Toward an Ethical and Accountable Society

Working Group 9.2: Social Accountability and Computing

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Abstract. From the beginning (established in 1977) of IFIP Working Group 9.2: Social Accountability and Computing (WG 9.2), the aim has been involving people from different backgrounds to work toward a better world by endorsing the responsible and ethical use of computers and information technologies. Computers and other digital technologies have raised different topics during the history of the working group. Society has been facing all the time a growing amount of problematic issues that computers brought to us. Our digitalized society is such that social accountability seems to remain an important approach – or even more important – when we are facing topics such as data economy, artificial intelligence, and sustainability of technology.

Keywords: Social Accountability · Information Systems · History · IFIP · Ethics

1 Overview

The aim of IFIP Working Group 9.2: Social Accountability and Computing (WG 9.2) has always been to endorse the responsible and ethical use of computers and information technology. During the four decades of the existence of WG 9.2, the meaning and impact of computers have moved from rareness to a globally pervasive part of society. As people more and more use technological devices throughout the day, information technology is beginning to have a profound effect on people's psyches as well as a society due to technology becoming pervasive in our everyday life [1]. Considering the effect that information technology has on individuals and the whole society, the need for social accountability is not less than it was in the late 1970s when WG 9.2 was founded.

In section two, a general view of the history of WG 9.2 is provided. In section three, themes of the working group are presented and the main themes – eHealth, eGovernment and ethical sustainability of computing – are briefly presented. Finally, in section four, the themes that are anticipated to become (or already are) an even more important area for social accountability are introduced. Those areas are artificial intelligence, data economy and sustainable computing.

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2 History

By the 1980s, TC 9 was an extremely active body comprising representatives, usually with academic backgrounds, and appointed by the computing societies of countries that were members of IFIP. They were largely of European origin but were geographically dispersed. The representatives discussed developments in information processing within their countries and reported on and researched the impacts of various new and emerging technologies on work, society and the community.

2.1 Early Years of WG 9.2 (1977–1990)

WG 9.1, "Computers and Work," and WG 9.2, "Social Accountability," were both established by TC 9 in 1977. Rob Kling was the first chair of WG 9.2 alongside Klaus Brunnestein, who was chairing the European core of WG 9.2 (see Table 1 for Working Group Chairs).

The early years of the Working Group(s) were challenging, and there were times when no activities were conducted by the American core of WG 9.2, and the European core was also very low with its outcome. There was a discussion about whether WG 9.2 should be disbanded or continued as it lacked activity. TC 9 set up the review committee – chaired by Bernard Levra – to evaluate the situation and inform TC 9 [2]. In the end, WG 9.2 continued to exist and did have only one group instead of separate European and American cores.

Table 1. Chairs of WG 9.2

Years	Chairs
1977–1984	American core chair: Rob Kling
1977–1979	European core chair: Klaus Brunnstein
1980–1985	European core chair: Richard Sizer
1985–1990	Richard Sizer
1991–1996	Jacques Berleur
1997–1999	Colin Beardon
2000–2003	Jan Holvast
2004–2010	Penny Duquenoy
2011–2019	Diane Whitehouse
2020–	Jani Koskinen

By 1985, TC 9 and its WGs included members from different countries. They worked together on tasks and met at meetings and conferences at various locations, usually throughout Europe. This enabled important formal exchanges of research and experience but also for informal discussions and opportunities for understanding differences and forming relationships. The mandate of TC 9 was broad; the topics raised that related

to the development and use of technology were varied. Some had economic and political implications. For example, there were significant concerns about the impacts of technology that included the use of information processing for military purposes. There were scientifically robust discussions (particularly with the representative of the USA) about sensitive issues like "Star Wars" defense technologies.

As the range and reach of information technology developed exponentially, the implications and impacts broadened leading to the identification of new issues. As an example of range discussions and the synergy with the work of the initial WGs, WG 9.1, Computers and Work, held a conference at Humboldt University in East Berlin on System Design for Human Development and Productivity: Participation and Beyond [3]. The conference, which began on 12 May, was preceded by WG meetings just after Chernobyl had exploded on 26 April 1986 and it did collect people together from different countries, an issue that demonstrates the collaborative nature of WG.

During the late 1980s, there were also two SIGs organized [4]. SIG 9.2.1 on Disabilities was chaired by Geoff Bubsy that – however – ended its activities after a couple of years. The other, and still active, was SIG 9.2.2 on ethics, which is currently known as SIG 9.2.2: IFIP Special Interest Group on a Framework for Ethics of Computing. It is important to note, however, that SIG 9.2.2 was established on a special mandate and reports directly to the General Assembly (GA), not to either the WG 9.2 or TC 9.

2.2 1990–2000

TC 9 recognized the need for the greater involvement of governments, the business community, and computing professionals throughout the world in discussions about issues of the development and use of information processing. The industry was forcefully driving technical development and business and governments were rapidly implementing technology before impacts could be independently evaluated or predicted. Consequently, TC 9 sponsored joint working group conferences that involved participants from universities, practitioners, and senior management from business and government organizations, as well as activists in countries outside Europe. For example, in 1989 and 1991, TC 9, WG 9.2, and the Australian Computer Society held the Shaping Organizations, Shaping Technology (SOST) conferences. Members of TC 9 and the WGs supported local organizers. For the first SOST conference, Klaus Brunnstein and Ulrich Briefs from Germany, Hal Sackman from the USA, Jan Holvast from the Netherlands travelled to present papers and discuss the implications with attendees [see 5, 6]. As the impacts of information processing throughout communities increased, the social implications were again noted as being as important as technical challenges. "Almost all other IFIP TCs study areas may produce solutions that may have social impact. This means that the TC 9 community must analyze potential unintended effects and the downstream impact of the IT systems built by following models and recommendations given by other TCs" [7]. This underlined the need for WG 9.2 as a relevant working group.

During the 1990s, WG 9.2 thrived and met twice a year under the chairmanship of Jacques Berleur with Diane Whitehouse as secretary during the years 1990–1996. The Namur Award, given for outstanding contributions in the field of computers and society, was instituted in 1991. The roots of the Namur award-name originate from the place where meetings of the working group were arranged at that time – Namur, Belgium

as Berleur was working at the University of Namur. Berleur's full two terms were followed by the term 1997–1999 chaired by Colin Beardon. Recognizing the need for new researchers and doctoral students, WG 9.2 began a series of summer schools aiming to help the younger generation of researchers. The First IFIP summer school launched in 1991 (and it is still running as a series today) [8]. In 1997, the chair was transferred from Jacques Berleur to Colin Beardon 1997–1999 and the tradition of meeting twice per year continued.

2.3 2000–2010

Jan Holvast followed Colin Beardon as the chair of WG 9.2 during the years 2000–2003 with Penny Duquenoy as the secretary. During his time as a chair, the group was very active and had many members from both academia and industry. Discussions in the group were interesting and sometimes even heated, but the spirit of the group was always warm, and after a long day of content, the group gathered together for friendly and light-hearted dinner discussions. This tradition has always been followed within the group.

Jan Holvast was followed by Penny Duquenoy who was chair from 2004–2010 with Chris Zielinski as vice-chair and Kai Kimppa as secretary. The meetings were held twice per year in different places – the winter meetings were typically held in Namur, Belgium, at the Notre Dame University, where Jacques Berleur served as a professor, and then as emeritus, as had been the case for quite some time.

During the period from 2004 to 2010, WG 9.2 undertook several new projects. Two to mention here were the "Landscapes" book, edited by Chris Zielinski, Penny Duquenoy and Kai Kimppa, the official title of which was *The Information Society: Emerging Landscapes* [9] and another was the proceedings of a conference held at the University of Turku in 2005. Space does not permit a description of the excellent meeting (and heroic barbeque visit to a nearby island), but the result was some twenty very stimulating (and sometimes controversial) papers [10].

The Working Group also held a number of Summer Schools together with WG 9.6/11.7 – WG 9.6 being the driving force – first in Karlstad, Sweden, later also elsewhere – a forum that brought together PhD students and senior researchers in stimulating debates. Also, Special Interest Group (SIG) 9.2.2, Framework on Ethics of Computing, was at least as active as the working group (see Gottesman, this volume). Concrete outcomes were published subsequent to both of these activities [11, 12].

2.4 2010–2020

The 2010s was the decade of Chair Diane Whitehouse (2011–2019). The meetings were held twice a year (when feasible) in different places. During this era, one of the aims was to create a bridge between social accountability and ethical accountability which has been visible with strong collaboration with different working groups and especially with SIG 9.2.2. The aforementioned International IFIP Summer Schools were one of the main outcomes of common efforts between different workshops. In the beginning, these Summer Schools were quite active both from the social and technical side of

issues, but the technical side started to become more emphasized later, and thus WG 9.2 participation has unfortunately dwindled some as of late.

Because SIG 9.2.2 was focusing on analyzing the ethical codes and advancing the discussion, especially between the national representatives of IFIP, there was a need for more general ethical discussions where WG 9.2 was a natural forum for that. However, the cooperation between SIG 9.2.2 and the WG has been strong and there have been several different activities between them.[1] The WG 9.2's area of interest during this era was wide: eHealth, slow tech, teaching, digital divide, security and safety, for example.

At the beginning of 2020, WG 9.2's new chair, Jani Koskinen, started his term. He was elected at the TC 9 meeting held in Stockholm, Sweden, during the European Conference on Information Systems (ECIS 2019). One of the first tasks by the new chair of the new decade was calling up the group to create this chapter for the anthology of TC 9. Covid-19 has been ongoing during this term and the outcome has been that there have not been any physical meetings by WG 9.2. Therefore, instead of physical meetings virtual meetings have been used. Likewise, the planned WG 9.2 workshops in Human Choice and Computers conferences (HCC 14 and HCC 15) could not be held physically as those last two HCC conferences, held in Japan, were changed to virtual ones. One of the future challenges for WG 9.2 is to find new ways of doing things together – virtually and physically.

2.5 SIG 9.2.2: IFIP Special Interest Group on a Framework for Ethics of Computing

As described by Gottesman (this volume), the General Assembly of IFIP set up the Ethics Task Group in 1992, which become a special interest group SIG 9.2.2 for the specific purpose of creating an ethical code for IFIP.[2] Jacques Berleur was tasked with collecting the group, and he did so. The group's first major input was the landscape of ethics book, in which the group mapped the different situations in different IFIP member states they were able to activate how the local computer societies handled ethics, both in the local ethics group and at the codes of ethics level. It was found that ethical codes and modes of practice in the different countries differed considerably, and thus it was thought for a quite long time, that a unified code for IFIP would be difficult, if not impossible to create.

In 2005 a conference, a 20-year update was held in Turku, Finland. Unfortunately, it seemed that the same problem persisted. After this conference, the SIG decided to approach the issue differently. The group decided to map two things: 1) what are the main issues that a national society should at least consider handling in their code of ethics, should they want to create such a code, and 2) how to go about that, i.e., how to create an ethics group for a national society to handle both creating a code of ethics as well as handle other possible ethical issues that might arise for a national society. This was considered, rightly so, a major step forward for IFIP.

[1] Joint meeting with SIG9.2.2: "Why good people do wrong and what to do about it" (2013) and workshop with SIG 9.2.2 and BCS ICT ethics specialist group: "The challenges of virtuality and the cloud: the implications of social accountability and professional ethics" (2015)

[2] SIG 9.2.2, however, was already working already late 1980s. See https://www.ifip.org//minutes/GA98/GA98_TC9.htm.

In 2020, the SIG's new chair, Don Gotterbarn, and the group's membership were not content with this approach; instead, a true universally acceptable code of ethics for IFIP and its client societies entered development. The code is practically the same code which an international group of ICT and ethics researchers and practitioners created as the latest ACM code of ethics. This code has already been accepted as a code for several countries, and it is in the process of being accepted in others (e.g., Finland). There is strong reason to believe that it is indeed a suitable code for an internationally acceptable code of ethics, as it is specifically designed by an international group, and in such a manner that it is hard to claim the objectives of the code would not be ethical in any society. Only the future will tell whether the latest step on the special interest group 9.2.2's road will be successful, but it does look promising.

3 Themes

The name of WG 9.2, Social Accountability and Computing, already indicates the wide spectrum of themes that the working group focused on. The themes and topics that have been noted by the group are the following ones: critical infrastructures, speed and communication, materials and their finite nature, markets and changing power relation, growing maturation of citizens' role in shaping society, sustainability of society, personal relations, legitimacy of ICT, technology assessment and its methods, codes of ethics and professionalism, legal and regulatory frameworks, social cohesion and social exclusion, data privacy, human rights issues, globalization and its impact on democracy and culture, and ethics with regard to leading-edge technologies (see Working Group webpage[3]).

Social accountability of computing is a large phenomenon that is needed to achieve a better and more resilient society now, and most likely it will be needed even more in future. Social accountability is commonly seen as engagement between citizens and governmental parties to see and ensure that the actions of public officials and politicians are accountable – that those actions improve the well-being of citizens and protect their rights [13]. Likewise, demands made on companies are an important part of the social accountability of computing, although this is usually called corporate social responsibility. Especially when companies are globalizing, social accountability has global challenges that especially data-based economy has brought to us [14]. Likewise, the possibilities that technology – like IoT, artificial intelligence etc. – brings will set demands for achieving accountability [15].

It is also important to note the individual aspect of social accountability – meaning that individuals need to have accountability for their actions if we want to solve problems that our society is facing. We have environmental challenges and global inequality that should be noted also by individuals. Likewise, relations between people should be improved – especially in online forums, we have seen behaviors that are not sustainable. It is not possible to outsource the responsibilities only to business, governments, and other organizations. However, people also need ways of influencing and possess tools before they can have accountability. Without the possibilities and power to make decisions, one cannot be held accountable. Thus, there is a need for working towards a society where individuals are empowered and are seen as active actors.

[3] See http://ifiptc9.org/9-2/major-themes-of-wor/.

Social accountability is an evolving approach that covers issues such as the citizen oversight of public and/or private sector performance, user-centered public information access and dissemination systems, public complaint and grievance redress mechanisms and citizen participation in actual resource allocation decision-making [16]. Kling already over four decades ago mentioned that accountability in computerized information systems will be a salient issue in society [17]. Today we can agree that he was right and technology has such a profound effect on humans that now we need more than ever accountability implemented throughout the whole society. Next, we present three focus areas that have been central for WG 9.2.

3.1 eHealth

Modern medicine is disease-oriented, and it has become a field that is built on increasing specialization, which causes the fragmentation of the field [18–20] and thus people are easily lost and forgotten. This phenomenon is understandable as medicine and healthcare are so specialized nowadays and healthcare professionals cannot have an understanding of all medical issues since the specialization situation leads towards a narrower view. However, the problem is that people in this situation easily became an object of the treatment or action that the highly specialized healthcare professional is performing and commonly more and more with computers. The real risk in the fragmented healthcare field is that the professionals are losing the opportunity to understand the complete picture of the individual human beings they are encountering.

In order to prevent such alienation, a new approach to healthcare must be brought forward, and patients must be seen as human beings rather than objects. Therefore, it is not surprising that patients' involvement in healthcare has become an important issue for both healthcare professionals and policymakers [21]. Patient-centered healthcare and patient empowerment are seen as critical factors in improving the outcomes of healthcare and supporting the autonomy of the patient [22–25].

As eHealth is so central to medicine and healthcare it is obvious that it has been one of the focus areas for WG 9.2 which has a diversity of topics covered. Duquenoy et al. [25] argue that the use of online services in the health sector is related to patients' perception of respecting their privacy in these services.

Harvie, Eustace and Burmeister [26] have conceptualized and studied how elderly citizens can be included in the digital age. They propose that assistive technology can have an integral role in ensuring good health, social participation and independent living among elderly citizens.

To design domestic care technologies Finken and Mörtberg [27] suggest the concept of intra-action. Contrary to interaction, which perceives humans as subjects and technologies as objects, *intra*-action does not have a such prefixed distinction between subjects and objects. Humans can become objects which are sensed and measured in the context of the smart home as technology simultaneously becomes a subject acting on behalf of humans.

3.2 E-Government

Information and ICT have become ubiquitous parts of the public sector and governmental services [28]. To capture this development in public administration, e-government emerged as a popular term [29]. A new research field developed around it, raising issues of information, technology, and politics [30]. While no universally accepted definition of the e-government concept exists [31], it is often associated in the use of ICT to enhance the access and the delivery of public services for the benefit of citizens, governmental agencies and other stakeholders [32].

In the context of e-government, the relationship between user and provider is different from commercial setting, as citizens' choice of service are limited while governmental service providers have a responsibility to offer services to all citizens [25]. Hence, the question of access and accessibility are highly relevant for e-government services. Citizens' access to e-government relies heavily on their ability to access the internet and suitable devices, hence the use of ICT in the public sector could foster unequal access to public services for some of the citizens. Such an outcome would be largely contradictory to universalism, which is one of the core values of public administration [33]. Hence, digital divides have become a relevant research theme in e-government to study the gap between people, with effective access to digital services, and those with very limited or non-existent access [34]. As digital divides are related to other disparities in a societal sphere, they often reflect existing economical and societal inequalities as is the case with digital disability divides [35] which exist between people with disabilities and people without disabilities due to social, technical, financial and motivational factors.

According to Masiero [36], introducing ICT in a governmental context should aim for improving state-citizen relations. He claims that such improvement would require solving structural problems which may cause unresponsiveness of the state toward its citizens. However, such changes are rarely the focus of digitalizing governmental processes in developing countries. This is unfortunate, as integrating ICT into communities while strengthening social inclusion and avoiding the emergence and deepening of social and economic divides is one of the major challenges for e-government everywhere [37]. For example, Letch and Carrol [33] studied the consequences of an e-government initiative on a marginalized community in Australia. They propose that more efforts would be channeled forecast and evaluate the potential negative impacts of e-government initiatives.

Helbig et al. [38] recommend researchers ask who benefits from e-government and how different groups are influenced. These questions have been of interest for WG 9.2 alongside evaluating e-government initiatives and identifying their impacts on society.

3.3 Ethical Sustainability of Computing

Ethics sustainability has been at core of WG 9.2 and eventually lead to the establishment of SIG 9.2.2, the IFIP Special Interest Group on a Framework for Ethics of Computing. Although SIG 9.2.2 is not under WG 9.2 hierarchically, the aims of both are somewhat overlapping and thus presented here. One of the seminal works on ethicality and computers is Moor's article "What is computer ethics?" [39]. One reason for the lack

of legislation could be the digitalization of society, which radically changed the possibilities for the use of information. In addition to this rapid digitalization, the focus behind developing information systems has mainly been very technologically deterministic. Regulations have generally focused on solving emerging problems rather than being able to seek long-term solutions for the complex phenomenon that computers have brought upon us. This can be seen as a consequence of the Moorian policy vacuum [39].

A policy vacuum is a situation where there are no policies (or where the existent policies are unclear) regarding how information technology should be used [39]. Thus, the situation in which legislation is lagging behind the development of technology is an example of a Moorian policy vacuum – as we have seen with the legislation of AI currently being under formation but AI is already widely used [40].

As technology causes changes in the social system in which it is implemented and these changes are many times unpredictable. When an information system is changed or implemented it will change the organization as well [41–44]. Technological products, such as computers and information systems as larger installations, influence their social context by either through affordances or through constraints, enabling or discouraging certain behavior or use [45]. Brey has analyzed the proper role of technology in society. He shows that technology per se has an effect on society which shapes it towards positive and negative directions instead of technology being neutral. Brey's analysis focuses on defining the criteria for how technologies are contributing to the quality of society. He presents two fundamental values, well-being and justice, and three necessary, instrumental values – freedom, democracy, and sustainability – for a good society, and technologies should be used in a way that contributes toward those values.

Thus, the way that an information system is designed also plays an important role in this unpredictable interaction. As information systems are always designed by human beings that are trying to fulfil certain goals, information systems are never value-free [46, 47].

4 Future Directions

4.1 Data (Economy) Ecosystems

Discourses about the so-called 'data revolution' are steering societies to invest in data to advance economic and social development [48]. The current problem in society is that we have already entered an era of new colonialism: data colonialism, which has normalized the exploitation of humans through the use of their personal data. As Couldry and Mejias noted, we should resist building societies based on total algorithmic control, where we are reducing human beings to a role as data resources for economic purposes. Taking this position does not mean an outright rejection of data use and collection, but it might mean rejecting current data practices. [14] We need the accountability of all data from users to ensure that the rights of individuals are taken into account.

Research studying data economy ecosystems is, however, still in its infancy. There is no consensus about the definitions of the data economy, data ecosystem or data economy. Terminology is also inconsistent when talking about data and its use in present-day society [49]. Today's unclear situation is not helping to create data ecosystems where accountability and ethicality have a central position. Instead, a situation has developed in

which the dominating business corporations have been able to create a world of their own [50]. Thus, we need research about this phenomenon and transparency so that society can respond to the challenges and possibilities that a data economy and data ecosystems are bringing to us. The data economy is the whole phenomenon and the data ecosystem is a viable system, that is part of the data economy which may contain several and possible overlapping ecosystems [49]. From the perspective of social accountability is to seek the basis and justification of rules about how the data economy is put into practice in different ecosystems. There are several projects as IHAN,[4] Mesinfos,[5] Decode,[6] etc. that are aiming at creating new data economy ecosystems or solution for them [51]. Rantanen et al. [52] noted that research has been founded on themes of privacy, accountability, ownership, accessibility, and motivation, but the discussion is fragmented and should be further researched. There are several complex issues to look upon to understand and develop fair and socially just data economy. One of the questions is the ownership of data and how to ethically to justify it. Hummel et al. [53] well present the that ownership is issue where we need not only to think who owns the data but "data ownership is not only the resource of data itself, but societal resources of justice, privacy, self-determination, fairness, inclusion, and the like."

There is a need to go beyond narrow view on data economy and data ecosystems to meet future challenges for society. Private companies are forming ecosystems, most successful western ones being Google, Facebook, Twitter, and Amazon and Baidu, Alibaba, and Tencent in the east [14]. However, situation it that the data is seen as asset for companies to make profit and this hardly leads to situation where the common good is the aim. We should look new ways to govern the data (economy and ecosystems) globally and locally and thus this is the one of the key area for WG 9,2 as it is governing the all previous main themes of WG under one umbrella. Now these globally connected ecosystems currently dominated by global corporations or other strong institutes that may not be the most socially accountable actors.

4.2 Artificial Intelligence

By now, it is very clear that artificial intelligence has, and will have, many implications, effects and impacts on society. This is consequent on the work of such interpreters as Nick Bostrom (Superintelligence: Paths, Dangers, Strategies), public declarations by big-budget technology industrialists like Bill Gates (Microsoft), Elon Musk (PayPal, Tesla, Twitter, OpenAI, etc.) and Reid Hoffman (LinkedIn). AI-driven tools, such as drones and self-driving cars, present new social and ethical challenges documented in a growing literature.

Among the questions facing us are: Is AI set to provide the human race with a bright new future, or is it the harbinger of ultimate doom? Will nano-AI provide new ways of delivering health or will the robots take over? Many possible futures, even wider than the question of AI, have considerable – even existential – social consequences. It is essential to identify them. Accountability is certainly needed, but who will provide

[4] See https://www.sitra.fi/en/topics/fair-data-economy/.

[5] http://mesinfos.fing.org/english/.

[6] https://decodeproject.eu/.

it? Can it be in-built, or do we need watchdogs? What social and ethical structures are needed now and what will be needed in the years to come? A start on considering these questions was made during 13th IFIP TC 9 Human Choice and Computers Conference: "This Changes Everything" held in Poznan, Poland, 17th–21st September 2018 [54]. Undoubtedly, artificial intelligence will be a subject to which the Working Group will return frequently in coming years.

4.3 Sustainable Computing

In recent years, interest toward sustainability has increased in the field of computing among researchers and practitioners, especially because Covid-19 pandemic showed the need to tackle grand challenges that we are facing [55]. Focus have expanded from potential befits enabled by ICT to the sustainability of ICT. Sustainability of ICT can be analyzed by focusing on material consumption, power consumption and e-waste [56]. For example, e-waste is the largest source of hazardous waste in the global scale [57]. To prevent negative environmental impact of ICT and to increase its sustainability, Patrignani and Whitehouse [58] have suggested Slow Tech as prominent research approach to reflect the development and use of ICT from the viewpoint of goodness, cleanness and fairness.

Another approach is suggested by van der Welden [59], who questions the differentiation between the sustainability of ICT and ICT for sustainability in current discourse. She relates this division to concept of Anthropocene – the current epoch which is characterized by a time when human activities have made a greater impact on the planet than natural processes. While this concept has been largely used, it has not yet been formally accepted as a geological period and researchers using it disagree on the time when Anthropocene started. Van der Welden, alongside other researchers, criticizes the concept of Anthropocene for separating humans from the web of life and juxtaposing humans against other species [59]. She encourages others to study the complex and entangled relationship between humans, nature, and technology without reducing it to easy solutions or categories. With such an approach, it is possible to notice that nonhumans are also trapped in the rhythm of progress.

Whether or not one accepts the Anthropocene as ongoing geological period, ICT providers, users and policy makers need to adopt more systematic view which includes both human society and the planet when designing or using new technologies [60].

References

1. Walters, P., Kop, R.: Heidegger, digital technology, and postmodern education: from being in cyberspace to meeting on MySpace. Bull. Sci. Technol. Soc. (2009)
2. Zemanek, H.: A quarter century of IFIP. Abacus **3**(2), 28–33 (1986)
3. Working Group Computer and Work International Federation for Information Processing. System Design for Human Development and Productivity: Participation and Beyond; Proceedings of the IFIP TC 9/WG 9.1 Conference on System Design for Human Development and Productivity: Participation and Beyond, Berlin, GDR, 12–15 May 1986. Supplement volume of the IFIP-publication of North-Holland Publishing Company. Akad. d. Wiss. d. DDR, Zentrum für gesellschaftswissenschaftliche Information (1987)

4. TC 9 Report 2, 2 September 1998. https://www.ifip.org//minutes/GA98/GA98_TC9.htm
5. Clarke, R., Cameron, J. (eds.) Managing Information Technology's Organisational Impact. North-Holland (1991)
6. Clarke, R., Cameron, J. (eds.): Shaping Organisations, Shaping Technology. Australian National University (1991)
7. TC 9 Review 1997, Draft by Pertti Jarvinen, Secretary TC 9, 12 May 1997 held in the archives of Julie Cameron (1997)
8. Beardon, C., Whitehouse, D. (eds.): Computers and Society. Intellect Books (1993)
9. Zielinski, C., Duquenoy, P., Kimppa, K. (eds.): The Information Society: Emerging Landscapes: IFIP International Conference on Landscapes of ICT and Social Accountability, Turku, Finland, 27–29 June 2005, vol. 195. Springer, New York (2006)
10. Goujon, P., Lavelle, S., Duquenoy, P., Kimppa, K., Laurent, V. (eds.): The Information Society: Innovation, Legitimacy, Ethics and Democracy In Honor of Professor Jacques Berleur sj: Proceedings of the Conference" Information Society: Governance, Ethics and Social Consequences", University of Namur, Belgium, 22–23 May 2006, vol. 233. Springer, New York (2007)
11. Berleur, J., et al.: Criteria and Procedures for Developing Codes of Ethics Or of Conduct.., On behalf of International Federation for Information Processing, IFIP-SIG9, 2. IFIP Press, Laxenburg – Austria (2004). ISBN 3-901882-19-7. http://www.info.fundp.ac.be/~jbl/IFIP/Criteria_and_procedures.pdf¨
12. Duquenoy, P., Fischer-Hübner, S., Holvast, J., Zuccato, A. (eds.): Risks & challenges of the network society. In: Proceedings of the IFIP WG9.2, 9.7/11.7 Karlstad International Summer School, Karlstad Universities Studies (2004). ISBN 91-85335-03-07
13. Joshi, A., Houtzager, P.: Widgets or watchdogs? Public Manag. Rev. **14**(2), 145–162 (2012). https://doi.org/10.1080/14719037.2012.657837
14. Couldry, N., Mejias, U.A.: Data colonialism: rethinking big data's relation to the contemporary subject. Telev. New Media **20**(4), 336–349 (2019)
15. Crabtree, A., Lodge, T., Colley, J., et al.: Building accountability into the Internet of Things: the IoT databox model. J. Reliable Intell. Environ. **4**, 39–55 (2018). https://doi.org/10.1007/s40860-018-0054-5
16. Fox, J.A.: Social accountability: what does the evidence really say? World Dev. **72**, 346–361 (2015)
17. Kling, R.: Social analyses of computing: theoretical perspectives in recent empirical research. ACM Comput. Surv. (CSUR) **12**(1), 61–110 (1980)
18. Nolte, E., et al.: Overcoming fragmentation in health care: chronic care in Austria, Germany and The Netherlands. Health Econ. Policy Law **7**(1), 125–146 (2012)
19. Stange, K.C.: The problem of fragmentation and the need for integrative solutions. Ann. Family Med. **7**(2), 100–103 (2009)
20. Tinetti, M.E., Fried, T.: The end of the disease era. Am. J. Med. **116**(3), 179–185 (2004)
21. Callaghan, G.D., Wistow, G.: Publics, patients, citizens, consumers? Power and decision making in primary health care. Public Adm. **84**(3), 583–601 (2006)
22. Mead, N., Bower, P.: Patient-centredness: a conceptual framework and review of the empirical literature. Soc Sci Med **51**(7), 1087–1110 (2000)
23. Moretta Tartaglione, A., Cavacece, Y., Cassia, F., Russo, G.: The excellence of patient-centered healthcare: investigating the links between empowerment, co-creation and satisfaction. The TQM J. **30**(2), 153–167 (2018)
24. Rathert, C., Wyrwich, M.D., Boren, S.A.: Patient-centered care and outcomes: a systematic review of the literature. Med. Care Res. Rev. **70**(4), 351–379 (2013)
25. Duquenoy, P., Mekawie, N.M., Springett, M.: Patients, trust and ethics in information privacy in eHealth. In: George, C., Whitehouse, D., Duquenoy, P. (eds.) eHealth: Legal, Ethical and

Governance Challenges, pp. 275–295. Springer, Heidelberg (2013). https://doi.org/10.1007/978-3-642-22474-4_12
26. Harvie, G., Eustace, K., Burmeister, O.K.: Assistive technology devices for the oldest-old: maintaining independence for the fourth age. In: Kreps, D., Fletcher, G., Griffiths, M. (eds.) Technology and Intimacy: Choice or Coercion. IAICT, vol. 474, pp. 25–33. Springer, Cham (2016). https://doi.org/10.1007/978-3-319-44805-3_3
27. Finken, S., Mörtberg, C.: Performing elderliness – intra-actions with digital domestic care technologies. In: Kimppa, K., Whitehouse, D., Kuusela, T., Phahlamohlaka, J. (eds.) ICT and Society. IAICT, vol. 431, pp. 307–319. Springer, Heidelberg (2014). https://doi.org/10.1007/978-3-662-44208-1_25
28. Gil-Garcia, J.R., Dawes, S.S., Pardo, T.A.: Digital government and public management research: finding the crossroads. Public Manag. Rev. **20**(5), 633–646 (2018)
29. Yildiz, M.: E-government research: reviewing the literature, limitations, and ways forward. Gov. Inf. Q. **24**, 646–665 (2007)
30. Heeks, R., Bailur, S.: Analyzing e-government research: perspectives, philosophies, theories, methods, and practice. Gov. Inf. Q. **24**(2), 243–265 (2007)
31. Halchin, L.E.: Electronic government: government capability and terrorist resource. Gov. Inf. Q. **21**(4), 406–419 (2004)
32. Bélanger, F., Carter, L.: Digitizing government interactions with constituents: an historical review of e-government research in information systems. J. Assoc. Inf. Syst. **13**(5), 1 (2012)
33. Letch, N., Carroll, J.: Integrated E-government systems: unintended impacts for those at the margins. In: ECIS 2007 Proceedings, vol. 108 (2007)
34. Bolívar, M.P.R., Muñoz, L.A., Hernández, A.M.L.: Trends of e-government research. contextualization and research opportunities. Int. J. Digit. Account. Res. **10**, 87–111 (2010)
35. Sachdeva, N., Tuikka, A.-M., Kimppa, K.K., Suomi, R.: Digital disability divide in information society. J. Inf. Commun. Ethics Soc. **13**(3/4), 283–298 (2015)
36. Masiero, S.: Getting it right: the importance of targeting structural causes of failure in E-government. In: Hercheui, M.D., Whitehouse, D., McIver, W., Phahlamohlaka, J. (eds.) ICT Critical Infrastructures and Society. IAICT, vol. 386, pp. 34–43. Springer, Heidelberg (2012). https://doi.org/10.1007/978-3-642-33332-3_4
37. Dugdale, A., Daly, A., Papandrea, F., Maley, M.: Accessing e-government: challenges for citizens and organizations. Int. Rev. Adm. Sci. **71**(1), 109–118 (2005)
38. Helbig, N., Gil-García, J.R., Ferro, E.: Understanding the complexity of electronic government: implications from the digital divide literature. Gov. Inf. Q. **26**(1), 89–97 (2009)
39. Moor, J.H.: What is computer ethics? Metaphilosophy **16**(4), 266–275 (1985)
40. Stahl, B.C., Rodrigues, R., Santiago, N., Macnish, K.: A European agency for artificial intelligence: protecting fundamental rights and ethical values. Comput. Law Secur. Rev. **45**, 105661 (2022)
41. Lyytinen, K., Hirschheim, R.: Information systems as rational dis-course: an application of Habermas's theory of communicative action. Scand. J. Manag. **4**(1–2), 19–30 (1988)
42. Lyytinen, K., Newman, M.: Explaining information systems change: a punctuated socio-technical change model. Eur. J. Inf. Syst. **17**(6), 589–613 (2008)
43. Luna-Reyes, L.F., Zhang, J., Ramón Gil-García, J., Cresswell, A.M.: Information systems development as emergent socio-technical change: a practice approach. Eur. J. Inf. Syst. **14**(1), 93–105 (2005)
44. Mumford, E.: The story of socio-technical design: reflections on its successes, failures and potential. Inf. Syst. J. **16**(4), 317–342 (2006)
45. Brey, P.: The strategic role of technology in a good society. Technol. Soc. **52**, 39–45 (2018)
46. Nissenbaum, H.: How computer systems embody values. Computer **34**(3), 120, 119 (2001)
47. Tavani, H.T.: Ethics & Technology: Ethical Issues in an Age of Information and Communication Technology. Wiley, Hoboken (2007)

48. Cinnamon, J.: Data inequalities and why they matter for development. Inf. Technol. Dev. **26**(2), 214–233 (2020)
49. Koskinen, J., Knaapi-Junnila, S., Helin, A., Rantanen, M.M., Hyrynsalmi, S.: Ethical governance model for the data economy ecosystems. Digit. Policy Regul. Governance (2023). https://doi.org/10.1108/DPRG-01-2022-0005
50. van Dijck, J.: Governing digital societies: private platforms, public values. Comput. Law Secur. Rev. **36**, 105377 (2020)
51. Koskinen, J., Knaapi-Junnila, S., Rantanen, M.M.: What if we had fair, people-centred data economy ecosystems? In: 2019 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCom/IOP/SCI), pp. 329–334 (2019)
52. Rantanen, M.M., Hyrynsalmi, S., Hyrynsalmi, S.M.: Towards ethical data ecosystems: a literature study. In: 2019 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC), pp. 1–9. IEEE (2019)
53. Hummel, P., Braun, M., Dabrock, P.: Own Data? Ethical reflections on data ownership. Philos. Technol., 1–28 (2020). https://doi.org/10.1007/s13347-020-00404-9
54. Kreps, D., Ess, C., Leenen, L., Kimppa, K. (eds.) Proceedings of the 13th IFIP TC 9 International Conference on Human Choice and Computers, HCC13 2018 - This Changes Everything–ICT and Climate Change: What Can We Do? (2018)
55. Pan, S.L., Zhang, S.: From fighting COVID-19 pandemic to tackling sustainable development goals: an opportunity for responsible information systems research. Int. J. Inf. Manage. **55**, 102196 (2020)
56. Patrignani, N., Kavathatzopoulos, I.: On the complex relationship between ICT systems and the planet. In: Kreps, D., Ess, C., Leenen, L., Kimppa, K. (eds.) This Changes Everything – ICT and Climate Change: What Can We Do? IAICT, vol. 537, pp. 181–187. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-99605-9_13
57. Wijnhoven, F., Dietz, P., Amrit, C.: Information waste, the environment and human action: concepts and research. In: Hercheui, M.D., Whitehouse, D., McIver, W., Phahlamohlaka, J. (eds.) ICT Critical Infrastructures and Society. IAICT, vol. 386, pp. 134–142. Springer, Heidelberg (2012). https://doi.org/10.1007/978-3-642-33332-3_13
58. Patrignani, N., Whitehouse, D.: Slow tech: the bridge between computer ethics and business ethics. In: Kimppa, K., Whitehouse, D., Kuusela, T., Phahlamohlaka, J. (eds.) ICT and Society. IAICT, vol. 431, pp. 92–106. Springer, Heidelberg (2014). https://doi.org/10.1007/978-3-662-44208-1_9
59. Velden, M.: ICT and sustainability: looking beyond the Anthropocene. In: Kreps, D., Ess, C., Leenen, L., Kimppa, K. (eds.) This Changes Everything – ICT and Climate Change: What Can We Do? IAICT, vol. 537, pp. 166–180. Springer, Cham (2018). https://doi.org/10.1007/978-3-319-99605-9_12
60. Patrignani, N., Whitehouse, D.: Slow tech: towards an ICT for the Anthropocene age. Visions Sustain. **12**, 35–39 (2019)