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Digitalize and deny: Pluralistic collective ignorance in an algorithmic profiling project

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abstract

The digital transformation paradigm, marked by optimistic tech determinism, pushes contemporary management to constantly consider the usefulness of cutting-edge digital technologies for their organizations. When experiments with such technologies fail, the same optimistic tech determinism seems to play a role in actors' denial of that failure. Based on an ethnographic study of a public organization, this paper analyzes an empirical case involving an unsuccessful digitalization flagship project. Despite encountering fundamental problems and clearly failing to fulfill its promises, the project was allowed to continue, and daily work took place unabated. This study explores how managers, project managers, and employees reacted to the numerous problems and failures related to the project in both the development and implementation phases. Our paper is situated within the literature on organizational ignorance and denial, and it advances the concept of 'pluralistic collective ignorance'. Inspired by science and technology studies, the term 'pluralistic collective ignorance' is developed to account for the diversity in how organizational members ignore a phenomenon and the diversity of actors who do so. Tech optimism seems to prevent otherwise reflective actors from asking certain kinds of questions about technological solutions. However, as it is often unknown whether a digitalization project will have a positive impact in practice, it remains on open question whether denial should be viewed as supportive or destructive for organizational development.

Introduction

In contemporary management discourse, we hear a resounding catch phrase: 'Digitalize or die'. A quick Google search will convince you. This command implies that if an organization ignores the possibilities offered by digital technologies, it will be outperformed by more vigilant competitors or find itself unable to achieve its goals. In this paper, we demonstrate the relevance of a twist of this expression. We claim that some digital transformation projects that are designed and implemented to improve organizations make little sense in practice or simply do not work. Yet, they are not discarded, and their continued existence seems to rely on organizations' abilities to 'digitalize and deny'. As such, experimental digitalization projects offer an interesting context for studying organizational denial. Drawing on an empirical study of the introduction of an algorithmic profiling project in an organization, we develop the concept of 'pluralistic collective ignorance' to better understand how organizational denial can be achieved through varied everyday practices carried out by different actors rather than through group thinking, shared organizational norms and values, or a particular organizational function.

Futurist discourse on digital transformation, as reflected in the 'Digitalize or die' catch phrase, builds on a familiar combination of tech optimism and tech determinism where technologies are seen as having certain properties that will eventually lead to particular social outcomes (MacKenzie and Wajcman, 1999). Such assumptions underlie the widespread acceleration discourse, which conveys the message that due to rapid digital technological development, the future is coming at full speed (Rosa, 2013). The often-invoked image of a high-speed train suggests that both organizations and individuals need to jump on the train if they do not want to be left on the platform. Such images contribute to creating an impression of inevitability and speed (Vestergaard, 2021). They leave little space for agency, much less reflection: either we join and follow the preset pace, or we are left behind (cf. Plesner and Justesen, 2020). Technological determinism comes in both pessimistic and optimistic versions (Plesner and Husted, 2020). In the optimistic version, technological determinism is equated with social progress (Wyatt, 2008). Optimistic technological determinist assumptions guide many organizational digitalization projects, and the digital

transformation paradigm pushes contemporary management to constantly consider the usefulness of cutting-edge digital technologies for their organizations. Informed discussions of 'whether' to adopt a new technology easily glide over into 'when' to adopt that technology.

When new and untested digital technologies are implemented in organizations, they can be expected to have various effects (e.g. Wajcman, 2015). In cases where cutting-edge technologies cannot solve the problems they are intended to solve, organizations can react in a multitude of ways: they can abandon the project, they can redesign or adjust the project, or they can ignore the dysfunction. In this paper, we are interested in understanding the latter reaction. We analyze an empirical case in which a digitalization flagship project was allowed to continue, and daily work took place unabated, even though the project encountered fundamental problems, and clearly failed to fulfill its promises of efficiency gains and improved services. We explore how managers, project managers, and employees reacted to the numerous problems and failures related to the project in its development and implementation phases. We examine how the organization managed to ignore a number of problems and continued to develop, support, and implement the project.

This paper is situated within the literature on organizational ignorance (e.g. Bakken and Wiik, 2018; Essén et al., 2022; McGoey, 2012a; 2012b; Roberts, 2013). Specifically, we draw on work on denial and relate this to work on organizational change and digital transformations. The concept of denial derives from the psychological literature, especially the psychoanalytic tradition (e.g. Freud, 1937/1992). Variants of the concept are also found in economic psychology where similar mechanisms are conceptualized in terms of biases and cognitive errors (Kahneman, 2011). Research on ignorance has theorized denial as a socially constructed and organizational phenomenon (Rayner, 2012; Zerubavel, 2006).

Denial may occur when a strong desire for a specific object — or an outcome — conflicts with the external reality (Freud, 1937/1992). This contradiction leads to a disavowal of the external reality even though it is perceived by the actors, at least to some extent. The actors refuse to recognize the obvious implications of their perceptions (Trunnell and Holt, 1974). This socially

reinforced mechanism, in which a group refuses to see what is manifestly present, is captured by the proverbial 'elephant in the room' (Zerubavel, 2006). Empirical studies of organizational change and digital technologies have revealed that denial can be conservative, such as when organizations ignore impulses to change and are left behind (e.g. Munir, 2005). Denial can also be future-oriented, as when organizations ignore the obstacles posed by new technologies in a race towards the future, attempting to mimic the advances of other organizations (Caplan and boyd, 2018).

Based on an empirical study, this paper shows how denial can be seen as a collective act produced by the members of the organization. However, rather than analyzing denial as a consequence of a dysfunctional culture or 'group think' (Fox, 2019), we advance the concept of 'pluralistic, collective ignorance' inspired by science and technology studies (STS). We thereby challenge some of the basic assumptions underlying much of the organizational ignorance literature. First, we problematize the view that the ignoring organization is a unified collective with a strong, shared set of norms and values that make members of the organization act as one. Second, we problematize the idea that ignorance 'in reality' serves a latent or manifest function in the organization. Third, our STS approach helps us cultivate theoretical alternatives to more individualistic accounts of denial. In an STS-inspired understanding, cognition is collective and distributed among heterogeneous actors (Callon and Muniesa, 2005; Hutchins, 1995). We propose that if cognition and knowledge can be collective, then ignorance and denial can as well. Hence, we argue that ignorance and denial are collective, plural and distributed in a manner similar to organizational knowledge. We contribute to the literature on organizational ignorance by developing this perspective, and by theorizing organizational denial as related to larger social phenomena like tech determinist and tech optimist paradigms.

Towards pluralistic collective ignorance

Functions of ignorance in organizations

Ignorance has been theorized as the absence of knowledge in different forms, but it is also increasingly recognized as a social and organizational

phenomenon (e.g. Bakken and Wiik, 2018; Davies and McGoey, 2012; McGoey, 2012a, 2012b, 2019). Organizational scholars have argued that various forms of ignorance have different functions in organizations. For instance, public authorities actively produce blindness to avoid the actualization of potentially destructive information (Knudsen, 2011). McGoey argues that 'unsettling knowledge is thwarted from emerging in the first place, making it difficult to hold individuals legally liable for knowledge they can claim to have never possessed' (2012b: 559). Alvesson and Spicer (2012) introduced the term 'functional stupidity' to explain how certain forms of ignorance help organizations function smoothly and efficiently. Stupidity is functional because it has not only negative, but also positive effects seen from a managerial perspective (for a critique of the managerialist implications, see Butler, 2016). Organizations that sustain their ignorance can continue to employ their established practices and strategies even if they have proven inadequate, which allows them to learn and develop slowly, as Brunsson (1998) showed in his work on non-learning organizations.

The literature has also conceptualized different degrees of intentionality behind ignorance. McGoey (2012a, 2012b, 2019) developed the concept of 'strategic ignorance'. Hertwig and Engel (2016) discussed 'deliberate ignorance', Costas and Grey (2014) highlighted acts of 'intentional concealment', while Schaefer (2018) presented 'willful managerial ignorance' in which managers intentionally disregard or actively avoid collecting relevant information that could lead to transformative consequences in their actions. Nevertheless, as Heimer has pointed out, 'we should not assume a constant degree of intentionality' (2012: 19). Various types of ignorance may prevent people from reacting to organizational malfunction. Moreover, when managers and employees collectively contribute to ignoring phenomena in their everyday practices, it may be more difficult to identify intentionality. Sometimes there is little awareness of that ignorance. In some cases, 'denial' seems to be a more appropriate term than 'ignorance'.

Denial as a form of ignorance

Denial is a concept with a somewhat loose meaning and contested status. Nevertheless, the term captures the basic element of ignorance that is puzzling to bystanders; namely that people fail to comprehend what is right in front of them. In psychoanalytical accounts, denial is one of several defense mechanisms used to deal with emotionally uncomfortable or painful knowledge (Freud, 1937/1992). In line with this tradition, Trunnell and Holt defined denial in the following way: 'Disavowal or denial as originally described by Freud involves, not an absence or distortion of actual perception, but rather a failure to fully appreciate the significance or implications of what is perceived' (1974: 771). Denial differs from other defense mechanisms, such as repression. Whereas repression blocks any awareness of the 'painful' object, denial is more ambiguous. The concept of denial captures how it is sometimes possible to register and even acknowledge something, but still fail to take it in, fail to realize its implications, and fail to act on it. As Stanley Cohen puts it:

> People react as if they do not know what they know. Or else the information is registered – there is no attempt to deny the facts – but its implications are ignored [...] I became stuck with the term 'denial' to cover this whole range of phenomena. (2001: x)

As described here, denial can be seen as lying somewhere between knowledge and ignorance.

Cohen's examples include grave atrocities, but the mechanism is observable in more mundane contexts as well. In an organizational context, denial is most often disconnected from individual traumatic and painful experiences, and it is more relevant to study failures to appreciate the significance or implications of 'uncomfortable knowledge' (Rayner, 2012) than deeper, traumatic psychological issues.

When denial is theorized as an organizational phenomenon there is a tendency to focus on *sharedness*, as in Roberts' definition, which highlights the centrality of 'values and norms embedded in the organization' (2013: 223), as well as 'frameworks of understanding' that help us grasp how organizational denial comes about. Roberts suggests that 'organizational

denials occur when the values and norms embedded in the organization blind its members to knowledge that does not fit easily with the existing frameworks of understanding' (*ibid*.). In this definition, the organization appears to be a unified whole with a shared unconsciousness that drives its members in the same direction. When other scholars similarly elevate denial to the organizational level, they tend to portray the organization as an *agent* that actively denies issues that other agents try to problematize. According to Rayner,

> In a more sociological sense, denial does not refer to the cognitive or affective state of individuals, but to the refusal or inability of organizations at any level to acknowledge information, even when external bodies or even individuals within the organization seek actively to bring it to the collective attention. (2012: 114)

Similarly, organizations may be portrayed as unwilling to acknowledge chosen paths that seem untenable. As Heimer writes, 'organizations prefer to ignore, conceal, obfuscate and deny evidence that core activities bring unwanted side-effects' (2012: 31). In other words, organizations 'prefer' to be ignorant in order to protect their reputations or continue their core activities. In this perspective, organizations are portrayed as singular entities with specific motivations.

Even though the psychoanalytic and organizational concepts of denial differ in terms of level (i.e., the individual or the collective) and explanations (e.g., sexuality, childhood trauma, group think or dysfunctional culture), they share the basic intuition of the 'elephant in the room'. The concept of organizational denial allows us to bracket single individuals' intentions and motivations, while paving the way for investigating how it is possible for a collective to fail to acknowledge the malfunctioning of an organizational project, even when it has been challenged in everyday practices over an extended period of time. However, in much research on organizational denial, this comes at the cost of portraying organizations as unified agents or as strong collective identities in which individuals' truth-telling is ignored.

In this paper, we challenge such views by arguing that ignorance is sometimes produced by organizational members who do not necessarily

agree, who do not always act and talk in consistent ways, and who do not necessarily subscribe to the same norms and values, but who still contribute to the collective achievement of ignorance as denial. To better understand this, we develop the concept of 'pluralistic collective ignorance'. Before turning to our discussion of this concept, we briefly review the literature on digital transformation through the lens of organizational denial.

Organizational change, digital technologies, and organizational denial

In the literature on organizational change and digital technologies, the concept of denial can be relevant in different situations. In some cases, denial has a conservative function, whereas in others, it is more future-oriented. Denial has conservative effects when organizations ignore significant changes in the technological and organizational environment and insist on holding onto established business models despite those changes (Munir, 2005). One emblematic case is Kodak, which 'denied the possibility' that digital photography could become a technology with wide potential, and stubbornly insisted that it was a cumbersome and unnecessary technique relevant only for professionals (*ibid.*: 100-101). Another case of conservative denial is that of Microsoft, which 'actively ignored' the emergent standard of Java and instead tried to develop its own alternative (Garud et al., 2002: 15). In some cases, the conservative stance is clearly detrimental to an organization, as in the oft-cited cases of Blockbuster and Nokia, but it need not be. Cases of organizational refusal to engage in technological adventures have a parallel in organization theory, which argues that overly adaptive processes may be self-destructive (March, 1991), and that a slow type of learning may be most advantageous to organizations (Brunsson, 1998: 421; Levitt and March, 1988). From an institutional theory point of view, we would expect organizations to follow the rules and the standard operating procedures until 'environmental shocks' force them to radically change to survive (March and Olsen, 1989).

At the other end of the spectrum, denial allows organizations to ignore uncertainties, warning signs, and problems with new technologies in the race towards the future. Organizations may, for instance, mimic other organizations' technology investments or devise ambitious digitalization strategies to allay fears of being left behind or of appearing illegitimate

(Caplan and boyd, 2018). As Caplan and boyd write, 'this has been seen in the adoption of algorithmic and data-driven processes across a wide spectrum of sectors and institutions'(*ibid*.: 4).. They add that 'the narrative of technology as that which could disrupt existing institutional structures can be traced to the ideologies embraced by many of early proponents of the internet' (*ibid*.). Such mechanisms of isomorphism resonate with neo-institutional theory, which describes how organizations engage in change and renewal because the opposite appears illegitimate (e.g. DiMaggio and Powell, 1983; Røvik, 1998).

While the digital transformation paradigm can be argued to have real effects on organizations, the literature on digital transformation and organizational change in general indicates that organizational responses can range from skepticism and denial of technological developments to enthusiastic adoption and subsequent denial of unintended consequences and problems. In this paper, we are concerned with the consequences of optimistic and future-oriented approaches to digitalization. We argue that organizational denial is a fruitful arena of exploration, if we wish to understand how such optimistic and future-oriented approaches play a role in determining organizational strategies and investments, even when technologies do not work in practice. However, whether something 'works' depends on the specific contexts in which the technologies are entangled with the social. It is in these social contexts that specific forms of ignorance are produced and reproduced. To address these questions, we turn to STS.

Beyond functions and intentions: Pluralistic collective ignorance

STS has a long tradition of examining the production of knowledge as an active, collective, and distributed process (e.g., Callon and Muniesa, 2005; Hutchins, 1995; Latour, 1987). The view of knowledge as a social phenomenon stands in contrast to individual psychological perspectives on knowledge, but it also contradicts explanations that invoke the collective as an overarching and homogenizing system of norms, values, or economic structures. In STS, the collective is understood as a multiplicity of both human and non-human actors, all of which contribute to knowledge production, although in different ways.

In a similar vein, we suggest that both knowledge and ignorance – including the type of ignorance that we call denial – are collectively produced in distributed processes to which human and non-human actors actively contribute. The concept of 'pluralistic ignorance' has already been applied in social psychological research where it refers to a certain set of biases and misperceived beliefs about others (Zhu and Westphal, 2011). Thiel (2015: 256) describes pluralistic ignorance as a situation in which members of groups inadvertently reinforce each other's different misunderstandings of a situation. In contrast, we apply the term 'pluralistic' in line with an STS-inspired ontology. More specifically, we wish to emphasize that instead of pointing to mutual reinforcements of the *same* norms and beliefs, we view pluralistic ignorance as connoting the diversity in how organizational members ignore a phenomenon, and the diversity of the actors who do so. Also inspired by STS, our analysis of the production of ignorance includes both human and non-human actors, such as different visualizations and technologies (Latour, 1987). In other words, actors and networks organize knowledge, and they can also organize ignorance.

The concept of pluralistic collective ignorance can help to account for a type of denial produced by different actors in different ways, rather than being a result of particular organizational members' willful ignorance. The pluralistic collective ignorance concept also allows us to stay at the level of interaction and the actors' own explanations of their encounter with problems, rather than explaining their reactions as a type of shared delusion caused by invisible social structures or groupthink. The concept underscores ignorance as a multiple phenomenon.

Methods

Empirical background

The study is based on ethnographic fieldwork conducted in a unit ('the Unit') of a large Scandinavian public organization over a period of one year. The Unit was selected because it stood out as a prime example of a development-oriented organization engaged in various ambitious digitalization initiatives. It had introduced a number of digitalization projects aimed at supporting its daily work in different ways by improving the employees' handling of cases

and, hence, the services provided to clients. Overall, the Unit had a high level of employee satisfaction and a management team that was consistently praised by employees during our fieldwork for its leadership, engagement, and clear style of communication.

During our fieldwork, the Unit launched an ambitious new project. The project aimed to profile citizens who called the Unit through an automated prediction of which 'type' a caller would be, with the purpose of matching a particular type and purpose of a call with an employee who possessed the relevant skills to deal with the issue. When they called the Unit, citizens would enter their personal identification number, and an algorithm would then retrieve that citizen's personal data and place the caller into a specific 'profile', which was then visualized on the screen of the relevant employee. The goal was to make the best use of employee skills, deliver better and more 'targeted' services, and reduce the time employees spent on calls, as well as citizens' waiting times. While our fieldwork generated insights into many different digitalization projects, we found this algorithmic profiling project to be the most interesting because it was considered a prestigious flagship project and required resource allocations on many levels. Moreover, it was discussed in most of the meetings we attended and was expected to have a significant impact on daily work and productivity.

Data collection and analysis

The longitudinal character of the fieldwork allowed us to follow the algorithmic profiling project during its development and implementation phases. Our methodological approach was inspired by STS, which implies an open and agnostic approach to the workings and effects of technology in practice (e.g. Justesen, 2020; MacKenzie and Wajcman, 1999). As such, we paid attention to both human and non-human actors, where the latter included the algorithm, visualizations, and documents (Latour, 1987), leaving open the question of the role played by these non-human actors in practice. Our approach was based on the ontological assumption that the social and the technological are always entangled in practice (Orlikowski, 2007), and that an algorithm is not a separate and stable object but part of specific 'assemblages' (Lee, 2021).

Over nearly twelve months in 2018-2019, we regularly visited the Unit (from one to ten times per month) to observe meetings and conduct interviews. Both before and after the implementation of the algorithm, we spent full working days following different caseworkers' interactions with callers by sitting next to them, listening to their phone conversations, and viewing their screens. Prior to the implementation, we spent two full days at the Unit, and we spent six full days after the implementation. In total, we observed more than 200 phone conversations. Our data consists of fieldnotes, documents from the organization, and recorded and transcribed interviews and meetings. In addition to interviewing eight caseworkers both before and after the implementation, we conducted interviews with two top managers, three office managers, two project managers, and an IT person responsible for the development of the algorithm. The first round of interviews with the caseworkers focused on their work and their expectations of the algorithm, while the second round aimed at examining how the algorithm influenced their work. The interviews with managers revolved around expectations and evaluations of the project and were also conducted both before and after the launch. Finally, the IT person was interviewed to help clarify the choices that had been made in the design process. In addition, our data includes a group meeting (recorded in full), during which we presented and discussed our findings to the Unit's management team.

In the course of our fieldwork, we observed that the profiling project encountered a number of severe problems. We found it puzzling that the project was rolled out anyway, and that it was widely praised by different actors in the organization. Towards the end of our study, when the first version of the technology had failed, we asked ourselves how plans of a 'version 2.0' could be implemented, seemingly as if no problems had been encountered. For us, it seemed that numerous problems related to 'version 1.0' — problems that were clearly visible to key actors in the organization — had been ignored. We had our 'elephant in the room'.

When we began to examine the organizational dynamics related to ignorance and thought about our findings in terms of denial, we had to address several ethical considerations. We had been allowed into the organization in a spirit of trust and goodwill and were given permission to

come and go as we liked. In addition, we benefited from the openness of managers and staff members, who took time out to talk with us. As we could have focused on other successful digitalization projects in the Unit and on the professional management, our focus on an unsuccessful project could be perceived as a sign of disloyalty to our informants. We certainly felt awkward when we presented our findings to the management group. However, it also felt like the right thing to do, and so we provided the organization with our findings and reflections. We ended up having fruitful discussions about these findings and reflections during which the management team proved to be open-minded and oriented towards learning. We have written this paper in a similar spirit with the intention to foster a better understanding of what can be learned from unsuccessful projects and the organizational processes around them. We have carefully anonymized the organization and informants.

In our data analysis, we followed a thematic approach in which the first step was to familiarize ourselves with the entire corpus of data (Braun and Clarke, 2006). Again, we found ourselves puzzled over the problems with the project. It seemed that the actors were seeing and, sometimes explicitly discussing the problems with the algorithm project, and then ignoring them as if they did not exist. This observation led us to consider the concept of denial. We then decided to analyze our data by first identifying the different types of problems related to the project. Throughout the research process, we had no intention of identifying what the 'real problems' were. Instead, we were interested in how the problems were articulated by different actors (Essén et al., 2022), as well as the unintended consequences they had. We also sought out instances in which problems were ignored, and development work continued, as if they did not exist. We asked how managers and employees 'dealt with these problems' or, in our terms, 'how they succeeded in denying their existence'. The problems were often described by the actors, or they were visible during our observations. However, the actors' accounts revealed how their focus quickly changed. They did not seem to draw implications from their perceptions of these problems, much less take any consequent action.

At the core of our analysis, we identified different problems through the interviews and observations, and our analysis focused on how employees

and managers collaborated to ignore those problems. As the empirical material showed that many organizational actors contributed to ignoring the problems, the concept of collective ignorance seemed to have some explanatory power. However, the multiplicity of means used to deny the problems led us to further explore the diversity in perspectives and responses. It was through our analysis of the data that we realized how organizational ignorance — although collectively achieved — may not be a result of the same motivations or strategies or carried out in the same way by the same people over time. The multiplicity of means to deny problems that we identified in the empirical material led us to qualify our use of the term 'collective' with the term 'pluralistic'. We thus developed the concept of pluralistic collective ignorance to capture the organizational denial observed in our case.

Denial is a tricky analytical concept because it traditionally points to psychological mechanisms and hidden structures at work, which stands in stark contrast to an STS approach. However, we adopted the concept, and used the STS inspiration to analyze the data at the level of interaction and the actors' own explanations when they encountered problems with the project. Our actor-centered approach allowed us to account for the heterogenous and distributed nature of ignorance without resorting to explanations for 'behind the scenes' mechanisms. As this case study is situated in a particular organizational context and draws conclusions based on the actors' use of multiple means to deny problems, we cannot assess precisely the extent to which the observed phenomena are common. However, our results can be generalized in the sense that in other organizations that are experiencing a future-oriented push to experiment with new technologies, a similar multiplicity of means to deny problems may be observed and understood through the lens of pluralistic collective ignorance.

Seeing and ignoring problems: Denial at work

Denying the technological limitations of digital solutions: Acting anyway

The Unit was part of a large public organization that had an ambitious digitalization agenda and funds to support local digitalization initiatives. In

the Unit, the digitalization ambitions were pursued through various idea-creation workshops. At one such workshop, an idea emerged about creating better service with greater efficiency in the Unit through the automated profiling of citizens. The Unit applied for funding to develop an algorithm to handle this scoring and the project was launched.

The first project phase was filled with remarkable tech optimism as well as uncertainties. The tech optimism was reflected in interviews with two managers who expressed excitement about being first movers with this new application based on machine learning. One manager saw the experiment as having a positive impact on the organization's external image. In this manager's view, a positive result would also be highly motivating for employees:

> Being a first mover has given us some spotlight, and being mentioned as the exemplary digitalization project, being praised, getting attention from the outside world – of course our employees are getting a rush from that.

While remaining proud and optimistic, another manager noted the uncertainty in tackling the project, an uncertainty common to first movers:

> We are moving into unknown territory. We do not know yet and we cannot learn from others' experiences, because no one else has done this. We are happy to admit that. Also, the excitement – I mean, it is like we are taking up the mantle of leadership. We have dared to do something new.

Indeed, there were several fundamental uncertainties associated with the design of the algorithm, but they co-existed with the tech optimism and the acceleration discourse in which 'being at the forefront' was emphasized. After funding for the project had been secured, a small working group was established to define how the algorithm should score citizens and how value could be created by handling the different categories of citizens in different ways. The group collaborated with a data scientist who was to program the algorithm. In an interview, the data scientist described the process:

> I read all of the material about the project. Even after that, it was as if there was little connection between people's ideas at the conceptual level and what was doable in practice. [...] One of my main tasks in the beginning was to find out precisely what they wanted, what exact problem they wanted to solve, because that was not obvious.

The data scientist explained that he found the ideas for how to categorize citizens to be a bit 'loose'. There was a need to clarify which data should be used, how precise the algorithm should be, how it should learn, and so on. As the data scientist explained, 'you have this idea that we have a lot of fantastic data but, at the end of the day, there is very little that you can actually use'.

One of the first important tasks for the working group was to define proxies in terms of which types of data could be used as indicators for the type of caller. In the early stages, the working group operated with a long list of possible proxies. However, as the project developed, the number of proxy types was reduced because it was only technically and legally possible to collect and use certain kinds of data to feed the algorithm. The issue of assigning weights to proxies was also a challenge for members of the project group. After a lengthy discussion during an interview with a manager and another group member, they gave up trying to explain to us how the data weighting and the training of the algorithm was supposed to work. They ended up by saying, 'I cannot explain how' and 'neither can I'.

The aim was to develop an algorithm with a relatively high accuracy because the success of the project would hinge on that accuracy. However, the technological solutions were much less accurate than expected. Good proxies were difficult to find because the problem was only vaguely defined and which data to use was not obvious. In addition, there was a problem of how to train the algorithm. The management team and the project managers were made aware of these design problems early on, but those revelations did not cause them to pause. Instead, despite the uncertainties, management and some employees remained enthusiastic and continued to prepare for the launch of the algorithm. Management was working on organizational change activities and some employees were appointed as 'change agents'.

At this point, management developed several communication tools visualizing different aspects of the project: 1) flow diagrams of the idealized process of scoring citizens who phoned in and matching them with the appropriate employees; 2) flow charts of idealized 'user journeys'; and 3) visualizations of the employees' new roles. Management used these items

during different meetings and toured the Unit with a PowerPoint 'roadshow' containing the visualizations. A video of a roadshow presentation captured several questions from employees about how the algorithm works, and many of the answers revealed that the project was fraught with uncertainties. This is not unusual for a digitalization project in an early phase. However, in this case, the major uncertainties and technical limitations continued to haunt the project.

At this early stage, it was possible to overlook or deny the fundamental problems by simply carrying out the work with multiple, future-oriented tasks and scenarios. Project leaders and managers talked new organizational realities into being by invoking new categories and new work descriptions, and highlighting the hope of improved efficiency and quality, which were expected to follow from the implementation of the algorithm.

Some employees focused on their new roles and the implications of the project for their tasks. Many explicitly referred to their willingness to be part of organizational development projects. One employee, who referred several times to herself as a 'change agent', told us that her team had won a contest to determine which icons should pop up on employees' screens to symbolize a citizen category. When she was asked how she thought the icons would make a difference for her work, she did not raise any questions about the data, the proxies, the precision, or the algorithm's learning process. Instead, she discussed her own reactions:

> We will have to see about that. On the one hand, I get a second to prepare myself. On the other hand, I do not know. It can go two ways. Either you just get two seconds to prepare [mentally], or you just get your barriers up. I do not know, so it will be fun and exciting to see what it does.

Other employees voiced skepticism. For instance, one employee who was contemplating resigning observed that the 'management works systematically on standardization and uses robotics for everything'. However, despite his critique of the profiling project, the criticism was not about the fundamental problems with the algorithm: 'The idea is cool – the thing about knowing your customers'. Instead, he was worried about how the categorizations and icons would affect the work of his colleagues. He envisaged that the algorithm and the icons would make absolutely no

difference in his own work: 'I really do not need an icon to do my work. I can look at the data in two seconds and form an opinion'. Another employee was enthusiastic and articulated tech optimism:

> I have to say, I am the type of person who likes change. I like it when new technologies are brought to the market, and I think you should test them. [...] I think the concept of matching the right citizen with the right case worker is super cool, and it is an innovative way of thinking.

This employee expected to be allocated to all the citizen categories because of his broad skill set. Therefore, the difference the project would make for him would be the increase in the amount of time available to prepare before answering a call.

At an early stage, managers and employees seemed to ignore the fundamental problems related to the design of the algorithm, the trustworthiness of the proxies on which it was based and, thereby, the accuracy and validity of its predictions. Instead of focusing on these difficulties and ensuring that they were addressed, managers and staff continued to move towards implementation. The denial during this stage occurred through the redirection of focus towards the algorithm's potential or its future effects on case handling. Notably, however, the employees did not expect these effects to be significant.

Denying implementation problems: Finding positive signals

In the implementation phase, many events indicated that employees were not reacting to the algorithm's classifications in practice in the way they were supposed to. In our fieldwork, we observed that employees often did not notice the icons on their screens, although these icons indicated which type of citizens they could expect to have on the line. In situations where they noticed the icons, they did not align their responses with the instructions developed for communication with citizens in each category. When we asked employees which types of calls, they were matched with, they were often unsure. One said, 'I do not know' but then guessed, which later proved to be incorrect. While observing the work of another employee, she admitted that she did not really notice the icons and, therefore, neglected to react to the categorizations of the citizens. Instead, she carried

on talking to them with an open mind. In interviews, managers were frustrated that not all employees paid attention to the icons and changed their behavior accordingly. Some employees were portrayed by management as being 'resistant to change'. After several months, one manager sat beside an employee, who did not have a single icon pop up in connection with the calls she received. Afterwards, at a meeting, the manager was clearly upset. As it turned out, the algorithm had not been activated on all of the employees' workstations, but its absence had gone unnoticed. The employees just continued their case handling and client contact as usual.

Another problem was that the planned matching of specific types of calls and particular employees was complicated by staffing issues, such as, when employees had days off, they were assigned to administrative tasks, or the like. A large whiteboard with employees' names on magnets was supposed to show who had been assigned to which types of calls each day. In practice, however, moving employees among the different phone lines was coordinated through real-world talking across the open-office landscape. This was how they solved issues of client wait times (on the phone) and employee availability. The issue was illustrated in this interview with a case worker:

> Employee: Let me show you the whiteboard in here. Look at how they have named the employee groups to keep track of who answers which types of calls [points at the board]. This is what it looks like.
>
> Interviewer: Ok. Is this changed on a daily basis?
>
> Employee: Yeah, well, this is tricky. I just noticed that we need to take [a call agent] out because he is actually ill, and there are others…who are not… [Another agent] is working on something different…and [a third agent]… This is all wrong – he has left for the day.
>
> Interviewer: No one is assigned to the 'unknown' category?
>
> Employee: Ok, now I will do something here [moves magnets with names around]. It seems they have set up the board using the standard plan, but this does not take vacations into account.
>
> Interviewer: Who uses this board? Do you all use it?
>
> Employee: No, not really, but that is because it is so cumbersome to set it up.

The value of the algorithm hinged on 1) the categorizations making it easier for employees to take a call, and 2) a match being made between a particular category of citizens and an employee with the relevant skills to deal with their problem. If this match was not made, little could be gained from the project. Despite these types of problems in the implementation phase, a great deal of praise and enthusiasm regarding the project could be heard in both management and employee communication in the same period. At weekly section meetings, managers presented statistics showing increased efficiency, and the meeting agendas had a fixed item asking for examples of how the algorithm supported employees in their work. One day, a team leader presented a graph showing that the average time of client calls was significantly reduced – the slide included the words 'loud applause'. However, when the team leader asked the employees to explain how they had begun to handle calls differently after the introduction of the algorithm, the employees did not think there were any connections between the increased efficiency, the algorithm, and the new communication strategies. Instead, they agreed that the previous week's increased efficiency was a result of an unusual number of calls about cases that did not belong to their Unit. The employees had simply quickly passed the calls onto another unit, and this had boosted the productivity numbers.

While some employees interpreted the statistics differently from management (according to them, the algorithm slowed their work down, not the opposite), many employees enthusiastically told us about how much easier their work had become, and how they felt more prepared to take the calls because the icons popped up on their screens beforehand. Employees contributed to denying the lack of an impact from the algorithm's classifications in different ways. One employee explained how the way he was matched with a particular citizen type meant that the calls were now much shorter. When we asked if it was his impression that the algorithm scored citizens correctly, he said 'yes' with emphasis and enthusiasm. Another said that it was his gut feeling that the algorithm was right most of the time, and yet another went into detail saying that whereas she got all types of calls before, she could feel a difference now that the more difficult calls went directly to other colleagues. As she explained: 'When I listen to

my colleagues I can hear that they work harder to clarify issues with the citizens'.

Managers and employees contributed to denying the implementation problems by interpreting the data and their phone contact with clients as proof of concept and as evidence that the project was going well. They used enthusiastic expressions about how 'mega cool' the project was, and how 'happy' they were to see the icons pop up on their screens. At one meeting, for instance, a manager celebrated the reduced client waiting times (on the phone) with comments such as 'these are almost North Korean numbers' (implying high discipline), 'this is mega cool' and 'something is working here'. In an interview, one employee said that it 'made her happy' to see an icon pop up on her screen. When we asked her why, she explained that she had been on the winning team that had decided on the format of the icons. Taking these statements together, managers seemed to interpret the algorithm project in terms of positive numbers, while employees relied on positive stories and symbols.

Denying dysfunctionality: Continuing the good work

When the algorithm was finally up and running, we observed that it did not function in the intended manner. In our observation notes, we registered whether the icon corresponded to the content of the call and how employees responded to those calls. As we observed a systematic lack of the expected correspondence between the icon and the content, we decided to analyze our observation notes quantitatively and offer management some systematized feedback on how the algorithm seemed to work in practice. In a meeting with management, we presented a quantitative analysis of more than 200 calls that highlighted different types of problems with the algorithm. For instance, often the algorithm simply failed to correctly classify the calls. In the conversations between callers and caseworkers, we would hear that the algorithm's classification rarely corresponded to the content of the call. Moreover, a large number of calls could not be classified according to the categories used – they were in an amorphous 'other' category.

Managers explained these design problems in two ways: by highlighting the complexity of the organizational context or by pointing to the complexity of citizens' situations. One manager explained:

> I just want to point out that you came into the organization at the most complex time you could imagine, especially now that we are implementing a new finance and accounting system that cuts across units in the organization. That is just a fact, because some of the things that have been mailed to citizens have had faults in them.

At the meeting, a manager added that the complexity of the algorithmic profiling project did not just stem from the new finance and accounting system, but also from the varied nature of citizens' problems. Hence, 'in the statistics you presented, we could see that [the algorithm] categorized most calls as 'unknown' [...]. It is extremely difficult to guess what people call about because of the enormous diversity of their questions'.

In another interview, the same manager explained the difficulties of having the algorithm correctly categorize citizens, and the manager acknowledged that the project team knew of the mismatch between the content of the calls and the classification made by the algorithm:

> We know that ourselves, because in the project group we also observed the calls and noted what they were about. At that point, we could see, "Hey, the project is a bit off in relation to the real world. It does not match reality at all".

When prompted to clarify this realization, the manager explained:

> Well, I think there was some kind of infatuation with the project and maybe that sometimes overshadowed reality. Maybe we became too far removed from reality. I am not sure if we should have changed the project...or if we should... When we do rethink it, we need to learn from it as a project team. We need to know more about the reality we are trying to change.

Later, in the same interview, the manager told us about a new idea – to apply for funding to develop a 'version 2.0' of the algorithm to extend its uses to other domains. When asked why the Unit would apply for additional funds, the manager explained:

> The idea is that if you can roll out the algorithm on more phone lines, it is going to generate value, especially because there will be a larger analysis or understanding of the citizens and the match groups. We have not bought that analysis, but we would like to see it.

Employees contributed to denying the dysfunctionality in various ways. One blamed herself for not being good enough at interacting with the algorithm. In a situation where an icon did not appear on the screen as it should have, this employee suggested that she had probably picked up the phone too quickly. A trainee who had been part of the project group had little faith in the project. He stated, 'you might ask, "Does it need to be that complex, is it necessary, or is it waste of money and resources?"'. At the end of the day, however, he took the algorithm as a *fait accompli* and chose to write his thesis on change management, arguing that the change of culture in the organization was more important than the implementation of technology. In addition to such explanations, employees often would ignore the categorizations and icons produced by the algorithm without questioning them and go on with their work as they were accustomed.

Thus, the dysfunctionality seemed to be denied by working around the algorithm and in the pursuit of new, similar projects. In this sense, a single malfunctioning algorithmic profiling project did not fundamentally challenge or alter the belief in the need to develop the organization through advanced digitalization projects.

Concluding discussion

Based on an ethnographic study, this paper aimed to examine how an organization managed to ignore a multitude of problems occurring during the development and implementation of an algorithmic profiling project. In addition, it analyzed how ignorance can be collectively achieved in an organization dominated by a digital-transformation imperative. Our analysis showed that actors ignored the malfunctioning of the algorithmic profiling project in three overall ways: by 'acting anyway', by 'finding positive signals' and by 'continuing their work'. These different ways of accomplishing ignorance were marked by optimism and a future orientation, and our analysis revealed numerous instances of positive tech determinism playing a

role in organizational strategies and investments, even when the technologies did not work in practice. There was talk about being first movers, carrying the mantle of leadership and daring to move forward, as well as expressions of excitement about and pride in a visionary project. Various visualizations supported the positive narrative of the hopes attached to the technology, while challenging and opposing narratives were interpreted as signs of being 'resistant to change'.

In contrast to accounts that explain organizational ignorance as strategic (McGoey, 2012a, 2012b), willful (Schaefer, 2018) or even deceitful, our study has shown that different forms of ignorance production can take place. Our findings have demonstrated how actors can become aware of fundamental problems from the very beginning of a project, and sometimes even discuss them among themselves or in interviews. However, they do not draw the implication that the project needs to be drastically revamped or stopped altogether. Moreover, even when they recognized problems in the fundamental design (e.g., very low predicative accuracy) or implementation (e.g., the icons do not appear, are ignored, or do not match the caller), they continued to treat the project as a great success. This resonates with the definition of denial – 'not an absence or distortion of actual perception, but rather a failure to fully appreciate the significance or implications of what is perceived' (Trunnell and Holt, 1974: 771). Fundamental uncertainties relating to technologies are bracketed through the means mentioned above. Even when actors acknowledge the non-functioning of the project – including the admission that they may be infatuated with the technology – they continue to look ahead and plan to extend the project.

The paper contributes to the literature on ignorance by presenting an alternative to the functionalist and intentionalist explanations that have highlighted strategic ignorance (e.g. McGoey, 2012a, 2012b, 2019), willful ignorance (Schaefer, 2018) or functional stupidity (Alvesson and Spicer, 2012). Instead of seeing ignorance as a solution to 'latent' organizational problems, such as creating group coherence or reducing unmanageable complexity, our analysis suggests that different actors actively contribute to the collective production of ignorance while applying various and inconsistent methods of denial. Our analysis does not identify a unified activity, but instead a pluralistic and distributed type of collective ignorance.

It is collective in the sense that almost all organizational actors contribute to it. However, they do not contribute to the collective ignorance in the same way or for the same purposes. Some ways of denying the problems are common (e.g., tech optimist attitudes, a focus on being future-oriented, the carrying on of daily work and problem-solving). Other methods are more diverse (e.g., blaming oneself for not reacting appropriately to the algorithm's categorizations, blaming others for not playing the game, interpreting data in conflicting ways). Non-human actors play a role as well, not only because the data and the software are at the heart of the fundamental problems, but also because the project encompasses new types of notifications, new visualizations of work, PowerPoint presentations, and so on.

Through a focus on the common and the diverse as well as the human and the non-human, we can analyze denial as plural and as achieved through different everyday practices, rather than through a collective future-orientation, a belief in technological progress, a unified belief-system or groupthink (Fox, 2019). Rather than an explanation based on underlying or overarching mechanisms, our STS orientation prompts analyses of everyday workarounds, activities, and explanations.

Our findings indicate that the digitalization imperative and strong tech optimism affect organizational dynamics by coloring actors' denial strategies. With the imminent threat being 'if you don't digitalize, you will die', they prefer to 'digitalize and deny'. The findings also illustrate how it is possible to sustain tech optimism by denying that the technology might be the problem. Challenging the technology seems to be out of the question for managers and employees alike, who instead resort to different explanations, blame themselves or others, or ascribe it to other contingencies. They never consider the possibility that the project should be discarded.

In some ways, our study seems to tell a story that contradicts those about 'competence traps' and organizational denial of the need for an organizational response to a changing technological environment, such as the stories of Kodak or Microsoft (Munir, 2005; Garud et al., 2002). In our case, tech optimism seems to prevent otherwise reflective actors from asking certain kinds of questions about the technological solution. However, our

point is not that a belief in technological solutions and progress is either inherently good or problematic. Instead, our claim is that whether problems are solvable or unsolvable is often unknown. Moreover, as whether a digitalization project will have a positive impact in practice is often an open question, we do not know in advance whether denial should be viewed as supportive or destructive for organizational development.

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