Communications of the Association for Information Systems

Volume 53 Paper 41

12-5-2023

Criticality and Values in Digital Transformation Research: Insights from a Workshop

Markus Philipp Zimmer
Leuphana University, Lueneburg, Germany

Polyxeni Vassilakopoulou
University of Agder Norway

Miria Grisot
University of Oslo, Norway

Marko Niemimaa
University of Agder, Norway

Recommended Citation

Zimmer, M. P., Vassilakopoulou, P., Grisot, M., & Niemimaa, M. (2023). Criticality and Values in Digital Transformation Research: Insights from a Workshop. Communications of the Association for Information Systems, 53, 964-983. https://doi.org/10.17705/1CAIS.05341

Criticality and Values in Digital Transformation Research: Insights from a Workshop

Cover Page Footnote

This manuscript underwent editorial review. It was received 08/28/2023 and was with the authors for one month for one revision. Pitso Tsibolane served as Associate Editor.

Communications of the Association for Information Systems

Panel Report DOI: 10.17705/1CAIS.05341 ISSN: 1529-3181

Criticality and Values in Digital Transformation Research: Insights from a Workshop

Markus Philipp Zimmer
Leuphana University Lueneburg
Germany
0000-0003-1499-5427

Polyxeni Vassilakopoulou
University of Agder
Norway
0000-0002-5947-4070

Miria Grisot
University of Oslo
Norway
0000-0001-5266-5248

Marko Niemimaa
University of Agder
Norway
0000-0002-3733-830X

Abstract:

Digital transformation can positively or negatively contribute to societies, organizations, and individuals depending on the values inscribed in the underlying digital technologies. This highlights the importance for researchers to critically examine digital technologies' value inscriptions, how technology use enacts these values and the bearing of these values on research. This paper draws on the pre-ICIS 2022 IFIP 8.2 OASIS workshop on "Criticality and Values in Digital Transformation Research" to highlight four ways researchers can practice criticality, that is, how they can identify and reflect on the values that underlie digital phenomena. The types of criticality are phenomenon-based, method-based, theory-based, and self-reflexive criticality. Criticality alone does not constitute critical social research. However, criticality sensitizes researchers to consciously engage with values, which can feed into critical research's elements of insight, critique, and transformation. Criticality can inform insight by surfacing values; providing the basis for critique by confronting readers with alternative values; and supporting transformation by proposing alternative value inscriptions. Hence, we take criticality as pivotal for understanding how digital transformation can contribute to building a better world and we invite the IS community to practice and discuss criticality, values, and reflexivity to drive positive change.

Keywords: Criticality, Values, Digital Transformation, Responsible Digital Transformation, Critical Research, IS Community.

This manuscript underwent editorial review. It was received 08/28/2023 and was with the authors for one month for one revision. Pitso Tsibolane served as Associate Editor.

1 Introduction

Digital transformation (DT), at the societal, organizational, and individual level, presents challenges and opportunities to address the most pressing issues of our times, for example, climate change, poverty, or loss in biodiversity (European Union, 2010; Henriksen et al., 2021; United Nations, 2016). These challenges and opportunities are grounded in the development and use of the digital technologies and infrastructures that underpin DT (Constantinides et al., 2018; Vial, 2019). We refer to DT as the design, development, implementation, and use of digital technology to trigger significant changes to an entity's properties (Vial, 2019). However, whether DT induced changes emerge as challenges or opportunities is not a matter of either/or. Rather, we can observe how the same digital technology presents itself as an opportunity but once widely adopted, gives rise to societal challenges. For example, being "always-on" enables flexibility and autonomy but also engenders a contorted reality of self and others and blurs the boundaries of work and life (Nastjuk et al., 2023). Artificial intelligence (AI) can help people with disabilities, optimize energy generation and consumption, or support drug development, while it can also fuel discrimination or disassemble entire democracies (Mikalef et al., 2022; Pappas et al., 2023; Vassilakopoulou et al., 2022). Rather than inscribing privacy as a basic human right, developers of digital technology often built on the principle of privacy violation (Cecez-Kecmanovic, 2019; Zuboff, 2015). Organizational DT could be a means for accomplishing sustainability (Graf-Drasch et al., 2023; Zimmer et al., 2023; Zimmer & Järveläinen, 2022) but often organizations emphasize economic gains when developing new digital business models (Chanias et al., 2019; Vial, 2019; Zimmer, 2019). These examples illustrate that any attempt to leverage digital technologies for DT can have positive and negative effects. The values inscribed in digital technologies and infrastructures underpinning DT contribute to enacting these positive and negative effects.

Designing and developing digital technologies that underlie DT, we inscribe, consciously or unconsciously, values. When using these technologies, we may intentionally or unintentionally actualize the value inscriptions they embody and the consequences they materialize. Any use of digital technology that occurs un-reflectively can end up aligning with these, desired or undesired, values. We argue that this calls for criticality in DT research with criticality referring to ways of identifying and reflecting on how values become inscribed in digital technology and how inscribed values become enacted in digital phenomena and the transformations observed. Criticality thus requires a value-reflective stance that enables us to render the values underpinning DT explicitly. This is a pre-requisite for pondering the question "*which values we value?"*, when investigating how DT builds or threatens the becoming of a better world (Conboy, 2019; Rowe, 2018; Walsham, 2012; Zimmer et al., 2023). Yet, how can we accomplish criticality?

Pondering this question, we called for submissions to the theme of "Criticality and Values in Digital Transformation Research" to the "Organizations and Society in Information Systems" (OASIS) pre-ICIS workshop of the Working Group 8.2 of the International Federation of Information Processing (IFIP)[1]. We organized this workshop to provoke submissions on criticality and values with the aim of collecting and reflecting on our community's understanding of how we can identify and reflect on the values that underpin DT. In this article, we share our learnings on criticality and values in DT research by reflecting on this workshop, the given keynotes, and participants' submissions. We first summarize the two keynotes given at the workshop. Afterwards, we reflect on how these keynotes speak to criticality and values. We then position our reflections within critical research and develop them into four approaches to criticality. These are *phenomenon-based, method-based, theory-based, or self-reflexive criticality.* We subsequently examine the workshop submissions to identify and reflect on manifestations of these four ways of criticality. This workshop report thus contributes to our understanding of how we—as researchers—can accomplish criticality in DT research, and by extension IS research in general. We close discussing how criticality can enable researchers to identify and reflect on values in DT research practicing criticality as well as how criticality relates to critical IS research's three elements of insight, critique, and transformation. We see this workshop report as an invitation to the IS community to engage in a discourse on using—and how to use—criticality, values, and reflexivity to build a better world.

[1] See https://ifipwg82.org/node/1532 for further details

2 Ways of Criticality in the Workshop's Keynotes

The workshop involved two keynotes. Brit Ross Winthereik presented the first keynote on "The Citizen from Hell: Towards Socially Thick Experiential Computing", while Jannis Kallinikos gave the second keynote on "The Data Lens: Technological Innovation and Institutional Change." Their keynotes were tied to the workshop theme of criticality and values in digital transformation research but explored different ways of criticality. These explorations triggered reflections among the authors (of this report) on how researchers can render values explicit. Before we outline these reflections, we descriptively summarize both keynotes.

2.1 Keynote: The Citizen from Hell: Towards Socially Thick Experiential Computing

In the first keynote, Brit Ross Winthereik focused on digitalization in the public sector, and in particular, on the digitalization of social services. She started by outlining the profound changes digitalization has brought to citizens' lives. Public sector digitalization created infrastructures that are not merely neutral substrate (an underpinning for action), or material system that merely connects different "component" parts. Rather, these digital infrastructures have become the actual environment where large parts of our lives happen and are even forced to take place; they form nowadays what Reimers et al. (2022) call "home" (in Heideggerian sense) or Niemimaa (2016) as action context. For example, the shift of public services to online delivery is emphasized by their decreased physical availability. In Winthereik's words: "digital infrastructures have become our environment." They underlie and weave into all citizen-state interactions. As public service digital infrastructures become our environment—the surrounding that shapes our experiences—she posed the question of "how to build livable digital environments?"

Exploring this question, she outlined the positive sides but also shortcomings of public service digitalization. She pinned the shortcomings to the role of users. Showing images of what is typically portrayed as the "user" of public online services—middle aged, able-bodied women and men, whom she attributed as autonomous, rational, and able to use self-service solutions—she drew attention to the citizens that are missing from these images: the elderly people, the non-technical savvy citizens, the disabled and injured. This emphasizes that public sector digitalization often conceives of "citizens" as a category of users that reflects the image of office workers. She pointed out that this is a distorted image, far-flung from the hoi polloi of heterogeneous and diverse groups of citizens with or without specific needs that constitute society. Winthereik stressed that "when digital platforms become access points to supporting all strands of life, digitalization is about life" and thus, about all demographics. The distortion of the citizen as middle-aged, well-abled user, however, makes the user category "socially thin" and many citizens "misfit" in digital welfare systems.

Illustrating citizens' "misfit" into welfare systems, she drew on her experiences as a mother of a child that does not fit well with the established user image. She shared experiences of frustration when having to deal with social service systems designed for the average "office worker". Winthereik's autoethnographic approach provided vivid examples of what it is like to live in this digital environment—the digital social service systems—and use these services that do not, and may not even possibly, accommodate for all the "special cases" that signify the heterogeneity of citizens. Rather than describing services or presenting distant analyses, she asks what it is to experience the digitalization of society. She illustrates that in the eyes of a digitalized society, citizens are always and already "datafied". They somehow exist in the system and this "datafied" existence grants them access. However, this does not hold for all citizens. Winthereik described how assisting her child, she had interactions with her municipality, her child's school, and other services that were frustrating and stressful. She shared that "the authorities meet you with suspicion and when you ask for a pair of shoes, you receive an ice axe." This frustration culminated in an angry email to social services in which she ended up writing as a salutation: "Greetings, Citizen from Hell".

Citizen from hell has since then evolved into a phrase for research, activism, and design of digital environments. Speaking to other parents and digital citizens with different needs, she turned citizen from hell into a phrase capturing human experiences of (and in) public digital infrastructures. Turning the phrase into a Twitter handle, she shared these experiences of her extensive self to expose the hardships and reality of using social services online. As a form of online activism, the Twitter handle provides a different channel of expression from that of her researcher identity for which she uses a separate Twitter profile. The phrase became a vehicle for online activism to express socially thick experiences of online social services. Winthereik presented how citizen from hell probes digital designs to acknowledge and

accommodate that citizens are members of many different worlds and that their identity is co-extensive with their digital environment (i.e., technology, social relations, welfare politics). This makes citizen from hell a way of capturing socially thick experiences on digitalization; on how digital technologies participate in all interactions and structure these interactions. Rather than referring to this diversity of citizens as users, Winthereik suggested seeing them as the *human in computing*. In the words of a digital citizen, "we need more nuances on the relations and on 'situations from hell' to get the human perspective." [2]

2.2 Keynote: The Data Lens: Technological Innovation and Institutional Change

The second keynote speaker, Jannis Kallinikos, proposed theorizing data as sociocultural artifacts rather than statistical entities. Instead of approaching data from the standard quantitative perspectives of data science and analytics, his keynote focused on the social, institutional and technological dynamics on the basis of which data is generated and made to perform its functions in the economy and society. The study of data as sociocultural artifacts can thus disclose how data shape and are shaped by the ways we mark, represent, and perceive socioeconomic life, including how we organize and intervene upon existing problems, institutions, and relations. To deliver this argument, Kallinikos revisited established discourses on data and data's sociocultural origins which he sought to link with the generic cognitive, epistemic, and communicative functions that data perform in social and organizational settings. He closed by proposing a *social science of data* that is distinct from data science and data analytics.

Outlining established discourses on data, Kallinikos highlighted data science and big data analytics as well as privacy and surveillance. The first (i.e., data science) treats data as technical inputs—as data points—that feed the models and techniques of data science. This discourse tends to view working with data as a craft of distilling underlying relations between data items (and possibly meaning and knowledge) from the facts that data records or mediates. The second (i.e., privacy and surveillance) understands data as a means to track and survey persons' whereabouts, behavior, habits, and their relations to others in the context of online settings and communities. Kallinikos recognized both discourses as "clear indicators of data's importance for our economy and society" that nonetheless feature widespread assumptions about data "as straightforward recorded facts and unambiguous signifiers of incidences or events." Calling these assumptions "simplifications", Kallinikos continued to assert that they overlook the social and cultural origins of data and the cognitive, epistemic, and communicative foundations of whatever content data carry.

In a historical outlook of data, Kallinikos listed a variety of functions data performed in the past. These include memory and information exchange and practices such as writing, indexing, and archiving. Providing historical examples, he stressed the importance of data as written records and accounts (e.g., ledgers), essential for establishing formal organizations and corporations as key institutional entities in modern times. This historical exploration, he argued, reveals that the economy, society, and data are intertwined. He departed from this to outline the cognitive (semiotic), epistemic, and communication functions of data. The cognitive function stems from how we select, encode, and make sense of facts and turn data into social objects. These operations of selecting, encoding, and sensemaking are by necessity subject to predilections characteristic of established ways of viewing the world. This suggests that whenever produced, data is the outcome of certain social presuppositions and could, accordingly, have other presuppositions at the basis of its generation. While this may suggest randomness in data generation, Kallinikos presented the contrary. He illustrated how economic and institutional factors shape the predilections underpinning data generation. Besides these sociocultural factors, digital technologies' capabilities—what they can handle, store, and process—shape the generation of data in important ways. Technology is not neutral and shapes the production and processing of data and the content they carry (Yoo et al., 2010). It is worth noting that only a little while ago, image, text, and sound required separate technologies. His key observation: sociocultural and technical factors turn data into filters of perception and instruments of knowing. He presented these as the basis for data's epistemic function.

By aggregating, comparing, and relating data, we can construct knowledge. Kallinikos referred to this as the epistemic function of data from which we create social objects. These are relatively stable entities as users, patients, audiences, traffic, or cultural patterns that have a close link to established areas of social life and knowledge domains (e.g., medical practice, accounting, and finance). At the same time, the technological underpinnings of data provision and the diffusion of computation tend to create social

[2] Citizen from hell will be published as a book chapter: The citizen from hell: Experiencing digitalization (2024) Brit Ross Winthereik, Technical University of Denmark Chapter for The Digital State in Practice in Kjaer and Perriam (Eds.) De Gryuter.

objects using data points outside their original knowledge domain which makes data also a media of communication (Alaimo & Kallinikos, 2022, 2024). The communication function of data rests on its exchangeability. Exchanging data involves sharing data sets or providing access as well as communication through data. Kallinikos outlined how this often turns data into commodities as we can see, for example, in data-based goods and services such as audiences, reputation metrics, credit scores, and other indexes. However, using the example of social media, he also presented how expectations on online data production shape social interaction and participation. This makes data an instrument of exchange in socioeconomic interactions.

These observations highlight why data should be seen as sociocultural artifacts. Digital technologies and the attributes of digital data—malleability, openness, editability, generativity, etc. (Faulkner & Runde, 2019; Kallinikos et al., 2013)—fuel the dispersion of data. This, he argued, changes and restructures processes of knowing and organizing (Alaimo & Kallinikos, 2022, 2024). Organizations, as relatively discrete entities, lack the capabilities to manage this digitally enabled data generation. Contrary to concentration and centralized control, Kallinikos proposed that we require new arrangements, which focus on distribution and openness. He suggested platforms and ecosystems as potential key arrangements that respond to the need to handle the dispersion and boundary crossing of data. These important social and economic transformations, he claimed, require a social science of data that investigates the predilections of data encoding, the sociotechnical nature of data generation, and use as well as the ecosystems and organizational practices to which they are associated (Swanson, 2021).

2.3 Reflecting on Approaches to Criticality in the Two Keynotes

The keynotes addressed different topics. However, they exhibited a commonality—they approached their topics with criticality. Indeed, when inviting the keynote speakers, we shared the workshop theme "criticality and values in digital transformation research." We asked them specifically to present alternative viewpoints that expose the values underpinning DT phenomena. In this section, we share our reflections on criticality in their keynotes. We outline four ways in which both keynote speakers accomplished criticality.

First, they chose to position their keynotes' topics outside the confines of established perspectives. Winthereik's and Kallinikos' keynotes illustrated alternative viewpoints on two different research themes. Winthereik shifted focus from technical questions of infrastructuring for public sector digitalization to the human experiences of the digital environments that these infrastructures constitute. Her emphasis on experiences of exclusion of citizens outside the general conception of users illustrates how the study of human experiences can shift the design of digital environments from being purely technical matters to becoming a sociotechnical design question. Kallinikos emphasized that data are not neutral, recorded facts but socioeconomically created and reproduced filters of perception aggregated to create knowledge. From this vantage point, he illustrates the requirement for new socioeconomical and institutional arrangements around data. This reflection on the keynotes' positioning illustrates that criticality can be accomplished in how we frame the phenomenon under study in relation to established knowledge.

Second, Winthereik illustrated how her choice of methodology contributed to exposing alternative viewpoints. Rather than analyzing digital social services from a distance, Winthereik chose a methodology resting on immersion. Conducting an autoethnography, she turned the spotlight on her own lived experiences and the experiences of the digital citizens around herself and her child. This makes her vulnerable. At the same time, she described how this approach can give access to data since a feedback loop may emerge between herself and others sharing experiences. Her keynote highlighted how this methodological choice produced and enabled insights on moments in "hell" for her and for a citizen that did not fit well into the standard mold of "user". We refer to this acknowledgment and reflection of how our methodological choices inform and perform our insights as the second approach to criticality.

Third, both keynotes develop alternative theory. Winthereik challenged the assumptions that underpin the conception of users. Illustrating and juxtaposing what we often envision when speaking of users with other user groups, she highlighted the importance of not treating humans as users but speaking of the human in computing. This alternative conception refers to and emphasizes the diversity and complexity of humans in computing compared to simply stating users. Similarly, Kallinikos presented constructs that underpin his re-theorizing of data as sociocultural artefacts. These constructs—the cognitive, epistemic, and communication functions of data—rest on his historical outlook of data that revealed data as sociocultural artefacts. That is, data are seldom recorded facts but emerge from socioeconomic and institutional interactions that bring in social relations and values when deciding what to record. The developed and

presented constructs thus provide a vocabulary that can explicate how values inform data generation and ultimately the knowledge created from data. We identified this theoretical development that enriches our understanding beyond established viewpoints as the third approach to criticality.

Fourth, Winthereik renders transparent her personal involvement, her own stance and values and how these underpin her work on "Citizen from Hell". Her keynote exhibits reflexivity by critically folding the speaker's own experiences back onto broader themes of digitalization, citizenship, and infrastructure design. Her self-reflections and personal anecdotes are used to illustrate and build the case for reimagining public digital infrastructures in more inclusive and human-centered ways. Early on in her keynote, she revealed that her research stems from her and her child's experiences with digital social services. She outlined how this made her vulnerable but also created opportunities for extended data collection through feedback loops. We consider this reflection of self-involvement, a researcher's "agenda" and its potential impact on their work, for example, how they study and conceptualize observations, another approach to criticality.

Reflecting on the keynotes, we identified four ways of criticality in the workshop's keynotes which we summarize in Table 1 alongside illustrations from the two keynotes.

Table 1. Ways of Practicing Criticality Identified in the Workshop's Keynotes

	Illustrations from keynote "The Citizen from Hell"—B. R. Winthereik	**Illustrations from the keynote "The Data Lens"—J. Kallinikos**
Framing the phenomenon under study	Framing exclusion from public sector digitalization as human experiences introduces an analytical direction for extending the perspectives taken in DT research.	Framing data as sociocultural artefacts objecting the conception of data as recorded facts.
Reflecting methodological choices	Reflecting on how the chosen methodology of autoethnography informed and produced insights.	Not applicable.
Developing alternative theory	Challenges the assumptions underpinning the construct of users and provides alternative viewpoints to grapple with the complexity of the human in computing.	Developing constructs for the functions of data provides a vocabulary (e.g., predilections) for studying the sociocultural nature of data.
Practicing self-reflexivity	Expressing self-reflexivity of her own stance and involvement as well as acknowledging that the difficulty is not to talk about the hardship but to contain people's empathy.	Not applicable.

3 Criticality—Enabling Critical Information Systems Research

Critical research has, next to positivism, interpretivism, pragmatism, and design-oriented research paradigms, a long-standing tradition within IS research (Cecez-Kecmanovic & Kennan, 2018; Chen & Hirschheim, 2004; Orlikowski & Baroudi, 1991). The critical paradigm suggests a normative and emancipatory stance when studying social issues of freedom, power, or discrimination (Cecez-Kecmanovic, 2011; Myers & Klein, 2011; Orlikowski & Baroudi, 1991). These two tenets, normative and emancipatory, emerge from three steps. First, understanding how IS contributes to oppression and alienation, within the status-quo of social issues. Second, reflection and critique of this status-quo. Third, challenging and transforming the status-quo. Klein and Myers (2011) refer to this as the three elements of critical research: insight, critique, and transformation. These elements make critical research normative because critique and transformation require a normative position against which researchers interrogate the status-quo. And, they make critical research emancipatory in that the goal is the transformation of—or at least providing suggestions for transforming—exposed pseudo-natural constraints that hinder or impede people from realizing their full potential (Cecez-Kecmanovic, 2011). Thus, critical research requires researchers to take a value-reflexive stance.

Accomplishing criticality entails being critical and being critical requires practicing value-reflexive research. We thus refer to criticality as ways of identifying and reflecting on how values become inscribed in digital technology, and how inscribed values become enacted in digital phenomena. Positioning criticality within the critical paradigm, we draw on Alvesson's distinction between *C*ritical and critical approaches (Lok, 2019). Critical—with a capital C—researchers draw on certain established and well-known critical theories

(see Myers & Klein, 2011), for example, post-structuralism or post-Marxist tradition. Critical approaches—with a small c—are "aimed, possibly implicitly, at exposing, disrupting, or changing institutional arrangements in society for the betterment of humanity by engaging with issues of domination, oppression, and/or inequality, without necessarily following in the Critical tradition." (Lok, 2019, p. 339). With this distinction between *C*ritical and critical research, criticality can fall within critical research that may or may not, explicitly follow the theoretical tenets of *C*ritical thinkers. Drawing on our reflections from the workshop's keynotes and the critical research paradigm, we conceptualize four ways of how researchers can take a value-reflexive stance when studying digital phenomena. These are phenomenon-based, theory-based, method-based, and self-reflexive criticality.

3.1 Phenomenon-Based Criticality

Phenomenon-based criticality requires researchers to be attentive of how they make concepts. We make concepts to describe and explain phenomena. By this, we perform phenomena through our concepts (Niemimaa & Zimmer, 2022). This is opposed to the widespread notion of concept discovery. Concept discovery assumes that concepts are out in the "real" world and await our discovery. However, we make the concepts based on how we view—or wish to view—the real world (Clarke & Davison, 2020). We decide what becomes seen, alleviated, or relegated as well as how our observations become seen. For example, if researchers study how municipalities use sensor-based data to monitor air pollution, they choose to make the nature of their observations' "pollution" rather than "air quality" or "the concentration of chemicals in the atmosphere". If we stop and reflect on how these word choices evoke different thoughts about the phenomenon under study, we likely arrive at the conclusion that "pollution" evokes different underlying value-stances than "air quality". This illustrates two things. First, the word choices we make to define concepts inscribe values into digital phenomena and, second, the word choices informants make to describe their observations and lived experiences inscribe values into the phenomena under study. Phenomenon-based criticality thus requires being attentive to how we inscribe values when we, jointly with our informants, make concepts that perform the phenomena we study. After all, concept-making can perform phenomena as issues of emancipation or otherwise.

3.2 Method-Based Criticality

Method-based criticality requires researchers to think about how their methodological choices inform their insight and subsequently, critique and transformation (Stahl et al., 2011). Methodological choices engender consequences on how we come to understand the phenomenon under study. If we decide to conduct an interview study, the selection of informants, their class, gender, ethnicity, and organizational role decide which aspects become alleviated and which are relegated (Cecez-Kecmanovic, 2011; Stahl et al., 2011). For example, if we decide to only speak to senior management, we allow their understanding to dominate how we conceptualize digital phenomena. Similarly, if we focus on case studies in a particular industry or only within the private and public sector, we miss the perspective, for example, of non-profit or non-governmental organizations. While we cannot speak to all stakeholder groups within one study, we can practice reflexivity of how our choices inform our insight, critique, and subsequently transformation. We can, for example, compare within a single case different actors' voices to reveal structures and patterns between local meanings and broader social and power relations (Cecez-Kecmanovic, 2011). When considering design science research, J. Ivari (2007) argues that design can never be value-free because every design choice involves valuing something over another. Method-based criticality entails being reflective in our methodological choices considering how these choices explicate and mobilize values in our understanding of digital phenomena or the design of artefacts.

3.3 Theory-Based Criticality

Theory-based criticality refers to two different practices. First, the use of critical social theory. Second, the reflection of values that underpin the theories we employ and develop when studying digital phenomena. Critical research builds on principles that suggest the use of critical social theory for inquiry into social issues (Myers & Klein, 2011). We can find critical social theories in the works of Bourdieu, Foucault, and Habermas. These philosophers provide concepts that can guide the explication of social issues such as power, freedom, or discrimination. At the same time, Myers and Klein (2011), who outlined the principle of using core concepts from critical social theorists in IS critical research, utter caution that this is a principle not a dogma. In this vein, they suggest that other critical theories than the three mentioned, may serve better, or that their concepts could be adapted and extended. After all, being critical also refers to being critical of one's own practices and theories. This is reflected, for example, in Masiero's (2023) opinion

piece calling for a decolonization of critical IS research. Her argument is that critical IS research has built its tradition (almost) solely on western philosophers. Further, even theories that have been criticized for not promoting a critical agenda and for neglecting such issues as power and dominance can become critical. For instance, Lok (2019) argues that for institutional theory to achieve a critical stance, applications of it require a shift in research questions from institutional processes per se, to analyzing the effects of institutionalization on people's capacities for self-realization as the basis for overcoming structures of domination and oppression that hinder emancipation. We extend theory-based criticality to a second practice. While critical theories by nature emphasize the exposition and critique of social issues, any theory, regardless of whether developed or denoted as a critical theory, builds on values and belief systems. The values woven into the empirical context from which the theory and its concepts stem or the values which researchers mobilized when developing the theory. Thus, we can also practice theory-based criticality when we reflect on our theoretical choices based on the values that underpin the chosen theory and its concepts. These theory choices can also impact the criticality of the methods we use (N. Iivari & Kuutti, 2017). Hence, theory-based criticality is comprised of the value-reflexive practices of employing critical theories or contemplating the values and belief systems underpinning the theory-in-use.

3.4 Self-Reflexive Criticality

Self-reflexive criticality requires researchers to reflect on their background, socialization, and values and how these aspects of their lives may inform an agenda hidden not only from others but also from themselves. Researchers are not clean slates. We carry our own historical and social baggage stemming from our upbringing, education, and experiences within a set of cultural contexts. This can influence how we approach the phenomenon under study, that is, why we consider this phenomenon an issue of social importance (or not). Moreover, this can affect how we gain access to data on the phenomenon under study. For example, entrance to the field differs among gender, ethnicity, educational background, etc. (Chughtai & Myers, 2017; Schultze, 2000; Van Maanen, 2011). This indicates that criticality refers not only to identifying and reflecting on the values of others but also on our own values and how these inform our research or even how we mobilize our values in our research. Accordingly, this informing can vary from how we observe and interpret reality (i.e., insight), to how we position critique (i.e., what we consider to be rightfully critiqued), to how we intend to transform the studied social issues. Self-reflexive criticality thus requires a self-directed and self-reflecting capacity (Rowe, 2018) to think about how we consciously (or subconsciously) line up our own values to an agenda underpinning our enquiry. This resonates with the contemporary discourse on research transparency (Burton-Jones et al., 2021; Järveläinen et al., 2022; Pratt et al., 2020).

4 Manifestations of Criticality in the Workshop Submissions

4.1 Analyzing the Workshop Submissions

The authors submitting to the workshop engaged with the theme of criticality and values in DT research. This is reflected in their submissions. In total, the workshop attracted 35 submissions classified either as research-in-progress or ready-for-prime-time. Research-in-progress manuscripts had a length of 300-500 words whereas ready-for-prime-time manuscripts extended to 3000 words at initial submission. After acceptance, which involved a double-blind review, we invited authors of ready-for-prime-time manuscripts to develop their submissions to full articles of 8000 words—hence, the classification ready-for-prime-time. Of the 35 submissions, 24 belonged to the research-in-progress category while 11 were ready-for-prime-time.[3] Similar to the keynotes, we examined all submissions to reflect on how we can practice criticality.

We coded the submissions for statements that manifested the four ways of criticality: phenomenon-based, method-based, theory-based, and self-reflexive criticality. That is, we coded in vivo and then assigned these in vivo codes to one—or multiple—ways of criticality. This coding included writing memos on why we considered a statement to reflect one—or multiple—ways of criticality. We drew on these codes and memos, first, to reflect our conceptualization of the four ways of criticality and second, to gain insights on how researchers can express criticality in their writing. Below, we present our reflections alongside exemplary manifestations, that is, excerpts from the workshop submissions. These are our own reflections

[3] Our call for papers for a special issue on "Embracing Contrarian Thinking: Value-Reflexive Research for a Digital World" reflects this interest from the community to further continue the discussions around criticality and values in research. For more information, see https://www.callforpapers.co.uk/embracing-contrarian-thinking

and not the submitting authors' personal stances or opinion. Therefore, and because the workshop does not feature proceedings, we present these excerpts without bibliographic details. However, we obtained the authors' consent to use these excerpts in this report. Table 2 presents additional excerpts.

4.2 Reflections from the Workshop Submissions

Criticality surfaced in individual statements or sometimes a paragraph. Statements manifesting **phenomenon-based criticality** foreground values when conceptualizing the phenomena under study. The authors used terms highlighting that values are at play. While this revealed the values they considered pivotal, the statements often missed critical reflections of how and why the authors chose to present the phenomenon under study from the perspective of these values and not others. The subsequent statement illustrates this:

> *[Current] focus on the design of transparent and trustworthy systems. […] emphasis should not be on the properties of technology itself [e.g., explainable AI] but on enabling design and enabling rules for responsible individuals who create relational goods mediated by digital technologies [AI].*

The excerpt shows how the authors argue that responsible AI cannot be accomplished through technical designs but requires principles and rules for individuals who use AI systems. This implicitly juxtaposes techno-centric and socio-centric viewpoints on the responsible use of AI (Vassilakopoulou et al., 2022; Zimmer et al., 2022) and by this, voices critique toward the contemporary techno-centric focus. This implicitness may signify limited reflection on the underlying values that inform the two conceptual viewpoints (Niemimaa & Zimmer, 2022).

In some submissions, statements highlight value sets as responsibility, sustainability, ethics and morals but stay clear of positioning in relation to these values or approach these values from, for example, an economical perspective. The following excerpts illustrate this observation:

> *In an era of an ever-increasing limitation of ecological and economical resources, the goal of greater sustainability is another important topic on the agenda of executives.*

> *RPA [robotic process automation] systems might seem strong and powerful, but from a socio-technical view the systems are re-framing relations in the network where they are residing, which in turn has implications on accountability. […]. The aim of this article is to analyse how accountability is re-arranged in relation to RPA […] and discuss meanings of accountability in relation to RPA.*

The first excerpt motivates the requirement for sustainability from an economic and executive perspective. The second one highlights the important question of accountability of robotic process automation systems, when these make decisions that impact individuals' lives. These statements share that they use value-loaded terms (i.e., sustainability, machines making decisions) to signify the relevance of the subject under study. Reflecting **on method-based criticality** across submissions, we found manifestations of this approach to criticality intertwined with studies' underlying methodology. In other words, we saw values finding their way into research designs and knowledge creation processes driven by methodology. For example, ethnographic studies build on researchers' lived experiences so, reflections on the researchers' immersion in the field and the role of their background in gaining access and insights are a pivotal part of such inquiries (Myers, 2009; Van Maanen, 2011). Design science studies draw on different stakeholders' requirements or understandings of the problem space. Case studies, or research based on interviews for data collection relate to both interviewees' values and researchers' values that shape interviewee selection as well as the preparation and conduct of the interviews. Textbooks refer to this as interview bias (Myers & Newman, 2007; Silverman, 2014). These examples illustrate how specific methodological choices are implicated with particular value-sets that shape research designs. Methodology and criticality thus appear intertwined, with method carrying certain framings, perspectives and priorities that enable some values while constraining others. A reflexive awareness of this interplay between methodology and values can enhance criticality by illuminating both seen and unseen influences on knowledge creation. This is not to say that method-based criticality equals the usual elaborations on different methodological and data collection limitations. What is required is a reflection on how methodological choices shaped insight and thus the basis, for example, for critique and transformation. However, many submissions did not include much reflection on methodological choices from a value perspective. For example, how the chosen interviewees introduce a value bias? How the different understandings of design stakeholders informed what is considered as an appropriate solution? We can see this, in the following statement:

Table 2. Reflections on the Manifestations of Criticality in the Workshop Submissions

Ways of criticality	Manifestation in submissions	Reflecting on manifestations
Phenomenon-based criticality Researchers are attentive to how they (jointly with their informants) make or employ concepts that perform phenomena and how these concepts inscribe values.	**Excerpt P.1:** We then show how the Google hotel booking platform is like a window—a glass platform—simply revealing, and thus leveraging, the distributed infrastructure […], this underlying infrastructure is not owned by Google, […], but pre-existed Google's penetration in the hotel booking service market. **Excerpt P.2:** […] we propose to shift scholarly focus from a problem [digital inequality] that continues to change its shape, to the overarching aim: digital equality. **Excerpt P.3:** […] segments of the population are excluded from the benefits of digitalization, whom we refer to as digitally marginalized.	**P.1** positions the study of how application programming interfaces (API) dynamically constitute infrastructures as showing how these APIs allow Google to exploit its market power (i.e., its search engine user base) when moving into the hotel booking market. **P.2** frames the same empirical observations as a question of digital equality rather than inequality. This bears several implications. For example, the goal becomes accomplishing equality rather than reducing inequality. **P.3** chooses terms as "excluded" and "marginalized" indicating an empirical setting of injustice.
Method-based criticality Researchers expose (and may self-correct) how their methodological choices engender consequences on understanding the phenomenon under study or the design of artefacts and how they explicate and mobilize values.	**Excerpt M.1:** It is not our intention that the insights generated by ML should usurp the creative role of designers. […] the evaluation will consider both the product and the process of design to ensure that the use of insights from big data does in fact produce synergy […], without a negative impact on the designer's experience.	**M.1** shows the researchers' concern that their design study could entail unemployment of creative workers when their designed AI can produce better quality results. Countering this concern, they decide to use a design evaluation which takes into account the human-machine interaction such that the interaction produces synergies.
Theory-based criticality Researchers either employ critical theory or reflect on the values and belief systems underpinning the theory-in-use.	**Excerpt T.1:** […] contemporary social media induces intuitive and automatic moral judgments. Indeed, we argue that the high-level of polarization and tribalism observed in these domains […] is attributable to social intuitionist dynamics in online moral judgment making. **Excerpt T.2:** This technological deterministic perspective on inequality, […], in its pure form views technology as a necessary and sufficient condition for inclusion, […]. A dichotomous understanding of digital inequality, […] to distinguish between the haves and have not's, might make sense from this perspective.	**T.1** illustrates how researchers can use existing theory to understand how IS can amplify morally undesired behavior. However, the excerpt—and submission –values drive research insights implicitly, that is, without explicit reflection. **T.2** exemplifies how researchers reflect on the values that underpin different theoretical perspectives as well as how this informs the resulting concepts and by this our understanding of the subject under study.
Self-reflexive criticality Researchers reflect on their own background, socialization and values and how these may inform insight, critique and/or transformation.	**Excerpt S:** To obtain clearance from our main stakeholders, the final manuscript underwent a process of "toning down the criticism", […] discomfort to a critical researcher. Later, reviewers criticized the manuscript to appropriate critical theory in rhetoric but not in substance. As a result, we realized that we could not do justice to our role as critical researchers who were hoping to leave the field by improving […]."	**S** shows researchers struggle to publish critical work. By this, the excerpt reveals the researchers' agenda to conduct critical work and improve the situation. While the excerpt introduces these personal aspirations, it misses the reflection on the values that drive this aspiration.

> *We report the identified stakeholders and main trust manifestation. After having understood what trust meant for these stakeholders, we iteratively followed the development of the artefact by drawing from current research on trust and AI as well as on industrial frameworks.*

The excerpt illustrates how the authors introduced the design partners' stance on a central concept (i.e., trust) into the design process. While they acknowledge that stakeholders had different understandings, they could have elaborated on these understandings, their potential tensions, and the resolutions that made their way in the artefact's design.

Examining **theory-based criticality** in the submissions, we made two observations. First, we noticed that researchers used theory to understand and explain how digital technology may contribute to oppression or amplify morally undesired behavior (see Table 2, excerpt T.1). Second, we observed that theory- and phenomenon-based criticality can appear eerily close. This observation grounds in how both ways of criticality rest on the concepts that researchers use. To mitigate the risk of ambiguity, we compared statements illustrating phenomenon- and theory-based criticality with the definitions of the respective approaches. Phenomenon-based criticality relates to how researchers carve out their object of study and frame the context by defining and using concepts to introduce, elevate, or relegate values within an empirical context. Theory-based criticality deals with how concepts veil and constrain our view and understanding. The latter traces these constraints to the values and belief systems that underpin these concepts. The following excerpt illustrates this critique of existing concepts that differentiates theory-based from phenomenon-based criticality:

> *[…] the need to pause and reflect on the conceptual underpinnings of digital inequality. In our contribution to this ongoing debate, we propose to shift scholarly focus from a problem that continues to change it shape, to the overarching aim: digital equality.*

Self-reflexive criticality surfaced in only one submission (see Table 2, excerpt S). Within this submission, the reflection involved the researchers' struggle to obtain stakeholder consent for publishing their critical work. This reflection revealed the researchers' motivation to publish their study within the critical paradigm for they consider the critical approach pivotal for contributing to the improvement of the status-quo. Interestingly, similarly to the preceding ways of criticality in other submissions, the identified manifestation of self-reflexive criticality is cut short when considering the reflection on how values underpin and inform the presented research. Overall, we account for the absence of self-reflexive criticality in the dominant research paradigms in IS and IS curricula (Chen & Hirschheim, 2004; Orlikowski & Baroudi, 1991). Authors tend to pursue an objective stance on the subject of study resulting in descriptions that almost suggest the absence of any researcher influence. Contrarily, self-reflexive criticality requires researchers to reflect on how, why, and which bias their value position may introduce to their research.

5 Discussing Criticality and Values in Digital Transformation Research

The pre-ICIS 2022 IFIP 8.2 OASIS workshop on "Criticality and Values in Digital Transformation Research" provided a platform for researchers to share and discuss work related to identifying and reflecting on the values that underpin DT phenomena. In this workshop report, we drew on the two keynotes and existing work on critical IS research to highlight four ways into criticality: phenomenon-based, method-based, theory-based, and self-reflexive criticality. These present different ways to identify and reflect on how values become inscribed in digital technology, and how inscribed values become enacted in digital phenomena. We then analyzed manifestations of the conceptualized ways into criticality within the workshop submissions to further develop how we—as researchers—can practice criticality. We discuss how these four ways present a starting point to identify the values at play in digital phenomena and enable us to reflect: *which values we value?* We organize this discussion posing two questions: (1) How can the four ways into criticality enable researchers to identify and reflect on values? (2) How does criticality relate to the three elements of critical research (i.e., insight, critique, and transformation)? After discussing divergent views on criticality, we close this report inviting the IS community to continue this discourse on how we can engage with the values that underpin digital phenomena. Table 3 summarizes the key takeaways from the IFIP 8.2 OASIS 2022 workshop in Copenhagen, Denmark, and this report.

Table 3. Summary of the Workshop's Form and Key Takeaways

Report structure	Key takeaways
Workshop goal	• Workshop invited submissions that reflect the values underpinning digital phenomena to reflect our community's understanding on how we can identify and reflect on the values that underpin DT and digital phenomena
Workshop format	• Two submission types: research-in-progress (500 words) and ready-for-prime-time (8000 words) • 35 submissions in total: 11 ready-for-prime-time discussed at roundtables and 24 research-in-progress presented in poster sessions
Workshop keynote: The citizen from hell: towards socially thick experiential computing (Brit Ross Winthereik)	• Keynote addressed digitalization in the public sector, particularly in social services, emphasizing the concept of socially thick computing. • Highlighted that digital infrastructures have become the environment where many aspects of citizens' lives occur, shaping their experiences. • The term "Citizen from Hell" as a symbol of human experiences in public digital infrastructures, representing socially thick experiences of computing.
Workshop keynote: The data lens: technological innovation and institutional change (Jannis Kallinikos)	• Keynote suggested a shift in the perspective on data, advocating for viewing data as sociocultural artifacts rather than purely statistical entities. • Emphasized the need to understand the social, institutional, and technological dynamics that shape the generation and utilization of data in economic and societal contexts. • Discussed the cognitive, epistemic, and communicative functions of data, highlighting the role of technology in shaping data generation and its potential as an instrument of exchange in socioeconomic interactions.
Four ways of criticality	• Reflection on keynotes produced four ways of criticality, meaning ways of identifying and reflecting on how values become inscribed in digital technology, and how inscribed values become enacted in digital phenomena. • *Phenomenon-based criticality*: Researchers are attentive to how they (jointly with their informants) make or employ concepts that perform phenomena and how these concepts inscribe values. • *Method-based criticality*: Researchers expose (and may self-correct) how their methodological choices engender consequences on understanding the phenomenon under study or the design of artefacts and how they explicate and mobilize values. • *Theory-based criticality*: Researchers either employ critical theory or reflect on the values and belief systems underpinning the theory-in-use. • *Self-reflexive criticality*: Researchers reflect on their own background, socialization and values and how these may inform insight, critique and/or transformation.
Criticality and the three elements of critical research	• Discussion on how criticality relates to the three elements of critical research: insight, critique and transformation. • Criticality can support insight by identifying and reflecting on the values at play in a digital phenomenon. • Criticality-informed insight can lead to critique and transformation, as it makes values visible, enables debates, and encourages researchers to propose alternative values and value inscriptions when dealing with digital technology.
Divergent perspectives on criticality's practicality	• The workshop highlighted consensus on the importance of criticality in value-reflexive research on digital phenomena but also divergent perspectives on practicing criticality. • Discussions revolved around three questions: whether practicing all four ways of criticality is necessary, the relations and potential dependencies between the four ways, and whether criticality affects the publishability of collaborative management research. • Divergent perspectives set the stage for future discourse on criticality in research.

5.1 Four Ways to Identify and Reflect on Values

Criticality sensitizes one to the importance of dissecting how values become inscribed and enacted in digital phenomena. The four ways into criticality presented in this report indicate ways to identify values and reflect on how they become inscribed or enacted (see Figure 1). Thus, we see them as different ways that can sensitize researchers prompting them to reflect on and engage with values at play when studying and theorizing digital phenomena. Through reflection and engagement with values and their public exposure, researchers can establish accountability as a form of "giving an account of" (Schultze et al., 2020). What such accounts can expose are stances of not merely values, but stances of what is valued and valuable. Further, these four ways differ in the agency that inscribes or enacts values. Phenomenon-based criticality sensitizes us to scrutinize how we—as researchers—and our informants enact values in how we define, position, and frame the subject under study (Clarke & Davison, 2020). The agency thus

lies with informants and researchers. However, often we as researchers decide on the final making of concepts in our publications (Niemimaa & Zimmer, 2022).

Method-based criticality turns to how researchers' methodological choices regarding data collection and analysis carry values and/or dictate which values become elevated (Cecez-Kecmanovic & Kennan, 2018; Stahl et al., 2011). For example, the selection of interviewees can create bias that leans towards the perspective of one specific demographic. Similar to phenomenon-based criticality, we have to ask "through whose eyes" (Clarke & Davison, 2020) do we see the phenomenon. We have to reflect on how data collection tilts or balances the views that we could possibly assume. This extends to our choice of research paradigm, which introduces values and belief systems on researchers' role in knowledge creation as well as on what accounts as knowledge (Cecez-Kecmanovic & Kennan, 2018; Chen & Hirschheim, 2004; J. Iivari, 2007; N. Iivari & Kuutti, 2017). Thus, the agency lies with researchers who decide on their research design and their intended readership whose judgement on the created knowledge's adequacy may follow and reproduce the same values that informed the research design.

Theory-based criticality requires researchers to choose their theory with scrutiny; or at least to reflect on the values underlying their choice. This refers less to how their personal value stances informed their choice of theory, but rather to the values inherent within the chosen theoretical perspectives. Theories, particularly inductive theories, emerge from theorizing empirical observations (Mueller, 2021; Mueller & Urbach, 2017). The theorizing process translates the values present in these observations to theoretical constructs. These inform our understanding and future research. Thus, theory-based criticality places the agency with the researchers who select or develop theory.

Last, self-reflexive criticality centers on explicitly interrogating the values, assumptions, and biases that researchers themselves bring to their work. This way of criticality thus sensitizes us to not attempt—or pretend—to be clean slates who observe the world to understand and explain things as they "objectively" are but to acknowledge that whatever mode of observation we choose, observation requires participation (Ingold, 2014). This participation introduces our own stances, belief systems, and values to the research setting. While the degree of their imprint differs, they imprint. Self-reflexive criticality thus emphasizes how researchers' values find their way into our understanding of digital phenomena. We visualize these four ways in Figure 1.

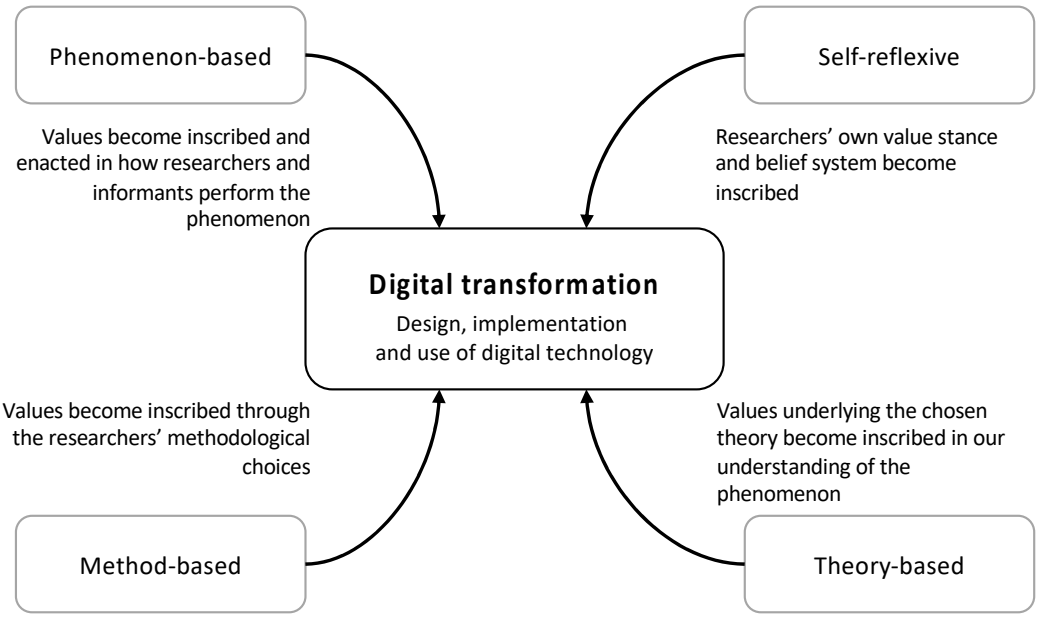

Figure 1. How values find their way into our understanding of digital phenomena.

Criticality can inform our discourse on which values we value. The four ways of criticality do not provide an answer to the question of which values we value; nor does criticality suggest which values we ought to value. Rather, we understand criticality as the pre-requisite for engaging in a discourse on *which values we value*. Without identifying—making explicit—and reflecting on the values that underlie DT research, we cannot discuss these values; we cannot consciously probe our conscience on whether we subscribe to

the values at play—the values we find—or prefer an alternative value set. If we prefer an alternative value set, criticality helps us in arriving at this preference, in juxtaposing possible values to reflectively discuss and ponder: which values we value? We elaborate on this in the next section when we relate criticality to the three elements of critical research.

5.2 Criticality and the Three Elements of Critical Research

While many of the submissions express ways of criticality as developed from the keynotes and critical IS research, not all of them could be accounted as "critical research" (Cecez-Kecmanovic, 2011; Myers & Klein, 2011). We rest this observation not on whether the submissions comply with all principles of critical research (e.g., Myers & Klein, 2011) but rather on the extent to which they leverage their criticality to inform insight, critique, and transformation, the three elements of critical research (Cecez-Kecmanovic, 2011; Myers & Klein, 2011). Our focus is on what the authors do with their criticality rather than on whether they strictly conform to established principles of critical research.

Criticality can support the element of insight. Identifying and reflecting on the values at play, we can create the basis for understanding how digital technology may amplify, suppress, or shape values in both intended and unintended ways. We gain a basis for comprehending the complex interplay between technologies, values, and consequences at the societal, organizational, or individual level. However, surfacing values without taking them into consideration to seek emancipation may provide insight but misses critique.

Criticality-informed insight creates the basis for taking the next step to critique and transformation. Making values visible is the pre-requisite for reflecting on *which values we value.* Insights on values confront readers with value positions that they support or object. Researchers can build on this confrontation to engage readers in debates on the identified values. These debates can include critique, for example, presenting alternative value sets than the identified or explaining how the identified values entail oppression and alienation with or through digital technologies. Thus, criticality can inform critique. Similarly, transformation can build on criticality-informed insight and critique. With the underlying values rendered visible, researchers can develop and propose alternative values and value inscriptions when designing, developing, or using digital technology.

Hence, criticality enables researchers to be critical, that is, to perform insight, critique, and transformation with a focus on the values that underlie digital phenomena (Myers & Klein, 2011). However, identifying the values at play alone, that is, insight, does not qualify as being critical. Being critical rests not only on reflection but also on pinpointing issues of power, oppression, and alienation as well as developing alternative ways (Myers & Klein, 2011; Stahl, 2008). Criticality sensitizes researchers to consciously and deliberately engage with values and how they inform our theorizing of digital phenomena as a stepping-stone to formulating critique and subsequently suggesting paths for transformation for a better world.

5.3 Divergent Perspectives on Practicing Criticality

The workshop exhibited consensus on the importance of criticality for value-reflexive research. However, the discussions at the workshop featured divergent perspectives on practicing criticality. The discussion on its practicality revolved around three questions. First, whether we can speak of criticality when we practice all four ways or only one way? Second, how the relationship among the four ways matters for practicing criticality? Third, whether criticality undermines the possibility for collaborative management research or the publishability of such work? We briefly summarize the discussions on these questions.

Criticality comprises four ways of how researchers can render explicit the values underpinning the study of digital phenomena. Divergent perspectives emerged on whether each way of criticality or all of them collectively accounts for practicing criticality. One perspective—perhaps the obvious one—was that the four approaches explain four different ways of how values become inscribed into digital phenomena. Hence, if we are to understand these values' role for digital phenomena holistically, we have to consider all four ways. The opposing perspective was that any subset of these four ways of criticality already means that researchers reflect on values and thus, that they practice criticality. However, the discussion on these two perspectives also produced divergent views on the quality and extent of reflection involved per approach. How much should one reflect on the values developed through our life history, from birth to scholarship? How and in what research does one's own positionality on subjects such as ethnicity, political dispositions, family status, and so forth become reflected as carriers of values impacting not only the questions we ask, but also the results we produce? While such positionality statements are already

encouraged in some social science journals (e.g., Journal of Social and Personal Relationships[4]), scholars debate their impact on science (e.g., Savolainen et al. (2023)). This first question of holisticness thus produced divergent perspectives that lead us to examine (1) whether criticality accomplished through each of the four ways differs (i.e., criticality emerges from all four ways combined) or if they are equifinal (i.e., regardless of which way we practice, we practice criticality), and (2) when we consider the extent and quality of reflections provided per approach sufficient.

Relating the four ways extends the discussion of holisticness to the four approaches' relationships. Regardless of what we consider as holistic, divergent perspectives emerged on whether holistic examinations include discussing the relationships and interdependencies among the four approaches. For example, theory-based criticality may intersect with both phenomenon-based and method-based criticality. The chosen theoretical framework can shape not only the concepts used to frame phenomena but also the employed research methods. These interdependencies illustrate that criticality may involve reflecting on the relationships among the four approaches. Divergent to this, not all workshop participants employed theoretical lenses to practice criticality but still they practiced phenomenon-based criticality. This shows that interdependencies can exist but, sticking to the example, framing, and positioning of phenomena do not necessarily depend on theory. This perspective pinned criticality to the capacity of self-reflexivity. Accordingly, self-reflexivity underpins all the other forms of criticality. Researchers who are aware of their own values and biases can see how these may influence their choices regarding phenomena, methods, and theories. However, providing evidence of self-reflexivity is neither a straightforward task nor are internal reflection processes always tangible but often an ongoing practice. A reflexive mindset may thus be manifested in phenomenon-based criticality without being explicit otherwise. This discussion came down to whether criticality includes reflecting on these relationships among the approaches vs. emphasizing reflection on each approach individually.

Workshop participants discussed issues of publishing work that practices criticality. This discussion focused specifically on research that builds on empirical material obtained via collaborative management research. That is research involving informants, for example, organizations, companies, individuals, etc. Publishing such work ultimately reveals details about these informants. When we reflect on values, this can mean we reveal issues that expose our informants unfavorably. Ethical research conduct, or the agreement that sealed access to the informants, requires us to run any publication by them. Diligent reflection of involved values can then impair publication, if the informants wish for removal of respective value insights. One perspective suggested that this requires us to tread lightly with criticality when conducting collaborative management research, meaning, making the reflections part of the access negotiations with the informants. Another perspective aspired to research's responsibility to society demanding publication of any insights on power imbalances or oppression.

We acknowledge these divergent perspectives on practicing criticality. Indeed, we found that while the workshop does not answer the questions on these divergent perspectives, their discussion provides a basis for our future discourse on criticality and its practice in research.

6 Conclusion

DT presents opportunities and threats in relation to the grand challenges of our time. In this report, we shared insights from the pre-ICIS 2022 IFIP 8.2 OASIS workshop on "Criticality and Values in Digital Transformation Research" and highlighted four ways into criticality that can nurture value discourses on the question "*which values we value"*. We presented these as practices for identifying and reflecting on values in digital phenomena. Indeed, we consider criticality as pivotal for understanding how the design, development, implementation, and use of digital technology can help humanity in tackling the grand challenges of our time through DT (European Union, 2010; Pappas et al., 2023; United Nations, 2016; Zimmer et al., 2023; Zimmer & Järveläinen, 2022). To understand how digital innovation, digital infrastructures, AI, and resulting DTs can help build a better world, we must engage with the values that underpin and emerge in these digital phenomena. We thus see the workshop and this report as an invitation to the IS community to engage in a discourse on using—and how to use—criticality, values, and reflexivity to build a better world.

[4] See https://onlinelibrary.wiley.com/pb-assets/assets/14756811/Positionality-Statements-1621354517813.pdf

Acknowledgments

We thank all workshop participants and the keynote speakers, Brit Ross Winthereik and Jannis Kallinikos, for their thought-provoking and engaging presentations and discussions as well as their comments on this report's draft. We are indebted to Jonna Järveläinen for graciously agreeing at short notice to facilitate one of the round table sessions. We are grateful to Matthew Jones and Benjamin Mueller who supported the workshop and guided us in its preparation. We also thank the Association for Information Systems and the IT-University Copenhagen, especially Oliver Krancher for his ground support. We express our deep appreciation to all who contributed to making this workshop a fruitful and thought-provoking event and thank the authors for their permission to use excerpts from their submissions in this report.

References

Alaimo, C., & Kallinikos, J. (2022). Organizations decentered: Data objects, technology and knowledge. *Organization Science*, *33*(1), 19–37.

Alaimo, C., & Kallinikos, J. (2024). *Data rules: Reinventing the market economy*. MIT Press.

Burton-Jones, A., Boh, W. F., Oborn, E., & Padmanabhan, B. (2021). Advancing research transparency at MIS Quarterly: A pluralistic approach. *MIS Quarterly*, *45*(2), iii–xviii.

Cecez-Kecmanovic, D. (2011). Doing critical information systems research – Arguments for a critical research methodology. *European Journal of Information Systems*, *20*(4), 440–455.

Cecez-Kecmanovic, D. (2019). The resistible rise of the digital surveillance economy: A call for action. *Journal of Information Technology*, *34*(1), 81–83.

Cecez-Kecmanovic, D., & Kennan, M. A. (2018). The methodological landscape: Information systems and knowledge management. In K. Williamson & G. Johanson (Eds.), *Research methods: Information, systems, and contexts* (pp. 127–155). Elsevier Ltd.

Chanias, S., Myers, M. D., & Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *Journal of Strategic Information Systems*, *28*, 17–33.

Chen, W., & Hirschheim, R. (2004). A paradigmatic and methodological examination of information systems research from 1991 to 2001. *Information Systems Journal*, *14*, 197–235.

Chughtai, H., & Myers, M. D. (2017). Entering the field in qualitative field research: A rite of passage into a complex practice world. *Information Systems Journal*, *27*(6), 795–817.

Clarke, R., & Davison, R. M. (2020). Research perspectives: Through whose eyes? The critical concept of researcher perspective. *Journal of the Association for Information Systems*, *21*(2), 483–501.

Conboy, K. (2019). Being Promethean. *European Journal of Information Systems*, *28*(2), 119–125.

Constantinides, P., Henfridsson, O., & Parker, G. G. (2018). Platforms and infrastructures in the digital age. *Information Systems Research*, *29*(2), 381–400.

European Union. (2010). Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union. *Official Journal of the European Union*, *53*(C83).

Faulkner, P., & Runde, J. (2019). Theorizing the digital object. *MIS Quarterly*, *43*(4), 1–24.

Graf-Drasch, V., Kauffeld, L., Kempf, L., Oberländer, A. M., & Teuchert, A. (2023, May 11). Driving twin transformation—The interplay of digital transformation and sustainability transformation. In *ECIS 2023 Proceedings*. Retrieved from https://aisel.aisnet.org/ecis2023_rp/255

Henriksen, H. Z., Thapa, D., & Elbanna, A. (2021). Sustainable development goals in IS research. *Scandinavian Journal of Information Systems*, *33*(2), 97–102.

Iivari, J. (2007). Information systems as a design science. *Scandinavian Journal of Information Systems*, *19*(2).

Iivari, N., & Kuutti, K. (2017). Towards critical design science research. In *ICIS 2017 Proceedings*. *International Conference on Information Systems*. Retrieved from http://aisel.aisnet.org/icis2017/ResearchMethods/Presentations/10

Ingold, T. (2014). That's enough about ethnography! *HAU: Journal of Ethnographic Theory*, *4*(1), 383–395.

Järveläinen, J., Niemimaa, M., & Zimmer, M. P. (2022). Designing a thrifty approach for SME business continuity: Practices for transparency of the design process. *Journal of the Association on Information Systems*, *23*(6), 1557–1602.

Kallinikos, J., Aaltonen, A., & Marton, A. (2013). The ambivalent ontology of digital artifacts. *MIS Quarterly*, *37*(2), 357–370.

Lok, J. (2019). Why (and how) institutional theory can be critical: Addressing the challenge to institutional theory's critical turn. *Journal of Management Inquiry*, *28*(3), 335–349.

Masiero, S. (2023). Decolonising critical information systems research: A subaltern approach. *Information Systems Journal*, *33*(2), 299–323.

Mikalef, P., Conboy, K., Lundström, J. E., & Popovič, A. (2022). Thinking responsibly about responsible AI and 'the dark side' of AI. *European Journal of Information Systems*, *31*(3), 257–268.

Mueller, B. (2021). The theorizing trifecta. *Journal of Information Technology*, *36*(3), 334–338.

Mueller, B., & Urbach, N. (2017). The why, what, and how of theories in IS research. *Communications of the Association for Information Systems*, *41*, 349–388.

Myers, M. D. (2009). Ethnographic research. In M. D. Myers (Ed.), *Qualitative research in business & management* (pp. 92–105). SAGE Publications Ltd.

Myers, M. D., & Klein, H. K. (2011). A set of principles for conducting critical research in information systems. *MIS Quarterly*, *35*(1), 17–36.

Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, *17*(1), 2–26.

Nastjuk, I., Trang, S., Grummeck-Braamt, J.-V., Adam, M. T. P., & Tarafdar, M. (2023). Integrating and synthesising technostress research: A meta-analysis on technostress creators, outcomes, and IS usage contexts. *European Journal of Information Systems*, 1–22.

Niemimaa, M. (2016). Entanglement of infrastructures and action: Exploring the material foundations of technicians' work in smart infrastructure context. In *ICIS 2016 Proceedings* (pp. 1–18).

Niemimaa, M., & Zimmer, M. P. (2022). Are we discovering or making concepts? Performativity in concept defining. In *PACIS 2022 Proceedings*.

Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, *2*(1), 1–28.

Pappas, I. O., Mikalef, P., Dwivedi, Y. K., Jaccheri, L., & Krogstie, J. (2023). Responsible digital transformation for a sustainable society. *Information Systems Frontiers*, *25*(3), 945–953.

Pratt, M. G., Kaplan, S., & Whittington, R. (2020). Editorial essay: The tumult over transparency: Decoupling transparency from replication in establishing trustworthy qualitative research. *Administrative Science Quarterly*, *65*(1), 1–19.

Reimers, K., Schellhammer, S., & Johnston, R. (2022). Infrastructure as a home for a person: A phenomenological interpretation of Star and Ruhleder's Relational View. *MIS Quarterly*, *45*(3),

Rowe, F. (2018). Being critical is good, but better with philosophy! From digital transformation and values to the future of IS research. *European Journal of Information Systems*, *27*(3), 380–393.

Savolainen, J., Casey, P. J., McBrayer, J. P., & Schwerdtle, P. N. (2023). Positionality and its problems: Questioning the value of reflexivity statements in research. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, 17456916221144988.

Schultze, U. (2000). A confessional account of an ethnography about knowledge work. *MIS Quarterly*, *24*(1), 3–41.

Schultze, U., Heuvel, G. van den, & Niemimaa, M. (2020). Enacting accountability in IS research after the sociomaterial turn(ing). *Journal of the Association for Information Systems*, *21*(4).

Silverman, D. (2014). *Interpreting qualitative data*. SAGE Publications Ltd.

Stahl, B. C. (2008). The ethical nature of critical research in information systems. *Information Systems Journal*, *18*(2), 137–163.

Stahl, B. C., Tremblay, M. C., & LeRouge, C. M. (2011). Focus groups and critical social IS research: How the choice of method can promote emancipation of respondents and researchers. *European Journal of Information Systems*, *20*(4), 378–394.

Swanson, E. B. (2021). *How information systems came to rule the world: And other essays*. Routledge.

United Nations. (2016). Transforming our world: The 2030 agenda for sustainable development. Retrieved from https://sdgs.un.org/

Van Maanen, J. (2011). *Tales of the field: On writing ethnography*. University of Chicago Press.

Vassilakopoulou, P., Parmiggiani, E., Shollo, A., & Grisot, M. (2022). Responsible AI: Concepts, critical perspectives and an Information Systems research agenda. *Scandinavian Journal of Information Systems*, *34*(2), 89–112.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, *28*(2), 118–144.

Walsham, G. (2012). Are we making a better world with ICTs? Reflections on a future agenda for the IS field. *Journal of Information Technology*, *27*(2), 87–93.

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research commentary—The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research*, *21*(4), 724–735.

Zimmer, M. P. (2019). Improvising digital transformation: Strategy unfolding in acts of organizational improvisation. In *Americas Conference on Information Systems (AMCIS) 2019 Proceedings* (pp. 1–10).

Zimmer, M. P., & Järveläinen, J. (2022). Digital–Sustainable co-transformation: Introducing the triple bottom line of sustainability to digital transformation research. In D. Kreps, R. Davison, T. Komukai, & K. Ishii (Eds.), *Human choice and digital by default: Autonomy vs digital determination* (Vol. 656, pp. 100–111). Springer International Publishing.

Zimmer, M. P., Järveläinen, J., Stahl, B. C., & Mueller, B. (2023). Responsibility of/in digital transformation. *Journal of Responsible Technology*, 100068.

Zimmer, M. P., Minkkinen, M., & Mäntymäki, M. (2022). Responsible artificial intelligence systems critical considerations for business model design. *Scandinavian Journal of Information Systems*, *34*(2), 113–162.

Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, *30*(1), 75–89.

About the Authors

Markus P. Zimmer is postdoctoral researcher at the Institute of Information Systems at Leuphana University of Lüneburg, Germany, and visiting scholar at the Turku School of Economics at the University of Turku, Finland. His research interest lies at the intersections of organizational change, digital technologies and responsibility. In particular, he studies Digital Transformation Strategy Making, Digital Workplace Transformation, Digital-Sustainable Co-Transformation, and Responsible Artificial Intelligence. His research has been published in the *Journal of Strategic Information Systems*, *Journal of the Association on Information Systems*, *Information Systems Frontiers*, *Scandinavian Journal of Information Systems*, and major IS conferences such as the *International Conference on Information Systems*.

Polyxeni Vassilakopoulou is a Professor at the Department of Information Systems, University of Agder, Norway. Her research focus is on the transformative potential of digital technology and the implications for work, organizations, and societies. Her current research activities are within the area of Data Governance and Human-Centered AI (HCAI). Prior to joining academia, she worked in management consulting for over a decade. She has published in leading journals including: *Information Systems Journal, European Journal of Information Systems, Journal of Strategic Information Systems*, *Information and Organization*, *Communications of the Association for Information Systems, Scandinavian Journal of Information Systems*, *Journal for Computer Supported Collaborative Work*, *International Journal of Medical Informatics*, *Health Informatics Journal*. She has served on editorial boards and funding agency panels. Vassilakopoulou is a recipient of EEA and Fulbright scholarships.

Miria Grisot is an Associate Professor at the University of Oslo. Her research focuses on Information Infrastructures, the digitalisation of work and Information Systems in Healthcare. Her research work has been published in top-tier IS outlets, such as *MIS Quarterly*, *Journal of the Association for Information Systems*, *Journal of Strategic Information Systems*, *Scandinavian Journal of Information Systems*, *Journal for Computer Supported Collaborative Work*, *International Journal of Medical Informatics*, *Health Informatics Journal* and presented in major conferences such as the *International Conference on Information Systems*.

Marko Niemimaa is an Associate Professor at the University of Agder and an adjunct professor at the University of Turku. His research focuses on the organizational aspects and implications of cybersecurity and philosophical aspects of IS research, including sociomateriality. Prior to joining academia, he has worked for almost a decade in different network security and information security expert roles. His research work has been published in top-tier IS outlets, such as *Journal of the Association for Information Systems*, *European Journal of Information Systems*, *International Journal of Information Management*, *Data Base*, *Communications of the Association for Information Systems*, and *Computers & Security*, and presented his work at the top conference venues such as the *International Conference on Information Systems.*