNRS), Gardere Wynne Sewell LLP, George Mason University, George Washington University, Global Digital Policy Incubator (Stanford University), GlobalSecurity.org,

Google, Hanyang University, HealthStyles.net, Hewlett-Packard, High Tech Forum, Human-Computer Interaction Institute (Carnegie Mellon University), Humanities Research Center (Rice University), Information Ethics & Equity Institute, Information Technology and Innovation Foundation, Institute for the Future, Intelligent Community Forum, International Telecommunication Union, Internet Corporation for Assigned Names and Numbers (ICANN), Internet Education Foundation, Internet Archive, Internet Engineering Task Force (IETF), Internet Initiative Japan, Internet Society, ITHAKA, NASA's Jet Propulsion Laboratory, Johns Hopkins University, Lighthouse Foundation, Massachusetts Institute of Technology (MIT), MediaShift, Michigan State University, Microsoft, Mimecast, Mindful Digital Life, Mobile First Media/Digital Healthcom Group, Nanyang Technological University, National Academies of Sciences, Engineering and Medicine, National Institutes of Health (NIH), National Research Council Canada, National Science Foundation, Nautilus, The Net Safety Collaborative, North Carolina State University, Netmagic Associates, New York University, NewPathVR, National Opinion Research Center (NORC), Northwestern University, Open University of Israel, Oxford Internet Institute, Packet Clearing House, Parsons Corporation, Peace Innovation Lab (Stanford University), Penn State University, Polycot Associates, Princeton University, Queensland University of Technology, Rethinkery Labs, Reuters Institute, Rensselaer Polytechnic Institute, Rochester Institute of Technology, Sprint, Stanford University, Statistics New Zealand, StumbleUpon, Sunlight Foundation, Syncfusion, Technology Education Institute, TechWomen.Asia, Telematica, Terbium Labs, Tetherless Access, The Millennium Project, The Mobile Alliance for Global Good, The Values Foundation, UNESCO, U.S. Department of State, U.S. Department of Defense, U.S. federal government, University of California (Berkeley, Irvine and Santa Barbara campuses), University of Chicago, University of Colorado, University of Copenhagen, University of Michigan, University of Milan, University of Minnesota, University of North Carolina (Chapel Hill and Charlotte campuses), University of Pennsylvania, University of Southern California, University of Wisconsin, Vanderbilt University, Verizon, Volta Networks, Way to Wellville, We Media, Wired magazine, Worcester Polytechnic Institute, World Wide Web Foundation, York University.

Complete sets of credited and anonymous responses can be found here:

http://www.elon.edu/e-web/imagining/surveys/2018_survey/Digital_Life_and_Well-Being_Anecdotes.xhtml

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