From Technology and Virtuality to "Our Digital Lives"
Working Group 9.5: Our Digital Lives

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Abstract. Following the work of scholars who see technology as intertwined with society, in this chapter we start with the history of our revamped working group, WG 9.5: Our Digital Lives, summarizing main activities by each chair, followed by a discussion of themes that we see as relevant to our group today. The chapter continues with some thoughts on future research about 'our digital lives' and our thoughts on what we could achieve in the future.

Keywords: Digitalization · Digital Work · Digital Lives

Building on a tradition of mainly qualitative and pluralistic research on the relationship of technology with society, the revamped (as of autumn 2019) IFIP WG 9.5: Our Digital Lives views digital technologies as strongly intertwined with most aspects of everyday life. Through our various activities, in the form of workshops, participation in larger conferences (e.g., Technical Committee (TC) 9's flagship conference, Human Choice and Computers (HCC)), and a series of blogposts, we aim to bring together academics, practitioners and others interested in how the digital influences our lives and society at large, what opportunities and challenges it presents, how it can be managed, and how it can influence the future of our lives.

We see our WG as providing a space for interdisciplinary dialogue and mutual exchange from a diverse set of disciplines (e.g., computing, information systems (IS), media studies, social theory, philosophy, anthropology, psychology, organizational studies, gender studies, politics and ethics, among others) interested in different aspects of the digital. Given our interest in a multiplicity of empirical sites and social phenomena associated with the digital, we explicitly encourage contributions in areas such as social media and online communities, connectivity and technology-enabled ways of working, emerging technologies and artificial intelligence (AI), and human enhancement, among many others. We explore some of these areas in more depth later.

We begin the remainder of this chapter with an overview of the WG's history, starting with its conception in 1989 – an era when digital technology was very different to what it

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is today – through to its awakening in 2006 and its further transformation in the last few years. We then discuss some of the themes that we see as strongly linked to our interests as a WG, including some of the themes mentioned above, and continue with a list of suggested areas for future research. We then close the chapter with a reflection on the WG in a context of rapid advances of digital technologies and an unprecedented impact on our (digital) lives that we are experiencing today; at a time following a widespread transition into technology-enabled ways of working due to the recent Covid-19 pandemic, and the emergence of generative AI. We hope that the chapter will be useful to a wide range of individuals; not only academics, but also practitioners, policy makers and educators who might be interested in finding out more about our activities and who may even want to consider becoming members and contributing to our growth and potential future impacts on our digital lives.

1 History

WG 9.5 has been around for a long time (since 1989) and its name, aims and scope were last updated in 2019 following earlier updates in 2008 and 2006. Digital technologies have evolved significantly during the last decade, with researchers and practitioners speaking about the digital rather than the virtual which was the case at the time. Moving away from a focus on virtuality, therefore, our most recent update, presented also below, also meant a change in terms of areas of focus, shifting our attention from older topics (e.g., computer-mediated communication) to more recent ones (e.g., online communities, AI) impacting also our identity as a group. In the following sub-sections, we provide a helicopter view of the history of the WG from its inception until the present. Each sub-section is named after the then WG's chair and the years of his/her tenure as chair in parentheses. Not all sub-sections are equally detailed as we were not able to retrieve information to the required extent for all different periods.

1.1 Klaus Brunnstein (1990–1995)

WG 9.5 was established in 1989 by Klaus Brunnstein as a group that would study technology from an informatics / designer perspective. Unfortunately, there is no further information as to the activities that took place during that time.

1.2 Years 1995–2006

According to IFIP's online records, and TC 9 online reports in particular, we have identified that Guenther Cyranek was chair of the WG in 1998. The WG's name was Applications and Social Implications of Virtual Worlds. During that period, its focus was on digital media and virtuality and their influence on culture in particular. Two workshops were planned in the year 1999: one in Germany (Virtual Environments 1999 in Stuttgart) and one in Brazil (Virtual University Autumn 1999, Fortaleza, State of Ceará, Brazil) [1]. As per information retrieved from the 2000 TC 9 report, two years later, Carolien Metselaar is mentioned as a member who leaves the WG, presumably as an earlier chair [2].

1.3 Niki Panteli (2006–2009)

Professor Niki Panteli (then senior lecturer in IS, University of Bath) served as the chair of the WG between 2006 and 2009. This was a newly revamped and renamed international WG introduced by IFIP TC 9, whose then chair (Professor Chrisanthi Avgerou) subsequently invited her to lead it due to her expertise in the area of virtuality (e.g., virtual teams, virtual collaborations). During her three-year tenure, Panteli set up clear strategies for the development of the WG, which included the organization of international workshops, an official launch, an international conference, and business meetings. Specifically, she launched the WG by organizing the First International WG 9.5 Workshop on Virtuality & Society (on June 16, 2006 at the London School of Economics and Political Science in London, UK) and she promoted attendance at international IFIP events, such as in Portland/Oregon, 2007, where a business meeting was also held. In addition, she played a lead role in the running of the First International Conference on Virtuality & Society: Massive Virtual Communities (organized with Warnke on July 1–2, 2008 at Leuphana University in Lüneburg, Germany), and an WG 9.5 International Workshop on Images of Virtuality (on April 23–24, 2009 at the Athens University of Economics and Business in Athens, Greece). During her tenure, the WG attracted members from around the world and from no members in 2006, grew to 60 by 2009, including well-known researchers in the field from leading Universities in the USA, such as the Massachusetts Institute of Technology (MIT), Stanford University and Boston University.

1.4 Martin Warnke (2010–2013)

In 2010, Professor Martin Warnke became chair of WG 9.5, David Kreps was vice-Chair, and Claus Pias secretary. The three chaired a track of the 9th HCC conference, part of the IFIP World Computer Congress in Brisbane, Australia, in September 2010. Jacques Berleur (TC 9 Chair 1999–2004) and Magda Herschui were the HCC 9 chairs, and Kreps, Warnke, and Pias were the chairs of Track 2: Virtual Technologies and Social Shaping. 2010 was the last year that Chrisanthi Avgerou was Chair of TC 9, after which she handed over to Jackie Phahlamohlaka, the South Africa Representative of TC 9.

In July 2011, Kreps hosted a "virtual" WG 9.5 conference at the ThinkLab, University of Salford, with members of the working group joining over videoconferencing. A small number of us (including Niki Panteli) were physically present; the rest dialed in. Sadly, this was the last WG 9.5 event for some time. In the same year, Warnke and Kreps made arrangements for a special issue in the *Information Systems Journal*, which in the end did not go ahead. Warnke became the German Representative of TC 9, and Pias dropped out due to personal reasons, whilst the popularity of the term "virtuality" itself began to wane. All WGs across IFIP seem to have a "shelf-life" and it began to feel that WG 9.5's "virtuality" incarnation had reached another fork in the road.

Magda David Hercheui, Diane Whitehouse, William J. McIver Jr., and Jackie Phahlamohlaka chaired HCC 10 in Amsterdam 2012, and, led by Martin Warnke, WG 9.5 contributed a Track – Session 5 (Section 4 of the Proceedings): Citizens' Involvement, Citizens' Rights and Information and Communication Technology (ICT) – Privacy and Security Challenges.

In 2012, Warnke and Kreps did a membership survey by email, and based upon the responses attempted to change the name of the WG, via the IFIP Technical Assembly Meeting that took place in September 2012, from "Virtuality and Society" to "Virtuality, Digital and Social Media." Unfortunately, there were objections from other TC chairs, and this idea was knocked back.

1.5 David Kreps (2013–2018)

In January 2013, Dr David Kreps became chair of WG 9.5 with Marie Griffiths, a colleague of his at Salford, became vice-chair, and Petros Chamakiotis, a former PhD student of Niki Panteli's, joined as secretary. Kreps kept the website up-to-date, and attended meetings of TC 9 in Kolding, Denmark in 2013 (alongside ETHICOMP), in Turku, Finland in 2014 (alongside HCC 11), in the UK in both 2015 (Leicester, alongside ETHICOMP) and 2016 (Salford, alongside HCC 12), and in Turin, Italy in 2017 (alongside ETHCOMP), but there were no meetings of the WG itself, which led Kreps to engage with HCC from that point on.

Along with HCC 11 Chair Kai Kimppa, Finnish representative of TC 9, Kreps secured a special issue in *Information Technology & People*, with Kimppa serving as a Guest Editor. The special issue was published in 2015. By this time (since 2014), Whitehouse had taken over the chair of TC 9 from Phahlamohlaka – who continued to be the South Africa national representative of TC 9 – and, following Kreps's involvement with HCC 11 through the aforementioned special issue, at the TC meeting in 2014, Whitehouse asked for volunteers to host HCC 12. Kreps, Griffiths, and another colleague of theirs from Salford, Gordon Fletcher, organized and hosted the 12th HCC conference at Salford in September 2016. At the subsequent TC meeting, the need to reboot several of the WGs of TC 9 – including WG 9.5 – was discussed and Kreps became the lead for a WG reboot initiative, to unfold over the coming years, focused on engaging people in contributing to HCC 13, proposed to take place as part of the proposed World Computer Congress to take place in Poznań, Poland, in 2018. Kreps's tenure as chair of WG 9.5 ended with him agreeing to replace Whitehouse as chair of TC 9, following her suggestion.

1.6 Petros Chamakiotis (2018–2021)

At the HCC in Poznań, Poland, Kreps passed on the baton to Petros Chamakiotis, chair, and Brad McKenna, vice-chair. Chamakiotis had been involved as secretary of the WG since 2013 and was then a lecturer in IS at the University of Sussex. McKenna was a lecturer in IS at the University of East Anglia. Chamakiotis and McKenna organized a track at that HCC, titled "Our Digital Lives," which is where they met Kathrin Bednar, a PhD student from the Vienna University of Economics and Business, whom they invited to join as the WG as secretary. Bednar enthusiastically agreed following an initial discussion at the conference dinner and a follow-up Skype call a few weeks later.

Since taking over from Kreps in Poland, Chamakiotis, McKenna and Bednar worked closely together to revamp the WG, updating its name, scope, interests, and members. The WG officially changed its name and scope the following year, in the autumn of 2019, due to technicalities, while the leadership of the WG made the relevant updates to the WG's website and the membership list. During the academic year 2019–2020, the

WG organized a workshop for the following HCC which had been planned to take place in Tokyo, Japan in September 2020. Although the organization of the workshop developed successfully and an eclectic number of high-quality submissions were accepted, the HCC was cancelled due to the Covid-19 pandemic. Although the conference itself was cancelled, the selected papers were scheduled to appear in the book of conference proceedings.

At the end of 2019, Chamakiotis moved from the University of Sussex in the UK to the Madrid Campus of ESCP Business School and recommended a workshop in Madrid that could take place in the academic year 2020–2021. Sadly, this could not go ahead because of the global restrictions due to the pandemic. In 2021, the WG offered a track (Track 5: Our Digital Lives) as part of the WG 9.4 Virtual Conference 2021, organized by IFIP WG 9.4 on "Implications of Information and Digital Technologies for Development." The conference theme was "Resilient Information and Communication Technologies for Development" (ICT4D) and the conference was held online on May 26–28, 2021.

Chamakiotis relaunched an earlier series of blogposts to ensure that some sort of contact with WG members could be reestablished. Given the limited opportunities for face-to-face (F2F) interaction in the context of lockdowns and social distancing, the blogposts were a great opportunity to keep the conversation going. The six blogs published during his tenure on the WG 9.5 website (and communicated to the members) focused on remote working (by earlier chair Panteli; April 2020); (dis)connectivity (by the then vice-chair McKenna; July 2020); digital health and activism (by Dimitra Petrakaki, September 2020), digital platforms (by Christos Begkos and Katerina Antonopoulou; December 2020); gender bias in IS academia (by Silvia Masiero; April 2021), and incivility and work email (by Emma Russell; July 2021).

1.7 Brad McKenna (2021–present)

In September 2021, at the TC 9 annual meeting, McKenna was confirmed as the chair for WG 9.5, Bednar became vice-chair, and the role of secretary remained vacant. It was a turbulent year due to the Covid-19 pandemic, so activities in 2021 remained limited. The HCC conference, originally planned for 2020, was rescheduled to 2022 in Tokyo and a WG 9.5 track at the conference was planned. Unfortunately, due to the on-going pandemic, it was not possible for the HCC conference to proceed in person. Therefore, conference tracks were merged with the main conference, and there were no specific WG 9.5 activities at the conference.

In 2022, McKenna organized a special issue of the *Journal of Business Research* titled "Virtual Influencers a New Frontier in Interdisciplinary Research," co-sponsored by WG 9.5 and the UK Academy for Information Systems (UKAIS). The theme of the special issue is on non-human social media influencers which are constructed and implemented with computer generated graphics, AI, chatbots, and other technologies. The deadline for the special issue was 15 February 2023 and it received 60 submissions. At the time of the final revisions of this chapter, the reviews of the submissions are ongoing. Also in 2022, Hameed Chughtai, senior lecturer at Lancaster University, became the WG secretary.

In 2023, McKenna, Bednar, and Chughtai, alongside the current secretary of WG 9.4 (The Implications of Information and Digital Technologies for Development), are running a joint WG 9.4 and 9.5 workshop at the European Conference on Information Systems (ECIS) in Kristiansand, Norway on June 13, 2023. The workshop is titled "Current Issues in the Digital Society" and explores themes around tackling the data-for-development orthodoxy and the ways digital technologies shape our everyday interactions.

2 Themes

In this section, we present a list of themes that we see as relevant to our WG today. These themes are not conclusive; they are meant to serve as a guide of some of the themes that – at the time of writing and revising this chapter – are viewed as current, relevant to the WG, worthy of investigation, and with potential for impact outside academia. In what follows, we review key literature of each of these themes.

2.1 Social Media and Online Communities

Social media platforms – such as Facebook, Twitter, Instagram, and WeChat – provide online spaces for friends, family members, business partners, or other individuals to communicate and exchange information [3]. The features of these platforms are designed to allow users to interact, coordinate, and form networks of different kinds of relationships [4]. There are many different types of social media platforms with various interactive communication methods [5] and are now an often critical and accurate way to support information flows and networks within our daily lives [6]. Social media are also becoming an alternative to traditional communication methods such as television and radio for receiving news and streaming of live events [4].

The use of social media has generated a large amount of research interest in recent years. Examples include the use of social media for customer engagement [7], social media and branding [8], and word of mouth [9]. These examples influence the ways in which customers make decisions [10], and has changed the ways in which companies and customers communicate with each other and has altered business strategies [11].

However, the use of social media is not uniform around the world. In the Western world, apps such as Facebook, Twitter, YouTube, and Instagram dominate. However, because these companies have been banned in China [12], other platforms have been developed to take their place. For example, Weibo replaces Twitter, and Youku replaces YouTube. WeChat, however, has arguably become the most important social media platform in China [13]. Chinese cultural values may also be inherent in the design of this social media application [14]. Social media platforms based in Asia tend to have tighter or closed social networks and relationships which reflects the less open self-disclosure and indirect communication styles more common in Chinese culture. This contrasts with Western style social media, which allow for wider social networks, more direct communication, and bolder forms of self-disclosure [15].

Traditional social media platforms, as well as digital platforms more generally, can also be used for the purposes of social movements and the development of online communities [16, 17]. In fact, social movements can also exist in virtual worlds such as

Second Life and World of Warcraft and have become platforms where online communities and social movements can recruit new members or participants and promote their online activities. Because virtual worlds are also more immersive than traditional social media platforms such as Facebook and Twitter [18], they allow for a broader range of social activities, for example, virtual parades [19], and where online communities can thrive [20, 21]. Online communities have also been found to enable a form of "digital activism" enabling globally dispersed individuals to come together and work towards a joint goal for the common good. This is the case with MedicineAfrica for example; a digital platform that hosts an online community of medical professionals and students from the UK and poorly resourced countries, such as Somaliland. Chamakiotis et al. [22] found that the purpose of creating social value by improving medical knowledge and clinical practice is underprivileged regions was enough to give rise to digital activism. New activities will likely arise as the Metaverse becomes more ubiquitous in society [23].

Lesbian, Gay, Bisexual, Transgender/Transsexual plus (LGBT+) social movements and online communities based in World of Warcraft demonstrate that the affordances of the game can be used by the players to create desired outcomes for online social movements, based on their goals and desires, and community involvement [20]. Power was exercised on the LGBT+ community by the developers of the game, and the online community managed to resisted the power [21]. They observed some similarities and differences between the LGBT+ movement and other online movements such as #MeToo. The #MeToo movement was similar in that social media were used to empower people to share personal stories of sexual abuse [24]. The difference, however, was that the #MeToo movement arose quite rapidly following the allegations of Harvey Weinstein whilst the LGBT+ movement grew slowly over several years. This demonstrates the nature of social media use can be vastly different depending on the goals and motivations of the users, but also that social media can provide for the collective power of individuals to come together and spread awareness [21].

In recent times, society has become more aware of the negative consequences of social media. Social media connect people from all parts of society together; however, this may have some negative consequences. One of these consequences is cyber bullying [25]. This has increased rates of anxiety, negative feelings, and depression which in the worst case scenario may result in outcomes like suicide [26]. Compared with traditional forms of bullying such as a small group of students in a school, cyberbullying has a far greater reach of victims. Traditional bullying may have little evidence as proof. However, for cyber cullying, victims can be humiliated online which increases the visibility to a broader group of people such as friends, friends of friends, family, and also unknown others, as videos can spread around various social media platforms which makes numbers difficult to estimate [25].

There are several other areas of concern relating to social media and our digital lives. One such example is fake news [27] and the emergence of deepfake technologies [28] which can spread rapidly around social media platforms and has been shown to influence in democratic elections [29]. A second area of concern privacy of user data. It was revealed that Cambridge Analytica was given personally identifiable information from 87 million Facebook users and has raised greater concerns for privacy protection

[30]. New privacy issues are emerging with contemporary social media platforms such as TikTok [31]. A third area of concern is social media bots. For example, Twitter bots [32] have been used to spread debates, such as the Covid-19 vaccine debates [33], or events like elections [34]. Although this list of concerns is not intended to be exhaustive, it demonstrates that as a society we need to be aware of how social media impact on our digital lives, both positively and potentially negatively and encourages us to think critically about its daily use.

2.2 Augmented Reality (AR)/Virtual Reality (VR)

AR is a technology which allows users to view the physical world in real time with virtual objects superimposed on it, thus augmenting the user's view, rather than replacing it [35]. The aim of AR is to simplify the user's life by augmenting the user's immediate surroundings with virtual information, thus enhancing the user's view of and interaction with the physical world [36]. AR has gained in popularity alongside the development of smartphones with enhanced cameras, GPS trackers, and other sensors which enable AR services for users [37]. There are many applications of AR for our digital lives, some of which are discussed below.

A popular use of AR is for gaming. The most well-known mobile AR game is Pokémon Go where users are asked to find virtual creatures (Pokémon) hidden in real-world locations [38]. There is potential for AR games to have an impact on our digital lives through changing consumer behavior practices and new marketing opportunities [39, 40], augmenting sports games [41] as well as health benefits [42].

Tourism is another area which AR has made a significant impact because it enables tourists to have an enhanced exploration of their surroundings [43]. In particular, because they have limited knowledge of their destination, AR helps tourists to increase their awareness [37]. Other areas of interest are AR for heritage sites [44], theme parks [45], urban destinations [46], mood maintenance [47], and its impact on senior tourists [48].

Another important area for AR and our digital lives is to understand its use in business. For business opportunities, AR can provide additional information which changes the way in which people work and shop [49]. Some recent examples include advertising effectiveness [50], decision making [51], enhancing online rapport [52], multi-sensory aspects in online retailing [53], time convenience and emotions [54], and virtual try-ons [55].

While AR integrates the physical world and the virtual world, VR fully immerses the user into a synthetic without seeing the real world. VR is a complete, computer-generated 3D virtual representation of a physical space and objects within it [49]. Users can navigate and interact with the virtual environment in real time [56]. There are three key elements of VR:

1. Visualization, where users can look around and explore a virtual world using a head-mounted display;
2. Immersion, where users are fully immersed into the virtual world without any real-world view;
3. Interactivity, where users have control over their experience using gestures, joysticks, keyboards or, some other input device [57].

There are plenty of applications for VR in our digital lives, for example, education and training [49]. VR has the advantage of interactions with objects and events that are physically out of reach in a safe environment [58]. Businesses can also use VR to find new ways to engage with their customers through immersive marketing campaigns [49]. For example, measuring the emotional responses to products [59], how VR stores can shape consumer purchase decisions [60], customer loyalty in VR [61], and virtual showrooms [62]. In the tourism sector, marketing was the most prevalent topic, followed by education, tourism experience enhancement, food and beverage, and meetings/conferences [57].

VR may also be used for a wide variety of serious games. One area is that of rehabilitation. VR has been used in games for rehabilitation for people with neurological conditions [63], stroke [64], motor disorders [65], and musculoskeletal disorders [66]. Other areas of healthcare where VR has been applied is for training of surgical techniques such as laparoscopy [67], increasing physical activity in children [68], the treatment of arachnophobia [69], life support training [70], and for exposure therapy for fear of driving following a motor vehicle accident [71].

AR and VR are related technologies but differ in their use of virtuality continuum [72] from the real-world on one side, and the virtual environment on the opposite side of the continuum. AR falls within the real-world side as the user views the real-world and is augmented with virtual objects. While users of VR are immersed fully into virtual environments and totally lose sense of the real world, they are situated in. As illustrated above, both AR and VR have important roles in our digital lives.

2.3 Digital Tourism

Technology is becoming increasingly important in tourism [73], and has transformed the experiences tourists have on holiday [74]. People take 38% more gadgets with them on holiday than they do during their daily life [75]. Information Technology (IT) plays a significant role in value creation for tourists [76]. This is due to the increasing digitalization of tourism experiences. For example, the use of online services for trip planning [77], and the ability of tourists to use multiple devices, e.g., laptop, smartphone, or tablet to find information or make bookings [78]. Smartphones are arguably the most used technology by tourists [79], and they have altered the way in which tourists interact with each other [80]. The use of social media has also changed the holiday experience as tourists are motivated to share their experiences [81].

Cai et al. [82] reviewed the digital tourism literature related to the theme of technology use. They found a number of uses of technology in tourism contexts. For example, the ability to enable co-creation of tourism experiences and the ability to share information [83], and to understand the needs of tourists [84]. The increasing ability to share information online has impacted the development of destination image [85] and destination image formation [86]. The ability to find more information through an increasing number of channels has helped tourists to have more profound travel experiences [87]. This also includes the use of electronic word of mouth through sites such as TripAdvisor, as well as mobile technologies and social media [81, 88].

The conversation above has mostly focused the use of technology by individuals (e.g., tourists). However, Cai et al. [89] also explored the use of technology from an

organizational perspective (e.g., tourism providers). From the perspective of tourism and hospitality organizations, technologies are often used as a strategic tool to gain competitive advantage [90], support decision making [91], and to develop marketing strategies [92]. Technologies such as virtual worlds [93], AR [94], and automated service robots in hotels [95] have helped tourism organizations to provide a wide range of user experiences and marketing opportunities. Other uses of technology in tourism organizations include using business intelligence [96], knowledge management [97] social networks [98], e-marketing [99], and for sustainability [100] to help gain competitive advantages. The Metaverse is also expected to have an impact on digital tourism [101].

More recently, people are becoming more aware of technology blurring the boundaries of home and away [102]. Due to modern society living in a state of constant connectivity, tourists are increasingly looking for ways to balance their digital lives with the need to escape their commitments back home while on holiday. This desire has created concept of digital-free travel [82, 103, 104]. Disconnecting is not always easy. Millennials, for example, have a desire for digital-free travel, but due to fear of missing out on important social or work commitments they may be reluctant to disconnect [103]. Once tourists do disconnect, many first suffer from anxiety, feelings of isolation, and frustration. However, these feelings soon pass and on the whole tourists enjoy their holiday more [82], and they build their character strengths [105]. Therefore, it is important for tourists to understand their motivations for travelling digitally free [106], and to balance their needs of enjoying their holiday, against their needs to maintain connected for commitments back home, or to be fully integrated into an increasingly digitalized tourism industry.

2.4 Connectivity

We focus on the topic of *connectivity*, a term that was first discussed as a technical capability, from a socio-technical perspective [107]. Our interest here is in understanding not only the technical capabilities of certain technologies, but how individuals themselves make use of, and manage, the connectivity afforded by the technologies they use and its influences on our lives both within and outside work [108]. Some of this literature has looked at the practices [e.g., 109] individuals develop to manage connectivity with an emphasis on connectivity after hours [110].

Connectivity – also referred to as ubiquitous connectivity – is the result of the widespread use of ICTs and is seen as affecting our private and social lives in many ways. The diversification of ICTs has led to the establishment of research fields that focus on specific technologies, e.g., the Internet, email, mobile phones, smartphones, and social media. While a plethora of theoretical and conceptual frameworks has been suggested for explaining the adoption and use of social media, qualitative studies promoting socio-material understandings of connectivity and its management are particularly encouraged [e.g., 111].

Empirical studies have reported that high use of ICTs is associated with lower subjective well-being, poor sleep quality and stress [112]. Social factors are especially important to consider when looking into how these technologies affect wellbeing. For example, Shakya and Christakis [113] report that the negative impact of online interactions on subjective wellbeing is greater than the positive impact of offline social networks.

Correspondingly, it was found that smartphone use reduces the quality of face-to-face interactions and thus their positive impact on wellbeing [114]. Qualitative findings by Bednar and Spiekermann [115] suggest that through the use of ICTs, personal reunions decrease and real interactions are perceived as unsatisfactory. Moreover, being connected and reachable continuously has the negative effects of inducing a fear of missing out, evoking addictive behaviors as well as stress. It is not surprising then that social media use has been associated with decreased subjective wellbeing in a longitudinal study [113] and with depression in adult samples [116] as well as in samples of young adults [117]. Primack et al. [118] argue that it is the number of used social media platforms rather than the time spent on these platforms that causes this association.

It has to be noted that many empirical studies use a cross-sectional design and are therefore limited in making claims about the direction of effects and causality. Therefore, they can only report associations and cautiously suggest directions of causality.

2.5 From Online Collaboration and Virtual Teams to Hybrid Working

Scholars from a number of fields, including IS and general management, organization studies and human resources (HR), as well as practitioners and policy makers, have used numerous terms to refer to technology-enabled ways of working. Some of the early writings in this then new phenomenon of technology-enabled working, within the IS community in particular, include computer-mediated communication (CMC) [119] and computer-supported cooperative work (CSCW) [120]. This literature grew significantly with the rise of virtual teams in particular, in the late 1990s and early 2000s. Virtual teams are known in the literature as teams of (often globally) dispersed coworkers that use ICTs to accomplish an organizational task or a project [121]. Different types of virtual teams have been recognized: for example, Griffith et al. [122] make the distinction between purely virtual teams with no F2F contact and hybrid ones that may have some F2F contact during their lifecycle. Similarly, virtual teams may differ in terms of degree of geographical (global vs. local), temporal (based on the time differences separating team members) and organizational (inter- vs. intra-organizational) dispersion. Evidently, not all virtual teams are the same, and therefore their management has to be tailored to their unique characteristics.

The traditional virtual team literature dealt with the benefits of virtual teams for both the employer and the employee, reduction of transportation costs, and access to global talent irrespective of boundaries. However, virtual teams are also known for their challenges. Dominant position within this literature have the challenges of developing trust—which has been seen as harder to achieve due to the lack of F2F communication between geographically remote members [123]; adopting suitable leadership styles or practices [124], and how leadership can be exercised to enhance and support virtual team creativity [125]. More recently, there has been an emphasis on ensuring that virtual team members are engaged [126] and happy in terms of their well-being [127].

In March 2020, the lockdowns around the world due to the Covid-19 pandemic led to a widespread transition into virtual ways of working, including virtual teams. As a result, we saw an explosion of research from numerous fields into how workers with no preparation could work in this fashion, with scholars highlighting that virtual teams were now different, and leaders of virtual teams had to look after their members' sense of

well-being and work-life boundaries as many of us juggled work, domestic, family and other responsibilities at the same time while working from home during the lockdowns [128, 129]. More than three years later, today, we see that technology-enabled ways of working have become pervasive and terms like "hybrid working" – largely referring to working partly from the office and partly from other locations such as one's home – have gained popularity and researchers [e.g., 130] and practitioners [e.g., 131] are interested in finding out how traditional management practices should be revamped.

2.6 Emerging Technologies

In the last decade, a variety of available devices and applications has made our lives increasingly more digital. Emerging technologies such as affective computing, AI, bio-electronics, and human-machine symbiosis [132] are expected to further increase the digitalization of many aspects of our lives. But the rapid pace of scientific discoveries and technological innovation poses several challenges for the definition and identification of emerging technologies [132, 133], the critical assessment of their likely impact on individuals and society [132, 134, 135], and the regulation and adaptation of their design [136–138]. These challenges have gained attention in several disciplines, including information systems, philosophy, science and technology studies, as well as law, and have inspired interdisciplinary frameworks for a better understanding of emerging technologies and their impact on individuals and societies [e.g., 139].

While there is a lack of conceptual clarity of the terms "technology" and "emergence" [132], emerging technologies generally refer to technologies that are being developed or are expected to be developed within the next 10 to 15 years [132]. Emerging technologies can be characterized through their radical novelty, fast growth, coherence over time, prominent impact, uncertainty and ambiguity [133]. Especially because emerging technologies are difficult to predict, they seem to be an elusive object to assess [140], with undetermined affordances and uses [141].

Technologies actively shape our social context [142] and mediate how we perceive our environment and thereby our relation to the world [143]. However, many individuals find it difficult to control their use of technologies and thus rely on legislation to monitor the influence of technology on their digital lives and handle negative effects [115]. The impact of emerging technologies cannot easily be estimated and monitored [144]. Also, it takes time for legal measures to come into effect, which is why regulation often lags behind technological innovation. It has been suggested that an ethical assessment of a technology's impact needs to take the concept of uncertainty into account [145] and should take place at an early stage in the product development life cycle [136], when product characteristics can still easily be adapted.

This challenge has inspired numerous ethical frameworks for the assessment and design of technologies, such as the Technolife approach [134] or the anticipatory technology ethics approach [135]. As regulators are often overwhelmed with anticipating the implications of emerging technologies, technology firms have been charged with the responsibility to address ethical challenges already in the design phase [137]. However, the lack of time and resources in traditional system development often results in a lack of motivation to tackle ethical issues [146]. Design methods that try to anticipate a technology's impact and protect human needs and values throughout the design phase

offer a promising alternative here [138]. Making use of ethical technology assessment and design frameworks can help to "keep technology from slipping beyond our control" [139].

2.7 Artificial Intelligence (AI)

AI is often enlisted as one of the core drivers of new and emerging technologies. However, AI has a longer history than the current hype suggests. In 1955, John McCarthy et al. [147] first attracted attention with his conjecture that "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it" (p. 12). His idea formed the basis for a conference in Dartmouth on AI, which coined the first use of the term. Since then, the debate on AI has spurred various thought experiments and arguments in philosophy and has led to significant technological developments. After several initial hype cycles, AI entered a period of reduced interest and funding in the 1970s and 1980s (often referred to as "AI winter" [148]), of which it has risen in the past decade to experience yet another hype cycle with increased funding and investment. AI as a discipline includes several subfields such as machine learning, robotics, and natural language processing, and is thus difficult to assess as one idea or phenomenon.

Today, skeptical and pessimist [149] views coincide with almost ubiquitous applications of AI. This inconsistency often departs from different understandings of the feasibility and risks of AI. Several performance measures have been defined for AI, including thinking rationally, thinking humanly, acting rationally, and acting humanly [150]. While some applications of AI are already in wide use, others might not even be theoretically possible. Different attributions of what AI is capable of have led the differentiation between "weak AI" or "narrow AI," which refers to the simulation of intelligence or its application to a limited range of tasks, and "strong AI" or "human-level AI," which refers to computers actually *having* mental states and *understanding* cognitive tasks [151, 152].

Weak or narrow AI has long made it into our everyday lives in the form of speech assistants, recommendation systems, navigation systems, health data tracking, etc. These functionalities and applications have opened up new possibilities and support us in many activities, but have also lead to a range of issues, including discrimination based on biased algorithms [153] and technological unemployment through automation [154].

The feasibility of strong AI is met with different expectations and opinions. In philosophy, many arguments have been presented that speak against the possibility of machines understanding and experiencing as humans do. For example, the Chinese room argument [151] shows that a computer can follow rules that make it seem as if the computer understands Chinese, while the computer does not understand Chinese at all. Thus, intelligent or human-like behavior of a computer cannot show that the computer has a mind, understanding, or consciousness. Contrary to the basic idea of the Turing test, which assesses an AI based on whether a person can differentiate it from a human or not [155], the human might not be the most appropriate comparison for computational performance. Not all successful problem-solving needs to be human-like, which speaks against humanly measures of AI. Still, there are opponents of the view that a human-level AI will be achieved in the upcoming decades [156].

These different expectations and views of AI show that AI is a double-edged sword [157]: it has the potential to advance achievements of global goals through increased productivity, income growth, and more socially inclusive and environmentally responsible practices, but also bears the risk to create a dystopian world with higher inequality and declined incomes for many. Thus, further research and discussions on AI needs not only a clear definition of AI, but also a clear and critical view of both technological feasibility and potential social and environmental implications.

2.8 Good Digital Society in an AI Landscape

New and emerging technologies such as AI can be empowering, but they can also be oppressive [158, 159]. Recent advances in data-driven solutions reveal the double-edged nature of AI-based information technologies. When users surrender agency to AI, or when AI subvert user agency, AI systems can become oppressive, constraining users' rationality. AI systems are designed by ordinary human beings, people with convictions and worldviews [160]. The conscious and subconscious values of designers and developers influence AI systems in implicit and explicit ways. While people, as users of technology, experience digital content at the individual level, the AI systems in most digital tools (such as those related to recommendations and moderation) are developed using the guidelines at the community or platform level. For example, when developing an algorithm for recommendations, a system may be designed in a way to (unintentionally) foster certain social divisions by adhering to the specific social practices including language and social norms. This may result in an indirect suppression of the other groups or individuals. In this way, a system may enforce online community guidelines of dominant power structures while further suppressing the suppressed [161, 162]. This is problematic because it means that there is a high risk of excluding the voices and experiences of those who interpret and experience the world differently from those without a certain worldview (say an Indigenous person): AI entrenches bias.

Many of us are familiar with the idea that AI systems are regularly making apparently benign decisions at the individual level, like purchase recommendations on Instagram or viewings recommendations on Netflix. AI systems are also slowly becoming key players in developing solutions to address broader social issues, like AI-driven activism [163]. The emergence of AI-based digital technologies in our everyday practices discloses the Janus face of AI: on the one hand, AI can be inclusive and engaging as new (AI-based) digital technologies provide socially marginalized people with a means through which they can make their voices heard [164]. For example, Indigenous people, considered some of the most marginalized people in the world, have started to use digital technologies to collaborate in order to support their communities [165]. On the other hand, the same technologies can be disengaging and exclude marginalized people as dominant forces, and power structures appropriate digital tools in ways that further marginalize the marginalized [166, 167]. Given the apparent double-edged nature of AI, and it is empowering as well as oppressive potential, we start by discussing the positive potential first – this is what is referred as the "good AI society" [168].

A good AI society is one of inclusivity in which AI is used to develop technologies that work toward social good in ways that allow the social, information, and biosphere to co-evolve and flourish together. In a broader sense, we are exploring the avenues towards

a digital good society. To do so, what is required is "more inclusivity of various voices influencing the development" of new digital technologies [168]. An inclusive approach requires moving away "from research on people, to research with them" [169]. We see inclusive approaches as those where marginalized people's voices are integrated in the main research. In the development of a good digital society [170], we hope that researchers and policymakers will involve people "whose voices have not traditionally been heard, who have felt some anger or distrust of their treatment by services and research" (p. 86). Instead of a single worldview, we are calling for a good digital society is one world where many worlds fit [171]. Some attempts have been made to bring technologies like AI closer to the people such as "AI4People" in order to develop ethical foundations for AI that is grounded in everyday life [168]. However, much work remains to be done as marginalized groups are still not involved in all cases. Without a nuanced understanding of the societal issues and a world stage where many voices can be heard, AI solutions risk becoming biased and prone to oppressive predispositions.

A socially inclusive approach, which values diverse perspectives and voices, brings forth the question of agency and engagement. While new technologies have made it possible for marginal voices to move to the center of the public discourse [172], it also reveals that "one's own identity, voice, and moral agency are a work in progress" (p. 433). Much work is needed to explore these issues further.

2.9 Demarginalization and Decolonization Issues

In an emerging theme, we are calling to shape the digital society to include decolonized approaches to the design and development of technologies that builds on everyday practices, and that acknowledges the intimate relationship with technologies from the perspective of marginalized social groups [173]. Decolonial approaches to the digital phenomena seek to examine and dismantle the ways knowledge is produced using the dominant power structures and coloniality [174]. For instance, often a theory or research developed using the Western epistemologies is applied to the non-Western context [173]. Such approaches are uncritical as they assume the universality of a theory or method and ignores the local contexts. For instance, MedicineAfrica (a digital platform discussed earlier in Sect. 2.1) provides online tutorials to medical professionals and students in poorly resourced countries with the purpose of transferring knowledge and ultimately improving how medical care is delivered; Petrakaki et al. [175] found that at the same time MedicineAfrica unintentionally produces a form of "epistemic colonialism" which ignores local needs, equipment and language. The decolonial approaches call for using local ways of being and doing. For MedicineAfrica, the above authors argue that the platform itself may provide the means in the future to address colonialism, by having local participants serving as tutors (thus, participants who have been trained by Western medical professionals through MedicineAfrica, but who speak the local language and are aware of the local circumstances). Another example shows how the Chinese concept of Qinghuai can inform the study of digital entrepreneurship [176]. Another example is using Japanese Animism as a way to develop cyber governance strategies [177] and how the Māori Indigenous concept of *ako* reveals new ways of knowing in everyday digital interactions [178]. By embracing under-represented approaches to research, we can answer questions not easily addressed through traditional methods of scientific inquiry.

New digital technologies are giving Indigenous peoples around the world a means through which they can make their voices heard on a global stage [179, 180]. By using technologies such as social media and the Internet, people are able to coordinate their campaigns and protests to spur change [165]. These social movements, while varied, often center around two key themes: cultural identity restoration and natural resource preservation. Increasingly, Indigenous peoples from around the world are no longer working in isolation but are collaborating across social media, attracting international attention. A recent example is the "Idle No More" campaign originating in Canada. This campaign started out as a local movement to protect the Indigenous environment and culture but spread as far as Hawai'i and New Zealand where other Indigenous communities appropriated the #idlenomore theme to address cultural and environmental issues. While the #idlenomore movement continues to develop, there are subtle background issues that may be unbeknownst to the marginalized people. It is still unclear how algorithms relate to the promotion of the cause of marginalized people and how different algorithms influence the ways of engagement and their use of digital technologies to raise their voices.

Recent research has reported that marginalized people are most likely to trust a digital solution that is related to and supported by the dominant power structures [181]. A key finding is that marginalized people not only preferred but honestly believed that the digital artefacts given by the foreign researchers were superior to their own devices (even when it was not the case). We also know that data-driven solutions powered by AI tools are often influenced by existing power structures and can contribute to further enforcing certain social structures that could lead to further marginalization in society [182].

Technologies such as AI and the sophisticated use of algorithms can be used to disseminate content on social media that distorts the causes of a social movement, threatening both the legitimacy of the movement and the social standing of affiliated actors. In this perspective, a social group can deploy digital technologies in ways that are beneficial to their members but detrimental to society at large. Social media and other digital technologies can be used to promote extreme views that lack the common ground necessary for collaboration within diverse groups and the building of a tolerant society [183]. We stress the empirical context of the marginalized people (such as a postcolonial political context) needs to be considered to address problems of marginalization in the studies of our digital lives and the development of a good digital society.

2.10 Human Enhancement

Many new and emerging technologies aim at enhancing human capabilities and could thus influence the human constitution. This has led to debates on human enhancement and whether the use of technologies for enhancing human capabilities is desirable, morally acceptable or to be condemned. Optimists welcome and celebrate human enhancement through the means of emerging technologies, while pessimists are very critical of it. Others question that there is something fixed that constitutes human nature and with it the strict separation of the human and technology.

Those who recognize that there is something fixed that defines humans attribute different roles to the human body. Some argue that the body naturally constitutes and

characterizes humans and thus want to protect it and with it the boundaries between humans and technology [e.g., 184]. They support "natural" strategies for human development and personal growth, such as education, and criticize technological developments and innovations that alter human capabilities and characteristics. Because of this conservative view, they have been referred to as "bio-" or "infoconservatives" [185, 186]. Others consider the human body as a mere biological substrate of the mind and welcome emerging technologies and their application not only for treatment, but also for enhancement purposes [e.g., 187]. In their view, the physical vulnerability of the human body is a weakness that technology could and should help to overcome. While they support different degrees of human enhancement through technology, they all endorse a liberal view on applying emerging technologies such as bio-technologies for self-modification and self-improvement [185]. In extreme versions such as transhumanism, the transcendence of human boundaries and limitations is even considered as the ultimate goal of human development [187].

These two opposing positions on biotechnologies are both based on the view that there is a fixed human nature. In addition to the liberal/transhumanist and bio/infoconservative position, there are existential-phenomenological accounts that see the influence of technology on "human nature" as more complex and negate a clear border between what is natural and technology [186]. Positions that focus on human nature imply that the human is naturally determined as a unique creature that is separated from animals, the natural environment, or technology [185]. These "humanist" positions [185] are misleading as they do not discuss *how* human beings are influenced by technology [186]. It has been argued that technological enhancement will always produce new vulnerability and thus cannot help to "overcome" human weakness [186]. Based on this reasoning, the categories of the human and technology and their relation need to be considered outside of a dichotomous view. The philosophy of technology has long emphasized that human nature is never purely "natural" but always includes "technological" aspects [188]. Following these lines of thinking can help to move away from a restricted view of both humans and technology and reconsider how technology influences humans and what implications this influence has for human development.

3 Future Directions

In this last section, we build on some of the themes discussed earlier and outline directions for future research that we think deserve academic attention and may be of value to our WG and the wider IS community in the years to come. These may be existing areas that have seen some attention already and require updating or expansion, or completely new areas of research.

3.1 Technology-Enabled Ways of Working and Wider Implications

The business landscape has changed drastically due to recent transitions into technology-enabled ways of working. Although some of these forms of work, e.g., virtual teams [189], have existed for a long time, newer ways of working with technology, such hybrid working as working from home, are impacting our lives in unprecedented ways, raising new types of challenges for many of us. Leaders of virtual teams are now expected to ensure – among other new responsibilities – that their members' engagement remains

high while working from home [129], HR professionals need to develop new policies as to how employees should manage connectivity to work after hours [110], and individual workers need to look after their well-being [190]. Contrary to literature that explains how we work from home in emergency situations, such as the recent pandemic [128, 191], a better understanding of how some of these new technology-enabled working environments should be managed is required. At present, we have seen attempts to capture some of these issues, for example, with the emergence of special issues in academic journals, organized to develop knowledge around hybrid working as a standard everyday practice [130]. However, much more can be done to expand recent research by scholars working across disciplines and/or in collaboration with practitioners. Some important areas include onboarding processes in online work, unpacking what hybrid working means beyond current understandings influenced by the pandemic, and exploring security and privacy issues in online work.

3.2 Ethical Approaches to Technology Design

Since the advent of the Internet, the variety of digital devices and applications has kept increasing. This has opened up a market for IT products through the digitization of previously analogue products as well as through new technologies and innovation.

IS shape our work and social lives by supporting us in our daily activities and interactions. However, IS do not only have the potential to improve information access and facilitate communication; they can also cause harms on the individual as well as on the societal level. Empirical studies have reported negative effects of new technologies or media on psychological well-being, such as poor sleep quality and stress [112]. Reports of millions of records being exposed because of digital privacy breaches [192] have fueled an unease among citizens who fear that they may lose control over their personal data to third party companies or the government [193, 194]. In 2018, the Facebook–Cambridge Analytica scandal triggered discussions on the power of digital monopolies and the potentially dangerous impact of social media platforms on democracy. Similarly, the Covid-19 pandemic was used as an opportunity for fake news and deepfake technologies to flourish through the Internet. Recent research shows that humans cannot always detect AI-generated content [e.g., 195]. Thus, the emergence of generative AI technologies raises truly unprecedented challenges in relation to how IS can impact our societies. These events indicate that we need to acknowledge a technology's effects at the individual and societal level to protect individuals' well-being, allow sustainable business models, and to ensure that technologies do not damage our democracies.

Alternative approaches to technology design and innovation have tried to answer to this call for an ethically responsible interaction of humans and technology. Human-centered design [196] focuses on designing enjoyable experiences instead of mere functionality. Related approaches strive to integrate human goals (e.g., goal-directed design [197]) or values (e.g., value sensitive design [198]) into technological systems or focus on including the stakeholders in the design process (e.g., through participatory design [199]). All these approaches share an empathic attitude towards human needs and values that they seek to include in the design of technology.

However, "values" have a moral foundation that distinguishes them from other concepts such as "needs" or "goals" [200]: Values represent ethical principles of the "ought-to-be" [201], that is, as Shilton [202] puts it, they "distinguish that which should be, as

opposed to that which is" (p. 128). Thus, values form a promising concept that can help to bridge ethics and design, especially when applied within a pluralist ethical framework [203].

3.3 Reconceptualizing Addiction

There is growing research interest in framing excessive use of ICTs as a form of addiction in order to capture better its effects on the individual. However, theories propose different objects, causes, and consequences of addiction and set the level of pathology at different levels [204–211]. No general theory has been agreed on yet and it is not clear why people keep using the Internet despite its negative effects [204]. This unclear theoretical grounding of empirical research makes it difficult to produce consistent findings. Therefore, there is ongoing research interest in redefining the concept of addiction with regard to digital services and devices, and reconsider the evaluation of the effects that using ICTs has on us.

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References

1. Järvinen, P.: The TC 9 1998 Report, Tampere, Finland (1998)
2. Berleur, J.: The TC 9 2000 Report, Washington, D.C. (2000)
3. Cao, Q., Lu, Y., Dong, D., Tang, Z., Li, Y.: The roles of bridging and bonding in social media communities. J. Am. Soc. Inform. Sci. Technol. **64**, 1671–1681 (2013). https://doi.org/10.1002/asi.22866
4. McKenna, B., Vodanovich, S., Fan, T.: I heart you: how businesses are using social media to increase social capital. In: European, Mediterranean & Middle Eastern Conference on Information Systems (EMCIS), pp. 2016-06-23–2016-06-24 (2016). https://ueaeprints.uea.ac.uk/id/eprint/59287
5. Rishika, R., Kumar, A., Janakiraman, R., Bezawada, R.: The effect of customers' social media participation on customer visit frequency and profitability: an empirical investigation. Inf. Syst. Res. **24**, 108–127 (2013). https://doi.org/10.1287/isre.1120.0460
6. Sutton, J.N., Palen, L., Shklovski, I.: Backchannels on the front lines: emergency uses of social media in the 2007 Southern California Wildfires. In: Fiedrich, F., Van de Walle, B. (eds.) Proceedings of the 5th International ISCRAM Conference – Washington, DC, USA, May 2008
7. Zeng, X., McKenna, B., Richter, S., Cai, W.: How social media can afford engagement processes. In: Themistocleous, M., Rupino da Cunha, P. (eds.) EMCIS 2018. LNBIP, vol. 341, pp. 272–279. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-11395-7_23
8. Gensler, S., Völckner, F., Liu-Thompkins, Y., Wiertz, C.: Managing brands in the social media environment. J. Interact. Mark. **27**, 242–256 (2013). https://doi.org/10.1016/j.intmar.2013.09.004

9. Brown, J., Broderick, A.J., Lee, N.: Word of mouth communication within online communities: conceptualizing the online social network. J. Interact. Mark. **21**, 2–20 (2007). https://doi.org/10.1002/dir.20082
10. Gallaugher, J., Ransbotham, S.: Social media and customer dialog management at Starbucks. MIS Q. Exec. **9** (2010). https://aisel.aisnet.org/misqe/vol9/iss4/3
11. Hennig-Thurau, T., Wiertz, C., Feldhaus, F.: Does Twitter matter? The impact of microblogging word of mouth on consumers' adoption of new movies. J. Acad. Mark. Sci. **43**, 375–394 (2015). https://doi.org/10.1007/s11747-014-0388-3
12. Lien, C.H., Cao, Y.: Examining WeChat users' motivations, trust, attitudes, and positive word-of-mouth: evidence from China. Comput. Hum. Behav. **41**, 104–111 (2014). https://doi.org/10.1016/j.chb.2014.08.013
13. Gao, F., Zhang, Y.: Analysis of WeChat on iPhone. In: 2nd International Symposium on Computer, Communication, Control and Automation, pp. 278-281. Atlantis Press (2013). https://doi.org/10.2991/3ca-13.2013.69
14. Vodanovich, S., McKenna, B., Cai, W.: Cultural values inherent in the design of social media platforms: a case study of WeChat. In: 30th Bled eConference (2017). https://aisel.aisnet.org/bled2017/8
15. Cho, S.E., Jung, K., Park, H.W.: Social media use during Japan's 2011 earthquake: how Twitter transforms the locus of crisis communication. Media Int. Aust. **149**, 28–40 (2013). https://doi.org/10.1177/1329878X1314900105
16. Selander, L., Jarvenpaa, S.L.: Digital action repertoires and transforming a social movement organization. MIS Q. **40**, 331–352 (2016). https://www.jstor.org/stable/26628909
17. Syed, R., Silva, L.: Social movement sustainability on social media: an analysis of the women's march movement on Twitter. JAIS **24**, 249–293 (2023). https://doi.org/10.17705/1jais.00776
18. Wasko, M., Teigland, R., Leidner, D., Jarvenpaa, S.: Stepping into the internet: new ventures in virtual worlds. MIS Q. **35**, 645–652 (2011). https://doi.org/10.2307/23042801
19. Blodgett, B., Tapia, A.: When protests go virtual: how organizing social protest in virtual worlds changes the nature of organizing. In: 16th Americas Conference on Information Systems (AMCIS), Lima, Peru, 14–17 August 2010. http://hdl.handle.net/11603/3980
20. McKenna, B.: Creating convivial affordances: a study of virtual world social movements. Inf. Syst. J. **30**, 185–214 (2020). https://doi.org/10.1111/isj.12256
21. McKenna, B., Chughtai, H.: Resistance and sexuality in virtual worlds: an LGBT perspective. Comput. Hum. Behav. **105**, 106199 (2020). https://doi.org/10.1016/j.chb.2019.106199
22. Chamakiotis, P., Petrakaki, D., Panteli, N.: Social value creation through digital activism in an online health community. Inf. Syst. J. **31**, 94–119 (2021). https://doi.org/10.1111/isj.12302
23. Dwivedi, Y.K., et al.: Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. Int. J. Inf. Manag. **66**, 102542 (2022). https://doi.org/10.1016/j.ijinfomgt.2022.102542
24. Manikonda, L., Beigi, G., Kambhampati, S., Liu, H.: #metoo Through the lens of social media. In: Thomson, R., Dancy, C., Hyder, A., Bisgin, H. (eds.) SBP-. LNCS, vol. 10899, pp. 104–110. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-93372-6_13
25. Dhond, V., Richter, S., McKenna, B.: Exploratory research to identify the characteristics of cyber victims on social media in New Zealand. In: Themistocleous, M., Rupino da Cunha, P. (eds.) EMCIS 2018. LNBIP, vol. 341, pp. 193–210. Springer, Cham (2019). https://doi.org/10.1007/978-3-030-11395-7_18
26. Cassidy, W., Faucher, C., Jackson, M.: Cyberbullying among youth: a comprehensive review of current international research and its implications and application to policy and practice. Sch. Psychol. Int. **34**, 575–612 (2013). https://doi.org/10.1177/0143034313479697

27. Aïmeur, E., Amri, S., Brassard, G.: Fake news, disinformation and misinformation in social media: a review. Soc. Netw. Anal. Min. **13**, 30 (2023). https://doi.org/10.1007/s13278-023-01028-5
28. Westerlund, M.: The emergence of deepfake technology: a review. TIm Rev. **9**, 39–52 (2019). https://doi.org/10.22215/timreview/1282
29. Allcott, H., Gentzkow, M.: Social media and fake news in the 2016 election. J. Econ. Perspect. **31**, 211–236 (2017). https://doi.org/10.1257/jep.31.2.211
30. Isaak, J., Hanna, M.J.: User data privacy: facebook, Cambridge Analytica, and privacy protection. Computer **51**, 56–59 (2018). https://doi.org/10.1109/MC.2018.3191268
31. Li, J., Zhang, Y., Mou, J.: Understanding information disclosures and privacy sensitivity on short-form video platforms: an empirical investigation. J. Retail. Consum. Serv. **72**, 103292 (2023). https://doi.org/10.1016/j.jretconser.2023.103292
32. Gilmary, R., Venkatesan, A., Vaiyapuri, G.: Detection of automated behavior on Twitter through approximate entropy and sample entropy. Pers. Ubiquit. Comput. **27**, 91–105 (2023). https://doi.org/10.1007/s00779-021-01647-9
33. Blane, J.T., Bellutta, D., Carley, K.M.: Social-cyber Maneuvers during the COVID-19 vaccine initial rollout: content analysis of tweets. J. Med. Internet Res. **24**, e34040 (2022). https://doi.org/10.2196/34040
34. Howard, P.N., Woolley, S., Calo, R.: Algorithms, bots, and political communication in the US 2016 election: the challenge of automated political communication for election law and administration. J. Inform. Tech. Polit. **15**, 81–93 (2018). https://doi.org/10.1080/19331681.2018.1448735
35. Azuma, R.T.: A survey of augmented reality. Teleoper. Virtual Environ. **6**, 355–385 (1997). https://doi.org/10.1162/pres.1997.6.4.355
36. Carmigniani, J., Furht, B., Anisetti, M., Ceravolo, P., Damiani, E., Ivkovic, M.: Augmented reality technologies, systems and applications. Multimedia Tools Appl. **51**, 341–377 (2011). https://doi.org/10.1007/s11042-010-0660-6
37. Park, S., Stangl, B.: Augmented reality experiences and sensation seeking. Tour. Manag. **77**, 104023 (2020). https://doi.org/10.1016/j.tourman.2019.104023
38. Rauschnabel, P.A., Rossmann, A., tom Dieck, M.C.: An adoption framework for mobile augmented reality games: the case of Pokémon Go. Comput. Hum. Behav. **76**, 276–286 (2017). https://doi.org/10.1016/j.chb.2017.07.030
39. Wong, F.Y.: Influence of Pokémon Go on physical activity levels of university players: a cross-sectional study. Int. J. Health Geogr. **16**, 8 (2017). https://doi.org/10.1186/s12942-017-0080-1
40. Zach, F.J., Tussyadiah, I.P.: To catch them all—the (un)intended consequences of Pokémon GO on mobility, consumption, and wellbeing. In: Schegg, R., Stangl, B. (eds.) Information and communication technologies in tourism 2017, pp. 217–227. Springer, Cham (2017). https://doi.org/10.1007/978-3-319-51168-9_16
41. Goebert, C., Greenhalgh, G., Dwyer, B.: A whole new ball game: fan perceptions of augmented reality enhanced sport broadcasts. Comput. Hum. Behav. **137**, 107388 (2022). https://doi.org/10.1016/j.chb.2022.107388
42. Althoff, T., White, R.W., Horvitz, E.: Influence of Pokémon Go on physical activity: study and implications. J. Med. Internet Res. **18**, e315 (2016). https://doi.org/10.2196/jmir.6759
43. Yovcheva, Z., Buhalis, D., Gatzidis, C., van Elzakker, C.P.: Empirical evaluation of smartphone augmented reality browsers in an urban tourism destination context. Int. J. Mob. Hum. Comput. Interact. (IJMHCI) **6**, 10–31 (2014). https://doi.org/10.4018/ijmhci.2014040102
44. Zhu, C., Fong, L.H.N., Gan, M.: Rethinking the consequences of postmodern authenticity: the case of a world cultural heritage in augmented reality. Curr. Issue Tour. **26**, 617–631 (2023). https://doi.org/10.1080/13683500.2022.2033181

45. Jung, T., Chung, N., Leue, M.C.: The determinants of recommendations to use augmented reality technologies: the case of a Korean theme park. Tour. Manag. **49**, 75–86 (2015). https://doi.org/10.1016/j.tourman.2015.02.013
46. Yovcheva, Z., Buhalis, D., Gatzidis, C.: Engineering augmented tourism experiences. In: Cantoni, L., Xiang, Z.(P.) (eds.) Information and communication technologies in tourism 2013, pp. 24–35. Springer, Heidelberg (2013). https://doi.org/10.1007/978-3-642-36309-2_3
47. Huang, T.-L., Tsiotsou, R.H., Liu, B.S.: Delineating the role of mood maintenance in augmenting reality (AR) service experiences: an application in tourism. Technol. Forecast. Soc. Chang. **189**, 122385 (2023). https://doi.org/10.1016/j.techfore.2023.122385
48. Yu, J., Kim, S. (Sam), Hailu, T.B., Park, J., Han, H.: The effects of virtual reality (VR) and augmented reality (AR) on senior tourists' experiential quality, perceived advantages, perceived enjoyment, and reuse intention. Curr. Issues Tour. 1–15 (2023). https://doi.org/10.1080/13683500.2023.2165483
49. Farshid, M., Paschen, J., Eriksson, T., Kietzmann, J.: Go boldly!: Explore augmented reality (AR), virtual reality (VR), and mixed reality (MR) for business. Bus. Horiz. **61**, 657–663 (2018). https://doi.org/10.1016/j.bushor.2018.05.009
50. Yang, S., Carlson, J.R., Chen, S.: How augmented reality affects advertising effectiveness: the mediating effects of curiosity and attention toward the ad. J. Retail. Consum. Serv. **54**, 102020 (2020). https://doi.org/10.1016/j.jretconser.2019.102020
51. Hilken, T., Keeling, D.I., de Ruyter, K., Mahr, D., Chylinski, M.: Seeing eye to eye: social augmented reality and shared decision making in the marketplace. J. Acad. Mark. Sci. **48**, 143–164 (2020). https://doi.org/10.1007/s11747-019-00688-0
52. Huang, T.-L., Mathews, S., Chou, C.Y.: Enhancing online rapport experience via augmented reality. J. Serv. Mark. **33**(7), 851–865 (2019). https://doi.org/10.1108/JSM-12-2018-0366
53. Heller, J., Chylinski, M., de Ruyter, K., Mahr, D., Keeling, D.I.: Touching the untouchable: exploring multi-sensory augmented reality in the context of online retailing. J. Retail. **95**, 219–234 (2019). https://doi.org/10.1016/j.jretai.2019.10.008
54. Chekembayeva, G., Garaus, M., Schmidt, O.: The role of time convenience and (anticipated) emotions in AR mobile retailing application adoption. J. Retail. Consum. Serv. **72**, 103260 (2023). https://doi.org/10.1016/j.jretconser.2023.103260
55. Tawira, L., Ivanov, A.: Leveraging personalization and customization affordances of virtual try-on apps for a new model in apparel m-shopping. APJML **35**, 451–471 (2023). https://doi.org/10.1108/APJML-09-2021-0652
56. Guttentag, D.A.: Virtual reality: applications and implications for tourism. Tour. Manag. **31**, 637–651 (2010). https://doi.org/10.1016/j.tourman.2009.07.003
57. Yung, R., Khoo-Lattimore, C.: New realities: a systematic literature review on virtual reality and augmented reality in tourism research. Curr. Issue Tour. **22**, 2056–2081 (2019). https://doi.org/10.1080/13683500.2017.1417359
58. Freina, L., Ott, M.: A literature review on immersive virtual reality in education: state of the art and perspectives. In: The International Scientific Conference Elearning and Software for Education, vol. 1, no. 133, pp. 10–1007, April 2015
59. Worch, T., et al.: Influence of different test conditions on the emotional responses elicited by beers. Food Qual. Prefer. **83**, 103895 (2020). https://doi.org/10.1016/j.foodqual.2020.103895
60. Kang, H.J., Shin, J., Ponto, K.: How 3D virtual reality stores can shape consumer purchase decisions: the roles of informativeness and playfulness. J. Interact. Mark. **49**, 70–85 (2020). https://doi.org/10.1016/j.intmar.2019.07.002
61. Bischoff, J., Berezan, O., Scardicchio, L.: The digital self and customer loyalty: from theory to virtual reality. J. Mark. Anal. **7**, 220–233 (2019). https://doi.org/10.1057/s41270-019-00065-4

62. Zhang, T., Li, G., Tayi, G.K.: A strategic analysis of virtual showrooms deployment in online retail platforms. Omega **117**, 102824 (2023). https://doi.org/10.1016/j.omega.2022.102824
63. Lewis, G.N., Rosie, J.A.: Virtual reality games for movement rehabilitation in neurological conditions: how do we meet the needs and expectations of the users? Disabil. Rehabil. **34**, 1880–1886 (2012). https://doi.org/10.3109/17483107.2011.574310
64. Lewis, G.N., Woods, C., Rosie, J.A., Mcpherson, K.M.: Virtual reality games for rehabilitation of people with stroke: perspectives from the users. Disabil. Rehabil. Assist. Technol. **6**, 453–463 (2011)
65. Ma, M., et al.: Adaptive virtual reality games for rehabilitation of motor disorders. In: Stephanidis, C. (eds.) UAHCI 2007. LNCS, vol. 4555, pp. 681–690. Springer, Heidelberg (2007). https://doi.org/10.1007/978-3-540-73281-5_74
66. Kiani, S., Rezaei, I., Abasi, S., Zakerabasali, S., Yazdani, A.: Technical aspects of virtual augmented reality-based rehabilitation systems for musculoskeletal disorders of the lower limbs: a systematic review. BMC Musculoskelet. Disord. **24**, 4 (2023). https://doi.org/10.1186/s12891-022-06062-6
67. Grantcharov, T., Bardram, L., Funch-Jensen, P., Rosenberg, J.: Impact of hand dominance, gender, and experience with computer games on performance in virtual reality laparoscopy. Surg. Endosc. Other Interv. Tech. **17**, 1082–1085 (2003). https://doi.org/10.1007/s00464-002-9176-0
68. Foley, L., Maddison, R.: Use of active video games to increase physical activity in children: a (virtual) reality? Pediatr. Exerc. Sci. **22**, 7–20 (2010). https://doi.org/10.1123/pes.22.1.7
69. Bouchard, S., Côté, S., St-Jacques, J., Robillard, G., Renaud, P.: Effectiveness of virtual reality exposure in the treatment of arachnophobia using 3D games. Technol. Health Care **14**, 19–27 (2006). https://doi.org/10.3233/THC-2006-14103
70. Figols Pedrosa, M., Barra Perez, A., Vidal-Alaball, J., Miro-Catalina, Q., Forcada Arcarons, A.: Use of virtual reality compared to the role-playing methodology in basic life support training: a two-arm pilot community-based randomised trial. BMC Med. Educ. **23**, 50 (2023). https://doi.org/10.1186/s12909-023-04029-2
71. Walshe, D.G., Lewis, E.J., Kim, S.I., O'Sullivan, K., Wiederhold, B.K.: Exploring the use of computer games and virtual reality in exposure therapy for fear of driving following a motor vehicle accident. Cyberpsychol. Behav. **6**, 329–334 (2003). https://doi.org/10.1089/109493103322011641
72. Milgram, P., Takemura, H., Utsumi, A., Kishino, F.: Augmented reality: a class of displays on the reality-virtuality continuum (1995). https://doi.org/10.1117/12.197321
73. Zhang, H., Gordon, S., Buhalis, D., Ding, X.: Experience value cocreation on destination online platforms. J. Travel Res. **57**, 1093–1107 (2018). https://doi.org/10.1177/0047287517733557
74. Neuhofer, B., Buhalis, D., Ladkin, A.: Technology as a catalyst of change: enablers and barriers of the tourist experience and their consequences. In: Tussyadiah, I., Inversini, A. (eds.) Information and Communication Technologies in Tourism 2015, pp. 789–802. Springer, Cham (2015). https://doi.org/10.1007/978-3-319-14343-9_57
75. UK Gadget Habit Report: UK Gadget Usage Report 2017. https://www.electrictobacconist.co.uk/uk-gadget-usage-report-2017-i276. Accessed 17 Mar 2020
76. Neuhofer, B.: Value co-creation and co-destruction in connected tourist experiences. In: Inversini, A., Schegg, R. (eds.) Information and Communication Technologies in Tourism 2016, pp. 779–792. Springer, Cham (2016). https://doi.org/10.1007/978-3-319-28231-2_56
77. Ferrer-Rosell, B., Coenders, G., Marine-Roig, E.: Is planning through the Internet (un) related to trip satisfaction? Inf. Technol. Tour. **17**, 229–244 (2017). https://doi.org/10.1007/s40558-017-0082-7

78. Murphy, H.C., Chen, M.-M., Cossutta, M.: An investigation of multiple devices and information sources used in the hotel booking process. Tour. Manag. **52**, 44–51 (2016). https://doi.org/10.1016/j.tourman.2015.06.004
79. Wang, D., Xiang, Z., Fesenmaier, D.R.: Smartphone use in everyday life and travel. J. Travel Res. **55**, 52–63 (2016). https://doi.org/10.1177/0047287514535847
80. Dickinson, J.E., Ghali, K., Cherrett, T., Speed, C., Davies, N., Norgate, S.: Tourism and the smartphone app: capabilities, emerging practice and scope in the travel domain. Curr. Issue Tour. **17**, 84–101 (2014). https://doi.org/10.1080/13683500.2012.718323
81. Munar, A.M., Jacobsen, J.K.S.: Motivations for sharing tourism experiences through social media. Tour. Manag. **43**, 46–54 (2014). https://doi.org/10.1016/j.tourman.2014.01.012
82. Cai, W., McKenna, B., Waizenegger, L.: Turning it off: emotions in digital-free travel. J. Travel Res. 0047287519868314 **59**(5), 909–927 (2020, in press). https://doi.org/10.1177/0047287519868314
83. Buonincontri, P., Micera, R.: The experience co-creation in smart tourism destinations: a multiple case analysis of European destinations. Inf. Technol. Tour. **16**, 285–315 (2016). https://doi.org/10.1007/s40558-016-0060-5
84. Xiang, Z., Gretzel, U., Fesenmaier, D.R.: Semantic representation of tourism on the Internet. J. Travel Res. **47**, 440–453 (2009). https://doi.org/10.1177/0047287508326650
85. Li, X., Pan, B., Zhang, L., Smith, W.W.: The effect of online information search on image development: insights from a mixed-methods study. J. Travel Res. **48**, 45–57 (2009). https://doi.org/10.1177/0047287508328659
86. Llodrà-Riera, I., Martínez-Ruiz, M.P., Jiménez-Zarco, A.I., Izquierdo-Yusta, A.: A multidimensional analysis of the information sources construct and its relevance for destination image formation. Tour. Manag. **48**, 319–328 (2015). https://doi.org/10.1016/j.tourman.2014.11.012
87. Xiang, Z., Wang, D., O'Leary, J.T., Fesenmaier, D.R.: Adapting to the internet: trends in travelers' use of the web for trip planning. J. Travel Res. **54**, 511–527 (2015). https://doi.org/10.1177/0047287514522883
88. McKenna, B., Cai, W., Tuunanen, T.: Technology enabled information services use in tourism: an ethnographic study of Chinese backpackers. Pac. Asia J. Assoc. Inf. Syst. **10**, 37–63 (2018). https://doi.org/10.17705/1pais.10402
89. Cai, W., Richter, S., McKenna, B.: Progress on technology use in tourism. J. Hosp. Tour. Technol. **10**, 651–672 (2019). https://doi.org/10.1108/JHTT-07-2018-0068
90. Bilgihan, A., Wang, Y.: Technology induced competitive advantage: a case of US lodging industry. J. Hospital. Tour. Technol. **7**(1), 37–59 (2016). https://doi.org/10.1108/JHTT-01-2015-0001
91. Spencer, A.J., Buhalis, D., Moital, M.: A hierarchical model of technology adoption for small owner-managed travel firms: an organizational decision-making and leadership perspective. Tour. Manag. **33**, 1195–1208 (2012). https://doi.org/10.1016/j.tourman.2011.11.011
92. Stepchenkova, S., Zhan, F.: Visual destination images of Peru: comparative content analysis of DMO and user-generated photography. Tour. Manag. **36**, 590–601 (2013). https://doi.org/10.1016/j.tourman.2012.08.006
93. Huang, Y.-C., Backman, S.J., Backman, K.F., Moore, D.: Exploring user acceptance of 3D virtual worlds in travel and tourism marketing. Tour. Manag. **36**, 490–501 (2013). https://doi.org/10.1016/j.tourman.2012.09.009
94. tom Dieck, M.C., Jung, T., Han, D.-I.: Mapping requirements for the wearable smart glasses augmented reality museum application. J. Hospital. Tour. Technol. **7**(3), 230–253 (2016). https://doi.org/10.1108/JHTT-09-2015-0036
95. Wang, X., Zhang, Z., Huang, D., Li, Z.: Consumer resistance to service robots at the hotel front desk: a mixed-methods research. Tour. Manag. Perspect. **46**, 101074 (2023). https://doi.org/10.1016/j.tmp.2023.101074

96. Fuchs, M., Höpken, W., Föger, A., Kunz, M.: E-business readiness, intensity, and impact: an Austrian destination management organization study. J. Travel Res. **49**, 165–178 (2010). https://doi.org/10.1177/0047287509336469
97. Okumus, F.: Facilitating knowledge management through information technology in hospitality organizations. J. Hospital. Tour. Technol. **4**(1), 64–80 (2013). https://doi.org/10.1108/17579881311302356
98. Di Pietro, L., Di Virgilio, F., Pantano, E.: Social network for the choice of tourist destination: attitude and behavioural intention. J. Hospital. Tour. Technol. (2012). https://doi.org/10.1108/17579881211206543
99. El-Gohary, H.: Factors affecting E-marketing adoption and implementation in tourism firms: an empirical investigation of Egyptian small tourism organisations. Tour. Manag. **33**, 1256–1269 (2012). https://doi.org/10.1016/j.tourman.2011.10.013
100. Erol, I., Neuhofer, I.O., Dogru (Dr. True), T., Oztel, A., Searcy, C., Yorulmaz, A.C.: Improving sustainability in the tourism industry through blockchain technology: challenges and opportunities. Tour. Manag. **93**, 104628 (2022). https://doi.org/10.1016/j.tourman.2022.104628
101. Buhalis, D., Leung, D., Lin, M.: Metaverse as a disruptive technology revolutionising tourism management and marketing. Tour. Manag. **97**, 104724 (2023). https://doi.org/10.1016/j.tourman.2023.104724
102. Neuhofer, B., Buhalis, D., Ladkin, A.: A typology of technology-enhanced tourism experiences. Int. J. Tour. Res. **16**, 340–350 (2014). https://doi.org/10.1002/jtr.1958
103. Floros, C., Cai, W., McKenna, B., Ajeeb, D.: Imagine being off-the-grid: millennials' perceptions of digital-free travel. J. Sustain. Tour. 1–16 (2020, in press). https://doi.org/10.1080/09669582.2019.1675676
104. Cai, W., McKenna, B.: Power and resistance: digital-free tourism in a connected world. J. Travel Res. **62**, 290–304 (2023). https://doi.org/10.1177/00472875211061208
105. Li, J., Pearce, P.L., Oktadiana, H.: Can digital-free tourism build character strengths? Ann. Tour. Res. **85**, 103037 (2020). https://doi.org/10.1016/j.annals.2020.103037
106. Egger, I., Lei, S.I., Wassler, P.: Digital free tourism – an exploratory study of tourist motivations. Tour. Manag. **79**, 104098 (2020). https://doi.org/10.1016/j.tourman.2020.104098
107. Kolb, D.G.: Exploring the metaphor of connectivity: attributes, dimensions and duality. Organ. Stud. **29**, 127–144 (2008). https://doi.org/10.1177/0170840607084574
108. Mazmanian, M., Orlikowski, W.J., Yates, J.: The autonomy paradox: the implications of mobile email devices for knowledge professionals. Organ. Sci. **24**, 1337–1357 (2013). https://doi.org/10.1287/orsc.1120.0806
109. Cousins, K., Robey, D.: Managing work-life boundaries with mobile technologies: an interpretive study of mobile work practices. Inf. Technol. People **28**, 34–71 (2015). https://doi.org/10.1108/ITP-08-2013-0155
110. Aljabr, N., Chamakiotis, P., Petrakaki, D., Newell, S.: After-hours connectivity management strategies in academic work. New Technol. Work Employ. **37**, 185–205 (2022). https://doi.org/10.1111/ntwe.12217
111. Aljabr, N., Petrakaki, D., Chamakiotis, P., Newell, S.: Connectivity within a context: exploring parameters beyond professionals' control. In: Proceedings 2022, p. 14066 (2022). https://doi.org/10.5465/AMBPP.2022.14066abstract
112. Li, J., Lepp, A., Barkley, J.E.J.E.: Locus of control and cell phone use: implications for sleep quality, academic performance, and subjective well-being. Comput. Hum. Behav. **52**, 450–452 (2015). https://doi.org/10.1016/j.chb.2015.06.021
113. Shakya, H.B., Christakis, N.A.: Association of Facebook use with compromised well-being: a longitudinal study. Am. J. Epidemiol. **185**, 203–211 (2017). https://doi.org/10.1093/aje/kww189

114. Rotondi, V., Stanca, L., Tomasuolo, M.: Connecting alone: smartphone use, quality of social interactions and well-being. J. Econ. Psychol. **63**, 17–26 (2017). https://doi.org/10.1016/j.joep.2017.09.001
115. Bednar, K., Spiekermann, S.: Aware but not in control. In: Kreps, D., Ess, C., Leenen, L., Kimppa, K. (eds.) HCC13 2018. IAICT, vol. 537, pp. 202–218. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-99605-9_15
116. Błachnio, A., Przepiórka, A., Pantic, I.: Internet use, Facebook intrusion, and depression: results of a cross-sectional study. Eur. Psychiatry **30**, 681–684 (2015). https://doi.org/10.1016/j.eurpsy.2015.04.002
117. Lin, L.Y., et al.: Association between social media use and depression among U.S. young adults. Depress Anxiety **33**, 323–331 (2016). https://doi.org/10.1002/da.22466
118. Primack, B.A., et al.: Use of multiple social media platforms and symptoms of depression and anxiety: a nationally-representative study among U.S. young adults. Comput. Hum. Behav. **69**, 1–9 (2017). https://doi.org/10.1016/j.chb.2016.11.013
119. Walther, J.B.: Computer-mediated communication: impersonal, interpersonal, and hyperpersonal interaction. Commun. Res. **23**, 3–43 (1996). https://doi.org/10.1177/009365096023001001
120. Schmidt, K., Bannon, L.: Taking CSCW seriously: supporting articulation work. Comput. Support. Cooper. Work (CSCW) **1**, 7–40 (1992). https://doi.org/10.1007/BF00752449
121. Ebrahim, N.A., Ahmed, S., Taha, Z.: Virtual teams: a literature review. Aust. J. Basic Appl. Sci. **3**, 2653–2669 (2009). https://ssrn.com/abstract=1501443
122. Griffith, T.L., Sawyer, J.E., Neale, M.A.: Virtualness and knowledge in teams: managing the love triangle of organizations, individuals, and information technology. MIS Q. **27**, 265–287 (2003). https://doi.org/10.2307/30036531
123. Hacker, J.V., Johnson, M., Saunders, C., Thayer, A.L.: Trust in virtual teams: a multidisciplinary review and integration. Aust. J. Inf. Syst. **23** (2019). https://doi.org/10.3127/ajis.v23i0.1757
124. Larson, L., DeChurch, L.A.: Leading teams in the digital age: four perspectives on technology and what they mean for leading teams. Leadersh. Q. **31**, 101377 (2020). https://doi.org/10.1016/j.leaqua.2019.101377
125. Chamakiotis, P., Panteli, N.: Leading the creative process: the case of virtual product design. N. Technol. Work. Employ. **32**, 28–42 (2017). https://doi.org/10.1111/ntwe.12081
126. Panteli, N., Yalabik, Z.Y., Rapti, A.: Fostering work engagement in geographically-dispersed and asynchronous virtual teams. Inf. Technol. People **32**, 2–17 (2019). https://doi.org/10.1108/ITP-04-2017-0133
127. Adamovic, M.: An employee-focused human resource management perspective for the management of global virtual teams. Int. J. Hum. Resourc. Manag. **29**, 2159–2187 (2018). https://doi.org/10.1080/09585192.2017.1323227
128. Waizenegger, L., McKenna, B., Cai, W., Bendz, T.: An affordance perspective of team collaboration and enforced working from home during COVID-19. Eur. J. Inf. Syst. **29**, 429–442 (2020). https://doi.org/10.1080/0960085X.2020.1800417
129. Chamakiotis, P., Panteli, N., Davison, R.M.: Reimagining e-leadership for reconfigured virtual teams due to Covid-19. Int. J. Inf. Manag. **60**, 102381 (2021). https://doi.org/10.1016/j.ijinfomgt.2021.102381
130. Zamani, E.D., Abbott, P., Lin, A., Watson-Manheim, M.B.: The new wave of "hybrid work": an opportunity to revise assumptions and build theory. Inf. Syst. J. (2022)
131. Knight, C., Olaru, D., Lee, J.A., Parker, S.K.: The loneliness of the hybrid worker (2022). http://hdl.handle.net/20.500.11937/89229
132. Stahl, B.C., et al.: Identifying the ethics of emerging information and communication technologies: an essay on issues, concepts, and method. Int. J. Technoethics. **1**, 20–38 (2010). https://doi.org/10.4018/jte.2010100102

133. Rotolo, D., Hicks, D., Martin, B.R.: What is an emerging technology? Res. Policy **44**, 1827–1843 (2015). https://doi.org/10.1016/j.respol.2015.06.006
134. Rommetveit, K., Gunnarsdóttir, K., Jepsen, K.S., Bertilsson, T.M., Verrax, F., Strand, R.: The Technolife project: an experimental approach to new ethical frameworks for emerging science and technology. J. Sustain. Dev. **16**, 23–45 (2013). https://doi.org/10.1504/IJSD.2013.053789
135. Brey, P.A.E.: Anticipating ethical issues in emerging IT. Ethics Inf. Technol. **14**, 305–317 (2012). https://doi.org/10.1007/s10676-012-9293-y
136. Reijers, W., et al.: Methods for practising ethics in research and innovation: a literature review, critical analysis and recommendations. Sci. Eng. Ethics 1–45 (2017). https://doi.org/10.1007/s11948-017-9961-8
137. Martin, K., Shilton, K., Smith, J.: Business and the ethical implications of technology: introduction to the symposium. J. Bus. Ethics **160**, 307–317 (2019). https://doi.org/10.1007/s10551-019-04213-9
138. Niemelä, M., Ikonen, V., Leikas, J., Kantola, K., Kulju, M., Tammela, A., Ylikauppila, M.: Human-driven design: a human-driven approach to the design of technology. In: Kimppa, K., Whitehouse, D., Kuusela, T., Phahlamohlaka, J. (eds.) HCC 2014. IAICT, vol. 431, pp. 78–91. Springer, Heidelberg (2014). https://doi.org/10.1007/978-3-662-44208-1_8
139. Wallach, W.: A Dangerous Master: How to Keep Technology from Slipping Beyond Our Control. Basic Books (2015)
140. Lucivero, F., Swierstra, T., Boenink, M.: Assessing expectations: towards a toolbox for an ethics of emerging technologies. NanoEthics **5**, 129–141 (2011). https://doi.org/10.1007/s11569-011-0119-x
141. Wakunuma, K.J., Stahl, B.C.: Tomorrow's ethics and today's response: an investigation into the ways information systems professionals perceive and address emerging ethical issues. Inf. Syst. Front. **16**, 383–397 (2014). https://doi.org/10.1007/s10796-014-9490-9
142. Brey, P.: Artifacts as social agents. In: Harbers, H. (ed.) Inside the Politics of Technology: Agency and Normativity in the Co-production of Technology and Society. Amsterdam University Press, Amsterdam (2005)
143. Ihde, D.: Technology and the Lifeworld: From Garden to Earth. Indiana University Press, Bloomington and Indianapolis (1990)
144. Bonnín Roca, J., Vaishnav, P., Morgan, M.G., Mendonça, J., Fuchs, E.: When risks cannot be seen: regulating uncertainty in emerging technologies. Res. Policy **46**, 1215–1233 (2017). https://doi.org/10.1016/j.respol.2017.05.010
145. Sollie, P.: Ethics, technology development and uncertainty: an outline for any future ethics of technology. J. Inf. Commun. Ethics Soc. **5**, 293–306 (2007). https://doi.org/10.1108/14779960710846155
146. Bednar, K., Spiekermann, S., Langheinrich, M.: Engineering privacy by design: are engineers ready to live up to the challenge? Inf. Soc. Int. J. **35**, 122–142 (2019). https://doi.org/10.1080/01972243.2019.1583296
147. McCarthy, J., Minsky, M.L., Rochester, N., Shannon, C.E.: A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955. AI Mag. **27**, 12–14 (2006). https://doi.org/10.1609/aimag.v27i4.1904
148. Mcdermott, D., Waldrop, M.M., Schank, R., Chandrasekaran, B., Mcdermott, J.: The dark ages of AI: a panel discussion at AAAI-84. AI Mag. **6**, 122–134 (1985)
149. Turchin, A.: Assessing the future plausibility of catastrophically dangerous AI. Futures **107**, 45–58 (2019). https://doi.org/10.1016/j.futures.2018.11.007
150. Russell, S., Norvig, P.: Artificial Intelligence: A Modern Approach. Prentice Hall, Upper Saddle River, NJ (2010)
151. Searle, J.R.: Minds, brains, and programs. Behav. Brain Sci. **3**, 417–457 (1980). https://doi.org/10.1016/B978-1-4832-1446-7.50007-8

152. Frankish, K., Ramsey, W.M. (eds.): History, motivations, and core themes. In: The Cambridge Handbook of Artificial Intelligence, pp. 15–33. Cambridge University Press, Cambridge (2014). https://doi.org/10.1017/cbo9781139046855.015
153. Kirkpatrick, K.: Battling algorithmic bias. Commun. ACM **59**, 16–17 (2016). https://doi.org/10.1145/2983270
154. Kim, T.W., Scheller-Wolf, A.: Technological unemployment, meaning in life, purpose of business, and the future of stakeholders. J. Bus. Ethics **160**, 319–337 (2019). https://doi.org/10.1007/s10551-019-04205-9
155. Turing, A.M.: Computing machinery and intelligence (1950). In: The Essential Turing: the Ideas That Gave Birth to the Computer Age, pp.433–464 (2012)
156. Baum, S.D., Goertzel, B., Goertzel, T.G.: How long until human-level AI? Results from an expert assessment. Technol. Forecast. Soc. Chang. **78**, 185–195 (2011). https://doi.org/10.1016/j.techfore.2010.09.006
157. Goralski, M.A., Tan, T.K.: Artificial intelligence and sustainable development. Int. J. Manag. Educ. **18**, 1–9 (2020). https://doi.org/10.1016/j.ijme.2019.100330
158. Chughtai, H., et al.: Demarginalizing interdisciplinarity in IS research: interdisciplinary research in marginalization. CAIS, 296–315 (2020). https://doi.org/10.17705/1CAIS.04613
159. Kane, G.C., Young, A.G., Majchrzak, A., Ransbotham, S.: Avoiding an oppressive future of machine learning: a design theory for emancipatory assistants. MIS Q. **45**, 371–396 (2021). https://doi.org/10.25300/MISQ/2021/1578
160. Chughtai, H., Myers, M.D.: Human values in a digital-first world: the implications for qualitative research. In: Simeonova, B., Galliers, R.D. (eds.) Cambridge Handbook of Qualitative Digital Research, pp. 91–103. Cambridge University Press, New York, NY (2023). https://hdl.handle.net/2292/66651
161. Flanagan, F., Walker, M.: How can unions use Artificial Intelligence to build power? The use of AI chatbots for labour organising in the US and Australia. N. Technol. Work. Employ. **36**, 159–176 (2021). https://doi.org/10.1111/ntwe.12178
162. Krafft, P.M., et al.: An action-oriented AI policy toolkit for technology audits by community advocates and activists. In: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, pp. 772–781. ACM, Virtual Event Canada (2021). https://doi.org/10.1145/3442188.3445938
163. Belfield, H.: Activism by the AI community: analysing recent achievements and future prospects. In: Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society, pp. 15–21. ACM, New York NY USA (2020). https://doi.org/10.1145/3375627.3375814
164. Frey, W.R., Patton, D.U., Gaskell, M.B., McGregor, K.A.: Artificial intelligence and inclusion: formerly gang-involved youth as domain experts for analyzing unstructured Twitter data. Soc. Sci. Comput. Rev. **38**, 42–56 (2020). https://doi.org/10.1177/0894439318788314
165. Ortiz, J., et al.: Giving voice to the voiceless: the use of digital technologies by marginalized groups. CAIS **45**, 21–38 (2019). https://doi.org/10.17705/1CAIS.04502
166. Srinivasan, R.: Whose Global Village? Rethinking How Technology Shapes Our World. New York University Press, New York (2018)
167. Daugherty, P.R., Wilson, H.J., Chowdhury, R.: Using artificial intelligence to promote diversity. MIT Sloan Manag. Rev. **60**, 59–63 (2019)
168. Cath, C., Wachter, S., Mittelstadt, B., Taddeo, M., Floridi, L.: Artificial intelligence and the 'good society': the US, EU, and UK approach. Sci. Eng. Ethics (2017). https://doi.org/10.1007/s11948-017-9901-7
169. Nind, M.: The practical wisdom of inclusive research. Qual. Res. **17**, 278–288 (2017). https://doi.org/10.1177/1468794117708123
170. Nind, M.: What is Inclusive Research? Bloomsbury Publishing, London, UK (2014)
171. Escobar, A.: Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press, Durham (2018)

172. Zuboff, S.: The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power. PublicAffairs, New York (2020)
173. Chughtai, H.: Decolonial critical hermeneutics. In: Davison, R.M. (ed.) Handbook of Qualitative Research Methods for Information Systems, pp. 240–256. Edward Elgar, Cheltenham, UK (2023). https://doi.org/10.4337/9781802205398.00020
174. Mignolo, W.: The Darker Side of Western Modernity: Global Futures, Decolonial Options. Duke University Press, Durham (2011)
175. Petrakaki, D., Chamakiotis, P., Curto-Millet, D.: From 'making up' professionals to epistemic colonialism: digital health platforms in the Global South. Soc. Sci. Med. **321**, 115787 (2023). https://doi.org/10.1016/j.socscimed.2023.115787
176. Xiao, X., Tan, B., Leong, C., Tan, F.T.C.: Powered by "Qinghuai": the melding of traditional values and digital entrepreneurship in contemporary China. Inf. Syst. J. **31**, 769–802 (2021). https://doi.org/10.1111/isj.12301
177. Kokuryo, J.: An Asian perspective on the governance of cyber civilization. Electron Markets. **32**, 475–485 (2022). https://doi.org/10.1007/s12525-022-00523-5
178. Woods, C., Dell, K., Carroll, B.: Decolonizing the business school: reconstructing the entrepreneurship classroom through indigenizing pedagogy and learning. AMLE **21**, 82–100 (2022). https://doi.org/10.5465/amle.2020.0366
179. Young, A.G.: Using ICT for social good: Cultural identity restoration through emancipatory pedagogy. Inf. Syst. J. **28**, 340–358 (2018). https://doi.org/10.1111/isj.12142
180. Myers, M.D., Chughtai, H., Davidson, L., Tsibolane, P., Young, A.G.: Studying the other or becoming the other: engaging with indigenous peoples in IS research. CAIS **47**, 382–396 (2020). https://doi.org/10.17705/1CAIS.04718
181. Dell, N., Vaidyanathan, V., Medhi, I., Cutrell, E., Thies, W.: "Yours is better!": participant response bias in HCI. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 1321–1330. ACM, Austin Texas USA (2012). https://doi.org/10.1145/2207676.2208589
182. Gupta, M., Parra, C.M., Dennehy, D.: Questioning racial and gender bias in AI-based recommendations: do espoused national cultural values matter? Inf. Syst. Front. **24**, 1465–1481 (2022). https://doi.org/10.1007/s10796-021-10156-2
183. Gaikwad, M., Ahirrao, S., Phansalkar, S., Kotecha, K.: Online extremism detection: a systematic literature review with emphasis on datasets, classification techniques, validation methods, and tools. IEEE Access **9**, 48364–48404 (2021). https://doi.org/10.1109/ACCESS.2021.3068313
184. Fukuyama, F.: Our Posthuman Future: Consequences of the Biotechnology Revolution. Farrar, Straus and Giroux, New York (2002)
185. Sharon, T.: Human Nature in an Age of Biotechnology: The Case for Mediated Posthumanism. Springer, Dordrecht (2014). https://doi.org/10.1007/978-94-007-7554-1
186. Coeckelbergh, M.: Human Being @ Risk: Enhancement, Technology, and the Evaluation of Vulnerability Transformations. Springer, Dordrecht (2013). https://doi.org/10.1007/978-94-007-6025-7
187. Bostrom, N.: The transhumanist FAQ. In: Kaplan, D.M. (ed.) Readings in the Philosophy of Technology, pp. 345–360. Rowman & Littlefield Publishers, Lanham, MD (2009)
188. Verbeek, P.-P.: What Things Do: Philosophical Reflections on Technology, Agency, and Design. The Pennsylvania State University Press, Pennsylvania (2005). https://doi.org/10.1017/CBO9781107415324.004
189. Gilson, L.L., Costa, P., O'Neill, T.A., Maynard, M.T.: Putting the "TEAM" back into virtual teams. Organ. Dyn. **50**, 100847 (2021). https://doi.org/10.1016/j.orgdyn.2021.100847
190. Alfes, K., et al.: Reinventing work. the implications of modern work arrangement for individuals and teams. In: Proceedings 2022, p. 14195 (2022). https://doi.org/10.5465/AMBPP.2022.14195symposium

191. Panteli, N., Nurse, J.R.C., Collins, E., Williams, N.: Trust disruption and preservation in the Covid-19 work from home context. JWL (2022). https://doi.org/10.1108/JWL-02-2022-0017
192. Verizon: Data breach investigations report (2017)
193. Pew Research Center: Public perceptions of privacy and security in the post-Snowden era (2014). 202.419.4372
194. European Commission. Directorate General for Justice and Consumers. TNS Opinion & Social: Data protection: report. Publications Office, LU (2015)
195. Lu, Z., Huang, D., Bai, L., Liu, X., Qu, J., Ouyang, W.: Seeing is not always believing: a quantitative study on human perception of AI-generated images (2023). http://arxiv.org/abs/2304.13023
196. Norman, D.A.: The Design of Everyday Things. Basic Books, New York (2013)
197. Cooper, A., Reimann, R., Cronin, D., Noessel, C.: About Face: The Essentials of Interaction Design. Wiley, Indianapolis (2014)
198. Friedman, B., Kahn Jr., P.H., Borning, A.: Value sensitive design and information systems. In: Zhang, P., Galletta, D. (eds.) Human-Computer Interaction and Management Information Systems: Foundations, pp. 348–372. M.E.Sharpe, Armonk, NY (2006). https://doi.org/10.1007/978-94-007-7844-3_4
199. Kuhn, S., Muller, M.J.: Participatory design. Commun. ACM **36**, 24–28 (1993). https://doi.org/10.1145/153571.255960
200. Fuchs, T.: Values as relational phenomena – a sketch of an enactive theory of value. In: Mühling, M., Gilland, D.A., Förster, Y. (eds.) Perceiving Truth and Value, pp. 23–42. Vandenhoeck & Ruprecht, Göttingen (2019). https://doi.org/10.13109/9783666573200.23
201. Hartmann, N.: Ethics. George Allen & Unwin, London (1932)
202. Shilton, K.: Values and ethics in human-computer interaction. FNT Hum.-Comput. Interact. **12**, 107–171 (2018). https://doi.org/10.1561/1100000073
203. Bednar, K., Spiekermann, S.: Eliciting values for technology design with moral philosophy: an empirical exploration of effects and shortcomings. Sci. Technol. Hum. Values 016224392211225 (2022). https://doi.org/10.1177/01622439221122595
204. Kardefelt-Winther, D.: A conceptual and methodological critique of internet addiction research: towards a model of compensatory internet use. Comput. Hum. Behav. **31**, 351–354 (2014). https://doi.org/10.1016/j.chb.2013.10.059
205. Craparo, G.: Internet addiction, dissociation, and alexithymia. Procedia. Soc. Behav. Sci. **30**, 1051–1056 (2011). https://doi.org/10.1016/j.sbspro.2011.10.205
206. Kuss, D.J., Griffiths, M.D., Binder, J.F.: Internet addiction in students: prevalence and risk factors. Comput. Hum. Behav. **29**, 959–966 (2013). https://doi.org/10.1016/j.chb.2012.12.024
207. Ko, C.-H., Yen, J.-Y., Chen, C.-C., Chen, S.-H., Yen, C.-F.: Proposed diagnostic criteria of Internet addiction for adolescents. J. Nerv. Ment. Dis. **193**, 728–733 (2005). https://doi.org/10.1097/01.nmd.0000185891.13719.54
208. Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D.J., Griffiths, M.D.: Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. Curr. Addict. Rep. **2**, 156–162 (2015). https://doi.org/10.1007/s40429-015-0054-y
209. Kwon, M., et al.: Development and validation of a Smartphone Addiction Scale (SAS). PLoS ONE **8**, e56936 (2013). https://doi.org/10.1371/journal.pone.0056936
210. Davis, R.A.: Cognitive-behavioral model of pathological Internet use. Comput. Hum. Behav. **17**, 187–195 (2001). https://doi.org/10.1016/S0747-5632(00)00041-8
211. Shen, C., Williams, D.: Unpacking time online: connecting internet and massively multiplayer online game use with psychosocial well-being. Commun. Res. **38**, 123–149 (2011). https://doi.org/10.1177/0093650210377196