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Article

A Circulatory Loop: The Reciprocal Relationship of Organizations, Digitalization, and Gender

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Abstract
In the digitalization debate, gender biases in digital technologies play a significant role because of their potential for social exclusion and inequality. It is therefore remarkable that organizations as drivers of digitalization and as places for social integration have been widely overlooked so far. Simultaneously, gender biases and digitalization have structurally immanent connections to organizations. Therefore, a look at the reciprocal relationship between organizations, digitalization, and gender is needed. The article provides answers to the question of whether and how organizations (re)produce, reinforce, or diminish gender-specific inequalities during their digital transformations. On the one hand, gender inequalities emerge when organizations use post-bureaucratic concepts through digitalization. On the other hand, gender inequalities are reproduced when organizations either program or implement digital technologies and fail to establish control structures that prevent gender biases. This article shows that digitalization can act as a catalyst for inequality-producing mechanisms, but also has the potential to mitigate inequalities. We argue that organizations must be considered when discussing the potential of exclusion through digitalization.

Keywords
digitalization; gender bias; gender inequalities; organizations

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1. Introduction

In organizational sociology, digitalization and gender equality are recognized challenges that are widely discussed separately. On the one hand, research on gender inequalities in organizations (e.g., Wetzel, 2014) shows that it is worth focusing on the structures of organizations to explore inequalities. In the digitalization debate, on the other hand, programmed gender biases play a major role due to their potential for social exclusion and inequality (Kohlrausch & Weber, 2020). At the same time, digitalization is associated with hopes for more gender justice and neutrality, as physicality is ascribed a smaller role in the digital space (Piasna & Drahokoupil, 2017) and as it comes with new career opportunities (Rajahonka & Villman, 2019) or access to employment, income, and education (Hilbert, 2011, p. 21). Since the 1990s, there has been discussion about whether the internet has the potential to change gender relations and identities, adopt roles beyond gender stereotypes, and soften the gender division of labor (Haraway, 1991). So far, articles rarely ask how gender and organization interact in the process of digital transformations. Instead, the debate mostly centers on the transformation of specific occupations (e.g., Regin, 2022). We consider this blank space remarkable given the formative and impactful function of organizations as drivers of digitalization (Büchner, 2018) and as loci of social integration (Schimank, 2005). Starting from the thesis that the reproduction of gender inequality is reinforced despite

the promises of salvation by digital technologies, we show the intertwined relationship of organizations, digitalization, and gender. Therefore, we introduce the question of whether and how organizations (re)produce, reinforce, or diminish gender-specific inequalities during their digital transformations.

To answer our question, we bring into dialogue the literature on the relationship between gender and organization and between digitalization and organization. In this conversation, two relations crystallize: The first shows the influence of digitalization processes on organizations and the accompanying organizational restructuring. During their digitalization, organizations are implementing new post-bureaucratic management concepts and forms of work. These have the potential to reinforce gender inequalities. The second relation emerges when organizations influence digitalization processes. Gender inequalities are usually built into digital technologies within organizations that program and produce them. When technologies are applied in other organizations or the social environment, they reproduce the gender inequalities programmed into them. Even if algorithms are explicitly tested for their gender-influencing consequences and are as neutral as possible, it is often the organizations applying them that undo this function. While having the literature on gender and technology in mind, we will not explicitly summarize this extensive body of literature but introduce it selectively into our argument. This decision was made due to the perspective chosen in this article, which centers on the organization.

To discuss the specific challenges of digitalization processes in organizations concerning gender inequalities, we address theoretical assumptions about the relations of digitalization and organization as well as gender and organization (Section 2). We then show examples of how organizations and digital transformations (re)produce, reinforce, and diminish gender inequalities (Section 3). Finally, we discuss the interplay of gender, organization, and digitalization to derive consequences and proposals for action (Section 4).

We base this article on a non-binary and genderqueer understanding of gender. When we use the term gender, we include genderqueer, agender, non-binary, trans, or intersex people. Nevertheless, our argumentation builds on existing studies that—with a few exceptions (e.g., Hofmann, 2014)—perform analyses under binary gender categories or latently carry them along (e.g., Kohlrausch & Weber, 2020).

2. Theoretical Framework: The Relationship Between Organizational Structures, Digital Transformations, and Gender Inequalities

We pose the question of the (re)production or avoidance of gender inequalities during digital transformations centering the organization as a mediating social system. The systems-theoretical view of organizations makes it possible to precisely grasp their specifics and to distinguish them as social systems from families or groups of friends in which gender inequalities also occur. Organizations are decision-based social systems that have purposes, steep or flat hierarchies, and a fixed set of members (Luhmann, 2000). Analytically, two types of structures can be distinguished in organizations: formal and informal ones (Luhmann, 2000). Formal structures regulate membership conditions and are manifested in decisions about personnel, communication channels, and programs. Informal structures fill the gaps in the formal structure and stabilize it in this way. This specific look at decided formal structures and their corresponding informal counterparts is why we use systems theory as an analytical model. Because organizations can make decisions regarding either their digitalization programs or their diversity measures, they have the lever to regulate gender inclusion and exclusion. As this perspective on organizations focuses primarily on structures and the "function" of these structures, our contribution—and we consider this to be an advantage of this theoretical setting—does not begin with individual actions and intensities, but rather with the structural basis for the analysis of inequalities. Additionally, as systems theory is interconnected with other theoretical assumptions we can lean on already existing discourses about the relation between organization and digitalization as well as between organization and gender and bring those into dialogue.

In the international discourse, discussions about the digitalization of and in organizations do not have a specific affinity for a systems theoretical perspective. The relationship is broadly discussed under questions of new organizational dynamics such as those of decentralized organizations (Alaimo & Kallinikos, 2022; Vergne, 2020), co-constitution of organization and digitalization (Faraj & Pachidi, 2021), or new organizational forms (Davis, 2016, among others). Digitalization is also discussed as part of heterogeneous contexts such as hospitals (Bruni, 2005), policing (Brayne & Christin, 2021), or processes of categorization on online music discovery platforms (Alaimo & Kallinikos, 2021). In organizational sociology, the systems theoretical debate on digitalization has recently gained momentum (Kette & Tacke, 2021), and sheds light on the digital transformation concerning organizational formal and informal structures. At the same time, it emphasizes that organizations should be understood not only as systems transformed by digitalization (Husted & Plesner, 2020) but also as drivers of digital transformations (Büchner, 2018). They drive digitalization by developing, using, changing, or distributing digital, algorithmic products (e.g., Jöstingmeier, 2021).

It is undisputed that digital transformations are leading to greater formalization in organizations (Büchner, 2018). Contrary to management hopes, the introduction of digital technologies does not lead automatically to an improvement of the organization. Instead, formal decisions are needed about the organizational structures and the use of these technologies (Rajahonka &

Villman, 2019, p. 16). For example, decisions are required concerning which technologies are introduced and who can or may use them, and how. It is determined which and how data is collected, evaluated, and used. Central to the management of business processes in organizations are enterprise resource planning (ERP) software systems such as SAP, which formalize decision-making programs, process structures, or personnel issues (Roski, 2021, p. 431). Organizational decisions are programmed into the systems, but the software systems themselves also contain a technical decision-making framework. Organizations can do little to intervene in this and organizational members must adopt it (Ametowobla, 2022; Mormann, 2016).

The impact digitalization has on organizational decisions and processes is also shown by the discourse on AI systems and algorithms (Besio et al., 2021; Kette, 2021). Büchner and Dosdall (2021, p. 336) show how algorithms are made "actionable" by and in organizations by embedding their results or categorizations into the organizational decision structure. This means that companies decide based on the preliminary decisions of the algorithms. The technology thus gains a decision-making capacity like that of organizations.

The use of digital technologies is also accompanied by differentiations of informal modes of action (Büchner, 2018) and shifts in (informal) power relations in organizations (Muster & Büchner, 2018). Formal structures impressed by software systems necessitate informal workarounds that are established around technologies (Lammi, 2021; Roski, 2021). Organizational members deviate from the intended use by either not or incorrectly using implemented technologies or by manipulating them (Baumgart et al., 2023).

Organizations are also changing in the process of their digitalization concerning formats of collaboration or the introduction of new management concepts. For example, digital transformation is almost naturally coupled with the adoption of post-bureaucratic organizational models (Muster & Büchner, 2018). Post-bureaucratic phenomena include, e.g., flat hierarchies, the increase in self-organized project work, network-like structures, or the use of creative and agile product development methods (Eckstein & Muster, 2021; Heckscher, 1994). The perceived rise of post-bureaucratic models suggests the shift to the discourse on gender in organizations since the abolishment of the bureaucratic organization is one suggestion for a more equal society (cf. Britton, 2000, p. 422). Doing so, the classic work of Acker (1990) on gendered organization claims that organizations themselves are inherently gendered, for instance, because they are conceptualized and designed by men. Other famous studies like those by Cockburn (1985) or Kanter (1977) discuss the social perception of certain occupations as male or female. Although there is no room for an extensive overview of the classic feminist debate on organizations, one can conclude that those works helped to shape the perspective on a socially constructed organization, which distinguishes itself radically from the "rational machine" understanding often propagated in the classic organization studies. However, Britton (2000) points to the shortcoming of this view, which lies in the lack of a precise analytical concept that allows one to grasp the differences between the organizational level, the societal level, and the personal level, e.g., personal perceptions of what is male- or female-coded. Considering this criticism, the here taken systems theory perceptive seems especially fruitful, since it enables the analytical shift between society, organization, and interaction. This analytical perspective, however, puts the hope that less bureaucratic and more digitalized organizations will offer more equality within the organization into question. Especially the focus on interactions that comes with post-bureaucracy within organizations is not only crucial for the debate on organizational implications of digitalization but also for the one on gender inequalities in organizations. This is due to the observation that the closer organizations operate to interactions and the fewer formal rules there are the more relevant gender becomes (Regin, 2022, pp. 11–13; Wetzel, 2014, p. 102).

Interactions in organizations usually take place informally unless they are formally regulated. This is because, even if organizational members encounter each other in a professional context as formal role bearers, (normative) gender stereotypes are linked to the roles and the associated behavioral expectations (Ridgeway, 2001). Demonstrations of power in the form of sexual assault (MacManus & MacKinnon, 1979) or more subtle practices like the asymmetrical distribution of speech in favor of male interaction partners occur daily (e.g., Brescoll, 2011). The "new economy" and its informal (career) networks follow on from here: They are characterized by their homosocial reproduction (Ohlendiek, 2003). This means that only those who resemble the existing members in as many characteristics as possible (e.g., age, gender, origin, education) become members (Allmendinger & Hinz, 1999, p. 199). The lack of standardized career ladders and assessment systems also opens the space for inequalities (Bowles et al., 2022). Informality can undermine formally implemented equality strategies or management concepts that explicitly focus on gender diversity in practice (Allmendinger & Hinz, 1999) and degrade them to shiny projects for the outside world (Hofmann, 2014, p. 394).

But the organization and its formal structures also reproduce and stabilize patriarchal power relations. Gender becomes directly relevant at the latest when positions are formally filled, e.g., when job descriptions and advertisements incorporate gender-stereotypical requirements or when women are considered particularly suitable or unsuitable for certain jobs based on physical characteristics (Wilz, 2002, p. 9). Formalized assessment procedures that apply stereotypical evaluation patterns produce inequalities in career opportunities (Acker, 1990). Glass walls, ceilings, and escalators can

be consequences of these recruitment and evaluation practices (Ohlendiek, 2003, p. 180). This is why Wetzel (2014, p. 116) refers to organizations as the "inequality calculator of modernity," in the sense that they decide on the inclusion and exclusion of members, and the suggested equality of members is translated into hierarchy and other inequality structures. In this context, the question of the extent to which women will be disproportionately affected by unemployment becomes relevant, especially as female-dominated jobs are increasingly performed by machines in the future (Cortes et al., 2020, p. 919; Genz & Schnabel, 2023, p. 6).

The literature shows that in the discussion of gender inequalities in the context of digitalization, organizations should be considered as an influencing and controlling system. It became clear that both digitalization and gender are interwoven into organizational structures and have an impact on them. Therefore, it would be useful to ask to what extent gender inequalities are reinforced by processes of digitalization in the organization or whether it even offers the potential for reducing gender inequality. In the following, we show how organizations (re)produce gender inequalities during their digital transformation.

3. What Goes Around Comes Around: On the Organizational (Re)Production of Gender Inequalities

To show how organization, digitalization, and gender are related, we focus on two parts where gender inequalities are (re)produced in organizations in the context of digital transformation: when digitalization, even apart from the use of specific technical artifacts, changes the structures of an organization (Section 3.1) and when organizations develop, influence, and adapt how technical artifacts function (Section 3.2). Thus, on the one hand, we ask about the organizational effects that result from digitalization projects of organizations. On the other hand, we are interested in the extent to which digitalization is given a specific direction by the organization (for this perspective, see also Kette & Tacke, 2021, p. 7).

3.1. Post Bureaucracy and Young Boys Networks: How Digitalization Changes Organizational Structures

In the following, we show three aspects of how digitalization promotes gender inequalities in organizations: Digitalization introduces post-bureaucratic management fashions that reinforce gender inequalities because they rely on interactions rather than formal regulations (A); digitalization ensures a shift in power relations in favor of male software developers and computer scientists (B); the use of mobile devices leads to a dissolution of work boundaries and thus to a double burden on women who perform care work (C).

(A) Contrary to the hopes for equality associated with post-bureaucracy or the new world of working (on this, see Piasna & Drahokoupil, 2017), gender inequalities are instead reproduced. Even if the increase in post-bureaucratic structures is accompanied by formalization (for example, by strongly regulating interactions), interactions are primarily characterized by informality. Thus, the emphasis is on networks, self-organized teams, and flat hierarchies (Williams et al., 2012), all of which operate close to interactions.

Professional networks are considered a catalyst for a successful career. Especially under the heading "old boys network" it has been shown how "old (white) men" provide each other with jobs and sought-after positions in organizations and that women do not have access to such networks equally (Scheidegger & Osterloh, 2004, p. 201). This can put women in a paradoxical situation: Women are excluded from powerful men's networks while women's networks—if they exist—are ridiculed or even trigger negative consequences if there is a perception that women are favored (Joshi et al., 2015, p. 1535; Williams et al., 2012, p. 566). It can be suggested that the problem is exacerbated by digitalization as networks shift their interaction to digital communication platforms. As a result, the networks stay invisible and become unattainable for women due to digitalization.

In self-organized teams, where a common final product overshadows individual performance, it becomes more important to highlight one's skills and professional achievements. Williams et al. (2012) show that women are negatively interpreted by male teammates when they highlight their accomplishments and that they must fight even harder than men for recognition of their work (Williams et al., 2012, pp. 557–560). In digital interactions, this problem may aggravate women, as it requires an increased staging of one's performance because participants must establish their presence and addressability through communicative explication (cf. Herzogenrath, 2021, p. 422).

With a flattening of hierarchies and the resulting reduction of positions in personnel management, the likelihood of women reaching a management position also decreases. Studies have shown that the strategic top management of listed companies is in favor of flatter hierarchies, but only at the hierarchical levels below them (Pasero, 2004, p. 148). This implies that the strategically decisive and correspondingly higher management levels are mainly occupied by men (Joshi et al., 2015, p. 1516) and that the vertical segregation of high hierarchical positions does not change (Pasero, 2004, p. 148).

In summary, we showed that if post-bureaucratic organizational concepts also come into play during digitalization, this can exclude women from interactions, obscure the visibility of their achievements, and reduce career opportunities. Piasna and Drahokoupil (2017, p. 327) appeal that especially in the context of the New Work discussions the role of practice at the workplace and organizational level should be recognized as perpetuating gender-related labor market segmentation.

(B) The growing relevance of information technology professions during digitalization results in a shift of

power within organizations. Power is shifting in favor of the people who deal with software development and programming and thus with increasingly important "zones of uncertainty" (cf. Crozier & Friedberg, 1979)—these are mostly "structurally dominated by men and symbolically associated with masculinity" (Prietl, 2019, p. 8; see also Rajahonka & Villman, 2019, p. 15). In the process, not only are there fewer women among software developers but the few that do exist are being marginalized and seen as less able (Joshi et al., 2015, p. 1519). For example, a quantitative study on the code database GitHub shows that the acceptance rate of "pull requests" from female software developers is higher than from men, but the trend reverses once the gender of the pull requestor is visible (Imtiaz et al., 2019; Terrell et al., 2016). The so-called pull request is used to inform other developers when software developers have uploaded a new version of their product so they can use, test, and further develop the product. Among other things, this leads to the fact that women perceive their skills as being lower than those of male computer scientists (Acilar & Sæbø, 2023, p. 243; Rajahonka & Villman, 2019, p. 15). This also makes the horizontal segregation of occupational groups addressed by gender research particularly important (e.g., Jarman et al., 2012), as it can be assumed that homosocial reproduction (cf. Ohlendiek, 2003) along the trait of gender is strengthened by the sheer quantitative weight of male developers. Homosocial reproduction occurs because male computer scientists with managerial jobs prefer people who are similar to them (Williams et al., 2012, p. 563). The gender differences then occur not only because there are hardly any female computer scientists, but additionally, because they are not in the positions to make personnel decisions (Joshi et al., 2015).

On the contrary, the study of Rajahonka and Villman (2019) shows that digitalization can also be seen as a career driver for women. The interviewed women underlined that their competencies in the use of and perspective on technology and social media created great opportunities to advance in their careers and to improve their standing in the organization (Rajahonka & Villman, 2019, p. 19). However, the interviewees were all asked to develop themselves and their digital competencies and had a positive attitude toward lifelong learning. The authors, therefore, summarized that "digital tools must be properly domesticated and combined with self-management skills to be able to enhance both women's well-being and opportunities to develop and advance in their careers" (Rajahonka & Villman, 2019, p. 22). The problem here is that the responsibility for the unequal situation of women is attributed to the individuals themselves, for example by attesting a lack of motivation or the lack of urge to spend money on things other than digital technology and the improvement of digital skills (van Dijk, 2012, p. 57). Additionally, women do this lifelong learning in addition to their paid labor and unpaid care work while, for men, a large part of this care work is still omitted and they can use this time to expand their skills (Arroyo, 2020, p. 183; see also section C).

To sum up: The digitalization of organizations can reinforce existing power relations or may shift them in favor of male organizational members—first because IT skills are demanded and more men have these skills; second because the positions that can fill jobs are more likely to be held by men who hire their peers; third because the few IT products by women that exist in organizations are held in low esteem. Nevertheless, the gaining importance of social media in organizations and the women's user and practice-oriented view on technology can also create new career opportunities—if women are willing to spend their free time and money gaining new skills about digital tools.

(C) With digital transformations, forms of mobile work become a new standard of everyday working life. Mobile workplaces create opportunities for organizational members and especially women to find a balance between work, family, and hobbies (Piasna & Drahokoupil, 2017). However, studies show that this assumption can also be a trap: For women with families, mobile working can lead to a double burden, as they must organize paid work and care work in parallel. If organizations do not provide guidelines that show how boundaries must be drawn between family lives and the increasingly flexible digitalized work, overload and an increase in work will follow (Rajahonka & Villman, 2019). Furthermore, due to the informal expectations of organizations, fathers are more inclined to invest the flexibility thus gained in paid work (Liebig & Peitz, 2017).

What was exacerbated during the pandemic by homeschooling regulations was also a problem beforehand, especially for working women in heterosexual partnerships: in particular, societal expectations and largely unchanged assumptions about unpaid work at home (Kromydas, 2020, p. 8) or that domestic chores cause women to have to balance family care work with professional work demands (Goh, 2013, p. 1020; Turner & Norwood, 2013, p. 397). The use of mobile devices "enables women to work two shifts at the same time" (Nagy, 2020, p. 73). Women are simultaneously burdened with two expectations—those of the employer and those of the family—which can be cited as a further reason for structural gender inequality (Arroyo, 2020, p. 182; Wajcman, 2004). It is striking that studies about queer or non-heterosexual couples find that the distribution of work and care tasks is far more egalitarian (Buschner, 2014; Kurdek, 2007).

Additionally, organizations are increasingly offering family- and compatibility-friendly options to encourage men to take up the "active fatherhood" demanded by society (Joshi et al., 2015, p. 1535; Liebig & Peitz, 2017, p. 392). Despite such measures, organizations reveal an informal expectation that business as usual is also practiced in the home office and that committed fatherhood is equated with career-rejecting men. The consequence is that, in contrast to women who use time flexibility and

autonomy for care work, men invest even more time in work through mobile working and thus gain an advantage (Liebig & Peitz, 2017, p. 397). Studies have shown that, concerning the gender digital divide, the Covid-19 pandemic resulted in a higher reduction of work hours for mothers with young children than for fathers (Collins et al., 2021, p. 110). Similarly, Arroyo (2020) was able to show that women's presence in the labor market and unpaid care work for the family crucially affects the time available to them for connecting to the internet and developing their digital skills (Arroyo, 2020, p. 183). The gender digital divide refers to the unequal access and use of information and communication technologies between genders and it is a worldwide phenomenon (Acilar & Sæbø, 2023, p. 234).

It is interesting to note that in both cases—concerning the expectations for women and men—the interviewees in the scientific studies did not place the responsibility for this on the organizations (Liebig & Peitz, 2017, p. 407; Nagy, 2020, p. 72). Instead, the importance of individual agency, lifelong learning programs of digital inclusion, and the advantages of mobile technologies are emphasized (cf. Arroyo, 2020; Rajahonka & Villman, 2019, p. 16). For organizations, this is functional: The family-friendly measures let them shine to the outside world; formally the offers apply and informally their members work in their free time thanks to mobile technology (Nagy, 2020, p. 79). Thus, if organizations use post-bureaucratic concepts during their digitalization that rely heavily on interaction and flat hierarchies or enable mobile work in an unregulated way, there is a risk that equal opportunities in organizations will be hindered.

3.2. How Organization and Technology Format Each Other (and Gender at the Same Time)

Further answers to the question of the reproduction or avoidance of gender inequalities through digitalization become visible when organizations develop, influence, or use digital technologies. The fact that digital technologies and the algorithms inscribed in them can be discriminatory is discussed repeatedly (Kohlrausch & Weber, 2020; Wang & Redmiles, 2019). Additionally, the social construction of technology theory argues that gender shapes the construction and meanings of technology and that technology in turn shapes gender roles (Rajahonka & Villman, 2019, p. 16). Surprisingly, the role of organizations as loci of software production is often overlooked. This is relevant because organizations sell biased technologies or use them themselves, thus incorporating biases into their structures (A); even if software could be objectively gender-neutral and might even promote gender equity, it is the organization that determines the impact and use of digital technologies—positively and negatively (B).

(A) Discriminatory software products are produced and used in organizations. Technical artifacts are never value-neutral, as they are the products of value- and persuasion-driven subjects (Hagendorff, 2019) who (preconsciously) inscribe discriminatory presuppositions into digital technologies. As computer software is usually developed for (and by) male information scientists it is typically biased in their favor (Rajahonka & Villman, 2019). Big Data and other digital technologies must therefore, according to Prietl (2019, p. 6), be seen as "the product of numerous practices of categorization and classification, of the production of comparability, and of the demarcation between what gets included and what does not, between what is considered as relevant and what is not." Such biased programming can occur in several ways:

On the one hand, by programming "preexisting biases," i.e., discriminatory beliefs of the subject, directly into the technology or by missing gender-inclusive features (see Prietl, 2023). An example is the Austrian AMS algorithm, which selects job seekers according to their chances of integration into the labor market. It then assigns them to different categories and automatically suggests jobs or training opportunities (Lopez, 2019). However, the user interface only captures binary gender categories. Non-binary jobseekers are thus not even captured or must assign themselves to one of the genders. The algorithm is also debatable because the jobseeker data is compared to an ideal base group of young Austrian men whose chances of integration are particularly high (Büchner & Dosdall, 2021, p. 339). Büchner and Dosdall (2021, p. 345, authors' translation) have shown that organizations tend to "pragmatically use qualitatively problematic but existing datasets rather than attempting to recreate them or refrain from using them algorithmically." When organizations embed biased algorithms into their decision architecture and make their consequential decisions based on the algorithmic presorting, it can lead to discrimination against women or other genders.

On the other hand, if the programs are based on machine learning, they can condition or reinforce biases (Prietl, 2023). Such algorithms are often trained by humans, so subjective value judgments and social stereotypes end up in the training data. Consider here Microsoft's chatbot Tay, which was fed false, racist, and discriminatory statements when interacting with humans, so that after less than 24 hours it sent off tweets like this one: "I fucking hate feminists and they should all burn in hell" (Verhoeven, 2020, p. 236). Another example is Amazon's former recruiting software. The self-programmed artificial intelligence was supposed to pre-select applicants and classify them into a rating model. The applications of the last ten years and their respective performance were used as training data. The results of the AI: Male applicants were preferred to female applicants. The reason was not only that there were simply more male applicants and thus more male entrants in the previous ten years, but also that both characteristics with female connotations and

terms frequently used by women were rated negatively (Verhoeven, 2020, p. 237). Prietl (2023) states that these results are not surprising if AI or self-learning algorithms use data sets that are inevitably from the past and derive predictions for the future. In this way, the use of technology can perpetuate established social inequality structures (Prietl, 2023, p. 59). Thus, the software developing organization becomes crucial in the development, distribution, and use of discrimination-neutral software. Reflection on what the systems can represent, what inequalities are perpetuated by them, and what attributions to reality become central in the implementation and distribution processes of digital technologies. For organizations, the absence of such reflection means processing gender inequalities.

(B) The progress induced by digital technologies can be inhibited during their use in the organization. In other words: If organizations formally implement anti-discrimination software, their informal structures may override this function (Roski, 2021). Just as technical systems shape organizational decisions, organizations shape how technology functions. For example, efforts are being made, particularly in human resources departments, to use digital technologies that avoid gender biases in personnel recruitment and development processes.

A recent study explores a digital personnel management platform in which all organizational members create a profile, and this is then anonymously proposed for vacancies (Baumgart et al., 2023). Through anonymization, the software was explicitly programmed to exclude gender as a factor in personnel decisions. Personnel decisions would no longer be made based on personal networks, gender, name, origin, sexuality, or one's appearance, but solely on professional skills and fit. As a result, the informal workaround established in the organization was for the anonymous profile holder and the manager of the vacant position to informally meet for coffee. In the ensuing interaction, gender again became relevant to personnel selection.

The anonymity of the internet is associated with the hope of less gender-based discrimination as it affords anonymity and algorithmic rationality based on skills or past performances. Instead, as Piasna and Drahokoupil (2017, pp. 325–326) show, in online labor markets, gender stereotypes play a role in hiring decisions regarding types of work and contracts for women. Job postings or search algorithms that require constant availability and instant responsiveness discriminate against workers who combine online work with other activities, especially caregiving.

In summary, the organization formally satisfies the anti-discrimination claims, but its informal structures cancel out this functional potential of digital technology. Gender is brought to the fore again in the interaction, which could be disadvantageous for women. In the next section we would like to discuss different possible solutions and strategies organizations could adopt to make their own formal and informal structures more gender inclusive on the one hand and to reflect on their software production and use on the other hand.

4. Conclusion and Outlook

Contrary to the hopes associated with digitalization, our explanations show two things: Organizations are places that produce or can contain gender inequalities *in* and *around* them. The same is true for (digital) technologies that they apply but also produce. By connecting to the information brought to them, adapting their decision-making premises, and thus changing their structures, organizations are also formatted, and digitalization and gender are structurally intertwined. A circulating relation emerges that can be observed from the organization as a reference problem. Regarding both relations—whether starting from the digitalization that changes the organization or starting from the organization that influences the digitalization—it became clear that gender inequalities are reproduced in organizations. Both relations proceed as a kind of circulatory loop in which one dynamic triggers and conditions the other.

Digitalization processes trigger new structures and forms of work in organizations that can have negative consequences for the social inclusion of all genders. If men are the ones with decision-making power or creative influence on technologies in these new structures, this can in turn influence the design of digitalization processes. A circular movement is also evident in the other direction: Organizations (unintentionally) program gender biases into the technologies they develop. When technological products are deployed in organizations, they reproduce gender inequalities in the organizational structures. These gender inequalities then in turn influence the products that are produced in the organization. Digitalization can thus act as a catalyst of inequality-producing mechanisms, but it also has the potential to mitigate inequality—which of these occurs can be influenced with the help of organizational design.

Organizations have one lever to try to mitigate or prevent all three risks: their formalization. Studies have shown that formalized organizational structures can be advantageous for discriminated organizational members (Allmendinger & Hinz, 1999): Regulations on hiring requirements, promotion criteria, and evaluation procedures reduce the risk of subjective decisions based on functionally irrelevant characteristics. Joshi et al. (2015, p. 1535) propose three issues diversity management could focus on: "integrating accountability structures into performance management and compensation practices, designing jobs to promote greater equity among incumbents, and implementing industry-wide mentoring programs for women." In addition, women can rely on such formal structures and specifications in the event of discrimination if these prohibit such action. Even if formal regulations can cause unexpected informalities as a consequential problem.

Regarding gender inequalities in digital software products, organizations could set up instances that explicitly monitor the technologies. It would be imaginable that departments that check the "user experience" also test the technologies for gender—or otherwise discriminatory assumptions. It would also be conceivable for third-party organizations to "audit, advise, or sanction data processing practices at companies or government institutions" (Hagendorff, 2019, p. 62, authors' translation). Another possibility might be mandatory training for software developers to reflect on the risk of gender biases or to suggest programming ways to avoid heteronormative assumptions. It could already help, as Prietl (2019, p. 9) suggests, "protagonists [of Big Data] acknowledge their own situatedness within social relations of power and inequality and the effects this position has on the design of Big Data technologies and the truth claims that they make." On a positive note, there are now even technical software solutions in use that recognize gender biases in user interfaces and workflows (Vorvoreanu et al., 2019, p. 1) or prevent forms of social discrimination from being learned by computers (Hagendorff, 2019, p. 60).

One thing is certain: As social systems that are present in all areas of modern society, organizations can play a supporting role in the social inclusion and equal treatment of all genders (Schimank, 2005). They can take up the structural potentials that accompany digital transformations and reduce (gender) discrimination. However, since gender equality does not help to fulfill the organizational purpose (Meuser, 2004, p. 93) and organizations are under constant pressure to refinance (Kette, 2012), they have no genuine interest in eliminating gender inequalities. While organizations' initiatives would be welcome, the appeal must be directed to politics, which can put organizations under pressure to implement legal measures (for some specific policy action see, e.g., Hilbert, 2011). In this context, a scientific investigation that takes a comparative look at different countries paying attention to the effects of particularly diversity-friendly legislation could be fruitful. Simultaneously, we suggest that our question concerning the inequality producing digital organization can also be studied concerning other marginalized groups as, e.g., everyday racism is also reproduced in digital data (Hepp et al., 2022, p. 2).

We have shown that an organizational sociological look at the dialogue between gender and organization as well as digitalization and organization is worthwhile to understand their mutual relations. What remains is the wish that the intertwining of organization, digitalization, and gender will be taken more into account by sociology and other social sciences in the future and that the role of organizations in the question of gender inequalities will be reflected. As Acilar and Sæbø (2023, p. 241) state, it is not possible to achieve sustainable development and gender equality without having every gender's meaningful participation in the information society.

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Conflict of Interests

The authors declare no conflict of interest.

References

Acilar, A., & Sæbø, Ø. (2023). Towards understanding the gender digital divide: A systematic literature review. *Global Knowledge, Memory and Communication*, *72*(3), 233–249. https://doi.org/10.1108/GKMC-09-2021-0147

Acker, J. (1990). Hierarchies, jobs, bodies: A theory of gendered organizations. *Gender and Society*, *4*(2), 139–158. https://doi.org/10.1177/089124390004002002

Alaimo, C., & Kallinikos, J. (2021). Managing by data: Algorithmic categories and organizing. *Organization Studies*, *42*(9), 1385–1407. https://doi.org/10.1177/0170840620934062

Alaimo, C., & Kallinikos, J. (2022). Organizations decentered: Data objects, technology and knowledge. *Organization Science*, *33*(1), 19–37. https://doi.org/10.1287/orsc.2021.1552

Allmendinger, J., & Hinz, T. (1999). Geschlechtersegregation im Erwerbsbereich: Berufsfelder, Organisationen und Arbeitsgruppen [Gender segregation in the labor market: Occupational fields, organizations and working groups]. In W. Glatzer & I. Ostner (Eds.), *Deutschland im Wandel: Sozialstrukturelle Analysen* (pp. 191–205). Leske + Budrich. https://doi.org/10.1007/978-3-322-99707-4_12

Ametowobla, D. (2022). *Zur Soziologie der Software* [The sociology of software]. Springer. https://doi.org/10.1007/978-3-658-37256-9

Arroyo, L. (2020). Implications of digital inclusion: Digitalization in terms of time use from a gender perspective. *Social Inclusion*, *8*(2), 180–189. https://doi.org/10.17645/si.v8i2.2546

Baumgart, L., Boos, P., & Eckstein, B. (2023). Datafication and algorithmic contingency—How agile organisations deal with technical systems. *Work Organisation, Labour & Globalisation*, *17*(1), 61–73. https://doi.org/10.13169/workorgalaboglob.17.1.0061

Besio, C., Fedtke, C., Grothe-Hammer, M., Karafillidis, A., & Pronzini, A. (2021). Verantwortungsvolle Maschi-

nen ohne Verantwortlichkeit? Datenintensive Algorithmen in Organisationen [Responsible machines without accountability? Data-intensive algorithms in organizations]. *Soziale Systeme*, *26*(1/2), 129–159.

Bowles, H. R., Thomason, B., & Macias-Alonso, I. (2022). When gender matters in organizational negotiations. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*(1), 199–223. https://doi.org/10.1146/annurev-orgpsych-012420-055523

Brayne, S., & Christin, A. (2021). Technologies of crime prediction: The reception of algorithms in policing and criminal courts. *Social Problems*, *68*(3), 608–624. https://doi.org/10.1093/socpro/spaa004

Brescoll, V. L. (2011). Who takes the floor and why. *Administrative Science Quarterly*, *56*(4), 622–641. https://doi.org/10.1177/0001839212439994

Britton, D. M. (2000). The epistemology of the gendered organization. *Gender and Society*, *14*(3), 418–434.

Bruni, A. (2005). Shadowing software and clinical records: On the ethnography of non-humans and heterogeneous contexts. *Organization*, *12*(3), 357–378. https://doi.org/10.1177/1350508405051272

Büchner, S. (2018). Zum Verhältnis von Digitalisierung und Organisation [On the relationship of digitization and organization]. *Zeitschrift Für Soziologie*, *47*(5), 332–348. https://doi.org/10.1515/zfsoz-2018-0121

Büchner, S., & Dosdall, H. (2021). Organisation und Algorithmus: Wie algorithmische Kategorien, Vergleiche und Bewertungen durch Organisationen relevant gemacht werden [Organization and algorithm: How organizations make algorithmic categories, comparisons, and evaluations relevant]. *Kölner Zeitschrift Für Soziologie Und Sozialpsychologie*, *73*, 333–357. https://doi.org/10.1007/s11577-021-00752-0

Buschner, A. (2014). *Die Arbeitsteilung gleichgeschlechtlicher Paare in Deutschland* [The division of labor in same-sex couples in germany]. University of Bamberg Press.

Cockburn, C. (1985). *Machinery of dominance: Women, men and technical know-how.* Pluto.

Collins, C., Landivar, L. C., Ruppanner, L., & Scarborough, W. J. (2021). Covid-19 and the gender gap in work hours. *Gender, Work & Organization*, *28*(1), 101–112. https://doi.org/10.1111/gwao.12506

Cortes, G. M., Oliveira, A., & Salomons, A. (2020). Do technological advances reduce the gender wage gap? *Oxford Review of Economic Policy*, *36*(4), 903–924. https://doi.org/10.1093/oxrep/graa051

Crozier, M., & Friedberg, E. (1979). *Macht und Organisation: Die Zwänge des kollektiven Handelns* [Actors and systems]. Athenaeum.

Davis, G. F. (2016). What might replace the modern corporation? Uberization and the web page enterprise. *Seattle University Law Review*, *39*, 501–515.

Eckstein, B., & Muster, J. (2021). Postbürokratie und die agile Unsicherheitsabsorption in Interaktionen Interaktionen [Post-bureaucracy and the agile absorption of uncertainty through interaction]. *Gruppe. Interaktion. Organisation. Zeitschrift Für Angewandte Organisationspsychologie*, *52*(3), 649–657. https://doi.org/10.1007/s11612-021-00599-1

Faraj, S., & Pachidi, S. (2021). Beyond uberization: The co-constitution of technology and organizing. *Organization Theory*, *2*, 1–14.

Genz, S., & Schnabel, S. (2023). Digitalization is not gender-neutral. *Economics Letters*. Advance online publication. https://doi.org/10.1016/j.econlet.2023.111256

Goh, D. (2013). WHO WE ARE AND WHAT WE WANT: A feminist standpoint approach to defining effective ICT use for West Virginian women. *Information, Communication & Society*, *16*(7), 1019–1041. https://doi.org/10.1080/1369118X.2011.649773

Hagendorff, T. (2019). Maschinelles Lernen und Diskriminierung: Probleme und Lösungsansätze [Machine learning and discrimination: Problems and solutions]. *Österreichische Zeitschrift Für Soziologie*, *44*(S1), 53–66. https://doi.org/10.1007/s11614-019-00347-2

Haraway, D. J. (1991). *Simians, cyborgs, and women: The reinvention of nature*. Routledge.

Heckscher, C. (1994). Defining the post-bureaucratic type. In C. Heckscher & A. Donnellon (Eds.), *The post-bureaucratic organization: New perspectives on organizational change* (pp. 14–63). SAGE.

Hepp, A., Jarke, J., & Kramp, L. (2022). *New perspectives in critical data studies*. Springer.

Herzogenrath, G. (2021). Anwesenheit, Adressierbarkeit und Anschlussfähigkeit: Organisationsberatung unter der Bedingung mediatisierter Interaktion in Videokonferenzen [Presence, addressability and connectivity: Organizational counselling under the condition of mediatized interaction in videoconferences]. *Soziale Systeme*, *26*(1/2), 399–425. https://doi.org/10.1515/sosys-2021-0015

Hilbert, M. (2011). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. *Women's Studies International Forum*, *34*(6), 479–489. https://doi.org/10.1016/j.wsif.2011.07.001

Hofmann, R. (2014). Organisationen verändern Geschlechterverhältnisse?! Queer-theoretische Perspektiven für eine geschlechtergerechte Entwicklung von Organisationen [Organizations change gender relations?! Queer-theoretical perspectives for a gender-equitable development of organizations]. In M. Funder (Ed.), *Gender cage revisited: Handbuch zur Organisations- und Geschlechterforschung* [Gender cage revisited: Handbook on organizational and gender research] (pp. 387–410). Nomos. https://doi.org/10.5771/9783845244617-387

Husted, E., & Plesner, U. (2020). *Digital organizing: Revisiting themes in organization studies*. Globe Press.

Imtiaz, N., Middleton, J., Chakraborty, J., Robson, N., Bai, G., & Murphy-Hill, E. (2019). Investigating the

effects of gender bias on GitHub. In IEEE (Eds.), *2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS)* (pp. 700–711). https://doi.org/10.1109/ICSE.2019.00079

Jarman, J., Blackburn, R. M., & Racko, G. (2012). The dimensions of occupational gender segregation in industrial countries. *Sociology*, *46*(6), 1003–1019. https://doi.org/10.1177/0038038511435063

Joshi, A., Son, J., & Roh, H. (2015). When can women close the gap? A meta-analytic test of sex differences in performance and rewards. *Academy of Management Journal*, *58*(5), 1516–1545. https://doi.org/10.5465/amj.2013.0721

Jöstingmeier, M. (2021). Algorithmisches Investment: Zum Einsatz von Künstlicher Intelligenz und Big Data in Finanzorganisationen [Algorithmic Investment: On the use of artificial intelligence and Big Data in financial organizations]. *Soziale Systeme*, *26*(1/2), 342–369.

Kanter, R. M. (1977). *Men and women of the corporation*. Basic Books.

Kette, S. (2012). Das Unternehmen als Organisation [The company as organization]. In M. Apelt & V. Tacke (Eds.), *Handbuch Organisationstypen* [Handbook on types of organizations] (pp. 21–42). Springer.

Kette, S. (2021). "Computer says no"? Konsequenzen der Algorithmisierung von Entscheidungsprozessen ["Computer says no"? Consequences of the algorithmization of decision-making processes]. *Soziale Systeme*, *26*(1/2), 160–188. https://doi.org/10.1515/sosys-2021-0006

Kette, S., & Tacke, V. (Eds.). (2021). Organisation und Digitalisierung [Organization and digitalization]. *Soziale Systeme*, *26*(1/2). De Gruyter.

Kohlrausch, B., & Weber, L. (2020). Gender relations at the digitalised workplace: The interrelation between digitalisation, gender, and work. *Gender a Výzkum*, *2020*(2), 13–31. https://doi.org/10.13060/gav.2020.010

Kromydas, T. (2020). Educational attainment and gender differences in work-life balance for couples across Europe: A contextual perspective. *Social Inclusion*, *8*(4), 8–22. https://doi.org/10.17645/si.v8i4.2920

Kurdek, L. A. (2007). The allocation of household labor by partners in gay and lesbian couples. *Journal of Family Issues*, *28*(1), 132–148. https://doi.org/10.1177/0192513X06292019

Lammi, I. J. (2021). Automating to control: The unexpected consequences of modern automated work delivery in practice. *Organization*, *28*(1), 115–131. https://doi.org/10.1177/1350508420968179

Liebig, B., & Peitz, M. (2017). Organisationaler Wandel durch neue Väter? Eine neo-institutionalistische Analyse aktiver Vaterschaft in Erwerbsorganisationen [Organizational change through new fathers? A neo-institutionalist analysis of active fatherhood in gainful employment organizations]. In M. Funder (Ed.), *Neo-Institutionalismus – revisited* [New institutionalism – revisited] (pp. 389–414). Nomos. https://doi.org/10.5771/9783845273785-389

Lopez, P. (2019). Reinforcing intersectional inequality via the AMS algorithm in Austria. In G. Getzinger (Ed.), *Proceedings of the STS Conference Graz 2019* (pp. 289–309). TU Graz. https://doi.org/10.3217/978-3-85125-668-0-16

Luhmann, N. (2000). *Organisation und Entscheidung* [Organization and decision]. Westdeutscher Verlag. https://doi.org/10.1007/978-3-322-97093-0

MacManus, S. A., & MacKinnon, C. A. (1979). Sexual harassment of working women: A case of sex discrimination. *Political Science Quarterly*, *94*(4), 696–698. https://doi.org/10.2307/2149645

Meuser, M. (2004). Von Frauengleichstellungspolitik zu Gender Mainstreaming: Organisationsveränderung durch Geschlechterpolitik? [From women's equality policy to gender mainstreaming: Organizational change through gender policy?] In U. Pasero & B. P. Priddat (Eds.), *Organisationen und Netzwerke: Der Fall Gender* [Organizations and networks: The case of gender] (pp. 93–112). Springer. https://doi.org/10.1007/978-3-322-80569-0_5

Mormann, H. (2016). *Projekt SAP: Zur Organisationssoziologie betriebswirtschaftlicher Standardsoftware* [Project SAP: On the organizational sociology of standard business software]. transcript. https://doi.org/10.1515/9783839433768

Muster, J., & Büchner, S. (2018). Datafizierung und Organisation: Grundzüge einer organisationssoziologischen Theorie datengestützten Entscheidens [Datafication and organization: Basic features of an organizational sociological theory of data-based decision-making]. In D. Houben & B. Prietl (Eds.), *Datengesellschaft* [Data society] (pp. 253–277). transcript. https://doi.org/10.14361/9783839439579-011

Nagy, B. (2020). "Mummy is in a call": Digital technology and executive women's work–life balance. *Social Inclusion*, *8*(4), 72–80. https://doi.org/10.17645/si.v8i4.2971

Ohlendiek, L. (2003). Gender Trouble in Organisationen und Netzwerken [Gender trouble in organizations and networks]. In U. Pasero & C. Weinbach (Eds.), *Frauen, Männer, Gender Trouble: Systemtheoretische Essays* [Women, men, gender trouble: Systems theoretical essays] (pp. 171–185). Suhrkamp Verlag.

Pasero, U. (2004). Gender Trouble in Organisationen und die Erreichbarkeit von Führung [Gender trouble in organizations and the accessibility of leadership]. In U. Pasero & B. P. Priddat (Eds.), *Organisationen und Netzwerke: Der Fall Gender* [Organizations and networks: The case of gender] (pp. 143–164). Springer. https://doi.org/10.1007/978-3-322-80569-0_7

Piasna, A., & Drahokoupil, J. (2017). Gender inequalities in the new world of work. *Transfer: European Review of Labour and Research*, *23*(3), 313–332. https://doi.org/10.1177/1024258917713839

Prietl, B. (2019). Big Data: Inequality by design? In Weizenbaum Institute for the Networked Society—The German Internet Institute (Ed.), *Proceedings of the Weizenbaum Conference 2019 Challenges of Digital Inequality—Digital Education, Digital Work, Digital Life* (pp. 1–10). https://doi.org/10.34669/wi.cp/2.11

Prietl, B. (2023). *Wider den Mythos von neutraler Technik* [Against the myth of neutral technology]. University Basel. https://www.unibas.ch/de/Aktuell/Uni-Nova/Uni-Nova-141/Uni-Nova-141-Wider-den-Mythos-von-neutraler-Technik.html

Rajahonka, M., & Villman, K. (2019). Women managers and entrepreneurs and digitalization: On the verge of a new era or a nervous breakdown? *Technology Innovation Management Review*, *9*(6), 14–24. https://doi.org/10.22215/timreview/1246

Regin, D. Ö. (2022). Risks, possibilities, and social relations in the computerisation of Swedish university administration. *New Technology, Work and Employment.* Advance online publication. https://doi.org/10.1111/ntwe.12265

Ridgeway, C. L. (2001). Interaktion und die Hartnäckigkeit der Geschlechter-Ungleichheit in der Arbeitswelt [Interaction and the conservation of gender inequality: considering employment]. In B. Heintz (Ed.), *Geschlechtersoziologie* [Sociology of gender] (pp. 250–275). Westdeutscher Verlag.

Roski, M. (2021). Neue Grenzziehungen zwischen Formalität und Informalität? Die Auswirkungen der digitalen Transformation auf die Arbeit im Büro [New demarcations between formality and informality? The impact of the digital transformation on work in the office]. *Soziale Systeme*, *26*(1/2), 426–448. https://doi.org/10.1515/sosys-2021-0016

Scheidegger, N., & Osterloh, M. (2004). One network fits all? Effekte von Netzwerkcharakteristika auf Karrieren [One network fits all? Effects of network characteristics on careers]. In U. Pasero & B. P. Priddat (Eds.), *Organisationen und Netzwerke: Der Fall Gender* [Organizations and networks: The case of gender] (pp. 199–226). Springer. https://doi.org/10.1007/978-3-322-80569-0_9

Schimank, U. (2005). Organisationsgesellschaft [Organization society]. In W. Jäger & U. Schimank (Eds.), *Organisationsgesellschaft: Facetten und Perspektiven* [Organizational society: Facets and perspectives] (pp. 19–50). Springer.

Terrell, J., Kofink, A., Middleton, J., Rainear, C., Murphy-Hill, E., Parnin, C., & Stallings, J. (2016). *Gender differences and bias in open source: Pull request acceptance of women versus men*. Manuscript submitted for publication. https://doi.org/10.7287/peerj.preprints.1733v2

Turner, P. K., & Norwood, K. (2013). Unbounded motherhood. *Management Communication Quarterly*, *27*(3), 396–424. https://doi.org/10.1177/0893318913491461

van Dijk, J. A. G. M. (2012). The evolution of the digital divide—The digital divide turns to inequality of skills and usage. In J. Bus, M. Hildebrandt Crompton, & G. Metakides (Eds.), *Digital enlightenment yearbook* (pp. 57–75). IOS Press.

Vergne, J. (2020). Decentralized vs. distributed organization: Blockchain, machine learning and the future of the digital platform. *Organization Theory*, *1*(4). https://doi.org/10.1177/2631787720977052

Verhoeven, T. (2020). Die Risiken der Digitalisierung [The risks of digitalization]. In T. Verhoeven (Ed.), *Digitalisierung im Recruiting* [Digitalization in recruiting] (pp. 225–244). Springer. https://doi.org/10.1007/978-3-658-25885-6_18

Vorvoreanu, M., Zhang, L., Huang, Y.-H., Hilderbrand, C., Steine-Hanson, Z., & Burnett, M. (2019). From gender biases to gender-inclusive design. In S. Brewster, G. Fitzpatrick, A. Cox, & V. Kostakos (Eds.), *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1–14). ACM Press. https://doi.org/10.1145/3290605.3300283

Wajcman, J. (2004). *TechnoFeminism*. Polity Press.

Wang, Y., & Redmiles, D. (2019). Implicit gender biases in professional software development: An empirical study. In IEEE (Eds.), *2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS)* (pp. 1–10). IEEE. https://doi.org/10.1109/ICSE-SEIS.2019.00009

Wetzel, R. (2014). "Was ist der Phall und was steckt dahinter?" Ein systemtheoretischer Blick auf die Beobachtung der Geschlechterdifferenz ["What is the phallus and what is behind it?" A systems-theoretical look at the observation of gender difference]. In M. Funder (Ed.), *Gender cage revisited: Handbuch zur Organisations- und Geschlechterforschung* [Gender cage revisited: Handbook on organizational and gender research] (pp. 89–121). Nomos. https://doi.org/10.5771/9783845244617-87

Williams, C., Muller, C., & Kilanski, K. (2012). Gendered organizations in the new economy. *Gender & Society: Official Publication of Sociologists for Women in Society*, *26*(4), 549–573. https://doi.org/10.1177/0891243212445466

Wilz, S. M. (2002). *Organisation und Geschlecht* [Organization and gender]. Springer. https://doi.org/10.1007/978-3-663-10964-8

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