Revitalizing Organizational Memory through Hermeneutic Phenomenology: Interpreting Information System Change in Ontario's Child Protection Sector

Completed Research Paper

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Abstract

After a period of robust activity in the 1990s and early 2000s, organizational memory has become a marginal topic in the study of information systems. To revitalize this debate, this paper looks at organizational memory from a phenomenological perspective. Traditional approaches to organizational memory have relied on knowledge-focused cognitivist assumptions. In this paper, an additional form of organizational memory is proposed that is embodied in the referential holism of equipment, environment, and socialization, which underpin being-in-the-world. This kind of organizational memory is not already obvious, but is hidden in plain sight. Three examples from the implementation of a new centralized enterprise case management system in the Canadian province of Ontario illustrate this understanding. This paper contributes both a more nuanced account of the phenomenon of organizational memory, as well as a phenomenological hermeneutic method to enable the study of this non-obvious background memory that underpins meaningful action in the world.

Keywords: Organizational memory, hermeneutic phenomenology, public administration

Introduction

This paper introduces an expanded interpretation of organizational memory. It illustrates this interpretation through analysis of the introduction of a new enterprise case management system and its influence on organizational practices in a public child protection setting. An expanded interpretation of organizational memory is beneficial in the context of information system change because information systems do not just store information or embed particular logics, but they disrupt background experiences and understandings that make activities intelligible for differently situated actors.

Organizational memory has been traditionally understood from an information processing perspective as a repository of knowledge that can be brought to bear on present decisions (Simon 1973; Stein and Zwass 1995; Walsh and Ungson 1991). Another body of literature, extending the area of focus while maintaining some of the underlying assumptions, characterizes the phenomenon as having tacit and distributed characteristics as well (Ackerman and Halverson 2004; Bowker 2005; Tuomi 1999). However, both of these perspectives have a gap when it comes to understanding organizational memory without making reference to knowledge, thought, or cognition. This paper argues that organizational memory research has been limited by certain commitments at the ontology level to a widely held Cartesian dualist worldview (Dreyfus 1991), which leads to a focus on memory as information, thought, or knowledge. This has led existing studies to ignore any kind of memory that does not fit within this epistemological framework – though this memory

might be crucially important in understanding the full influence of information systems implementation in organizational settings. In particular, there has been little research on the less obvious manifestations of organizational memory in the holistic background phenomena that underpin meaningful activity in the world, and how this is influenced by technological change. This paper makes this less-obvious, or implicit, layer of the organizational memory phenomenon the focus of study and proposes a revised understanding of organizational memory based on what it uncovers.

To support this interpretation, this paper draws on three examples from a case study of the implementation of a new enterprise case management system in Ontario's child welfare sector. The case study is of the Child Protection Information Network, a centrally-driven project by the provincial government, which introduced a new information system into the case management practice of social workers and administrators in Children's Aid Societies. The three examples outline how the implementation of this information system faced challenges because of the implicit memory embedded in it and its neglect of the implicit memory of its users and their environment. With in-person observational data, combined with interviews and documentary analysis, a phenomenological study of organizational memory was conducted by analyzing the situated activities of users within and around the technology. Access to users' direct interactions with the information system and their peers in a workplace setting, combined with a hermeneutic phenomenological perspective, allowed for a novel approach to the study of organizational memory. This methodological approach revealed the plausibility of an interpretation of organizational memory as something other than information, knowledge, or a cognitive process, helped to answer the question about how organizational memory could be theoretically enriched to better support interpretations of the interplay of technology, system, and human work, and highlighted the applicability of this interpretation in resolving some issues with the traditional conceptualization of organizational memory in the study of information systems, particularly around the reconciliation of perspectives among different groups and what is stored inside and outside the information system (Jennex and Olfman 2004).

This paper contributes a phenomenological understanding of organizational memory to information systems scholarship. This differs from existing conceptualizations by focusing on the implicit relationships between technology and organizational memory, rather than on storage repositories and memory processes that are represented or representable in and around information systems. It is not just about administrative data elements and system rules, or classification systems, but the practical norms that give those things meaning for different groups. In looking at organizational memory under different modes of being, it provides a means of preserving the insights from the information and knowledge-focused perspective, while also shedding light on a non-dualist analysis in line with recent calls to engage with the 'being of IT' (Riemer and Johnston 2017). This revitalization of the idea of organizational memory has important practical implications for information systems scholarship and the understanding of memory in public sector organizations, specifically around issues of usability, the embedding of worldviews, and the broader, but less obvious, impacts of implicit memory on a setting.

In what follows, this paper presents: (1) the key literature on the current conceptions of organizational memory, (2) the theoretical foundation for an enriched interpretation of organizational memory that is offered by Heidegger's hermeneutic phenomenology, (3) the methodological approach and progression of the research analysis that led to this interpretation, (4) the three examples that illustrate features of this enriched interpretation, (5) a discussion of the benefits, implications, and insights of this expanded interpretation of organizational memory, and (6) key conclusions and opportunities for future research.

Literature Review

A phenomenological perspective on organizational memory sees memory not just as a foundation for knowledge in organizations, privileged in traditional perspectives on organizational memory, but also for what people are, what they do, and how they do it. Before delving into the phenomenological perspective, it is important to better understand the two existing knowledge and cognition-focused perspectives on organizational memory, both explicit and tacit.

Explicit Organizational Memory

In information systems, computer supported cooperative work, infrastructure studies, and institutionalism, there are two perspectives on organizational memory (explicit and tacit), but both of these operate with

similar underlying assumptions. On the one hand, there is a focus on explicit instantiations of organizational memory in information systems. It focuses on mechanisms for retention, typically in facts, rules, and structures that shape roles (Stein and Zwass 1995; Walsh and Ungson 1991), as well as processes involved in getting from collection to retrieval (Stein and Zwass 1995; Walsh and Ungson 1991). This perspective looks at memory that can be represented in a cognitivist, information processing kind of way, and privileges knowledge and intention.

Scholars within this tradition focus on information processing. Simon's information processing approach to organizational memory, holds that once we understand "the decision-making system and its data requirements" (1973, p. 271), it will be possible to determine what needs to be "indexed for rapid retrieval" (1973, p. 273), suggesting that decisions and actions are solely based on explicit information. Similarly, Stein and Zwass assume that memory can be represented within the content of an information system (1995), Walsh and Ungson take a symbolic information processing perspective (1991), Jennex and Olfman define organizational memory as structured and unstructured concepts and information (2004), and Croasdell et al. define organizational memory as information or knowledge from the past that can be brought to bear on present decisions (2003).

These perspectives are clearly focused on information, with the belief that there is a direct relationship between information and action. Many of these scholars discuss more abstract possibilities for organizational memory, but do not discuss them outside of the information processing perspective. This body of research has led to studies looking at the relationship between information technology, explicit organizational memory, and organizational effectiveness (Ashworth et al. 2004; Jain 2017).

Tacit Organizational Memory

On the other hand, there is a recognition that some aspects of organizational memory are tacit and are embedded in structures such as functional systems (Ackerman and Halverson 2004), socially shared stocks of meaning (Tuomi 1999), classification systems and standards (Bowker 2005), and institutions (Douglas 1986). While these studies focus on tacit manifestations of memory, they all adopt perspectives that root these tacit forms of memory in knowledge, cognition, and thought.

Scholars within this tradition focus on the conceptual role of structures in our cognitive states. Ackerman and Halverson adopt a distributed cognition theory perspective that looks at where cognition might be embedded in the functional systems within which the individual operates (Ackerman and Halverson 2004). Tuomi discusses tacit socially shared stocks of meaning, but focuses on data, information, and knowledge within conceptual worlds (1999). For Bowker, classification systems play a tacit role as structured tools for forgetting: while there is some discussion of practice and background worlds, the emphasis is still about producing knowledge in the context of thought-worlds (Bowker 1997). Finally, Douglas argues that institutions influence how we classify and recognize things in the process of decision-making (1986). These institutions are a kind of memory, but they are found "already in the minds of individuals as they try to decide" (Douglas 1986, p. 4). These scholars focus on more abstract tacit manifestations of organizational memory; however, the emphasis lands squarely on mind, thought, and intentional activity. This portrays a kind of subject-object dualism and treats memory as an object of knowledge.

Summary

While the types of memory might differ as to whether they are explicit facts or rules or if they are tacit structures that play a conceptual role in our cognitive mental states, both share important similarities, insofar as they both assume a subject-object dualism, are committed to knowledge, focus on individual intention, and have cognitivist assumptions (Alavi and Leidner 2001). However, when treating all organizational memory as knowledge that is either explicit or tacit, "things that cannot be described easily and well get ignored, and so receive an ever-decreasing amount of attention" (Bowker 2005, p. 141). Under a phenomenological perspective, some memories that are not conscious or cognitive, may nevertheless play an important role in what organizations are and what they do. This subtle distinction has caused confusion in the discussion of organizational memory in the public administration literature, leading to paradoxes about technological change, inertia, and forgetting (Pollitt 2000).

Theoretical Foundations

Unlike explicit and tacit understandings of knowledge and, in this case, memory, a phenomenological perspective "wants to show that we are not normally thematically conscious of our ongoing everyday activity, and that where thematic self-referential consciousness does arise, it presupposes a nonthematic, non-self-referential mode of awareness" (Dreyfus 1991, p. 58). This section introduces the idea of implicit memory as a separate form of memory and distinguishes it from its tacit cousin to help elucidate and resolve some ambiguities in the discussion about organizational memory. It draws on Dreyfus' interpretation of Heidegger (Dreyfus 1991). Dreyfus was influenced by Heidegger's thinking, having interviewed Heidegger in the 1950s and having produced an unauthorized translation of *Being and Time* that was used for teaching prior to the publication of the first English translation in 1962 (Mark Wrathall and Jeff Malpas 2000). Dreyfus also translates this influence into critiques of information technology (Dreyfus 1972, 1992, 2009). Through this interpretation, a Heideggerian phenomenological perspective offers a means to clarify the meaning of organizational memory in the context of information system change.

In order to make sense of implicit memory, this section first illustrates how the explicit and tacit forms of memory align with the prioritization of epistemology in the Cartesian tradition. It then describes Heidegger's move towards ontology by setting out different ways of being. It then elaborates what it means to be in the world under this phenomenological perspective. Finally, it describes the relationship of this philosophical perspective to organizational memory and illustrates the similarities and differences between explicit, tacit, and implicit memory.

Criticism of the Cartesian Model

In the Cartesian tradition, knowing is primary. However, under this view, "if one makes knowing basic, one is from the start locked into the intentionalistic picture of human beings as subjects with beliefs (justified and unjustified) about objects and states of affairs." (Dreyfus 1991, p. 49) The explicit and tacit memory perspectives both make knowing basic. So, under a phenomenological perspective, arguments about the relationship between subject and object are irrelevant because "neither practical activity nor contemplative knowing can be understood as a relation between a self-sufficient mind and an independent world" (Dreyfus 1991, p. 49). Phenomenology breaks with "the Cartesian tradition by substituting for *epistemological* questions concerning the relation of the knower and the known *ontological* questions concerning what sort of beings we are and how our being is bound up with the intelligibility of the world." (Dreyfus 1991, p. 3)

Ways of Being

The phenomenological perspective can address these ontological questions because it enables an analysis that can distinguish between explicit, tacit, and implicit forms of memory. Within this understanding of being, there are three key ontological ideas. There is the being of humans (existence) and there are two ways in which nonhuman entities can be ontologically understood: there is being during times of reflection (present-at-hand), which is consistent with Cartesian subject-object dualism and a focus on epistemology, and the being of a person's equipment during everyday activity (ready-to-hand) (Heidegger 1962). First, "[h]uman being is essentially simply self-interpreting." (Dreyfus 1991, p. 23). People are understood fundamentally not as a combination of mind and body undertaking intentional activities, but as entities that pursue particular identities through their everyday activities. The present-at-hand, reflective, way of engaging with the world is where people try to represent things in terms of traditional epistemology. This state of being typically emerges when something goes wrong with a piece of equipment or when a person steps back from the practical pursuit of their identity. This state is representative of the Cartesian subject-object dualism that underlies most approaches to the generation of knowledge (Dreyfus 1991), and is the perspective from which the mechanisms and processes of organizational memory have been traditionally understood (Stein and Zwass 1995; Walsh and Ungson 1991). There is also a ready-to-hand way of understanding the entities that individuals engage with as merely equipment towards their ends. Equipment is any instrument that a person uses to pursue their self-interpretation, but in such a way that this piece of equipment disappears from reflective scrutiny and becomes embedded in that pursuit. This ready-to-hand way of experiencing the world is neither intentional nor conscious, but flows from the background that underlies practice. Its focus is also not on knowledge, but on meaningful action. Fundamentally, being is "that on the basis of which beings are already understood" (Dreyfus 1991, p. xi).

Being-in-the-World

To understand the relationship of these ways of being, it is important to clarify the holistic idea of being-in-the-world. Human beings exist as part of a holistic interlinked background, or world, which is given its intelligibility by equipment, socialization, and environment. This world largely fades into the background and is not obvious. According to Heidegger, "[t]he world as already unveiled in advance is such that we do not in fact specifically occupy ourselves with it, or apprehend it, but instead it is so self-evident, so much a matter of course, that we are completely oblivious of it" (1982, p. 165). From a phenomenological perspective, the world is "an organized pattern of practices and equipment that forms the background on the basis of which all activity and thought makes sense" (Dreyfus 1991, p. 249). Within this context, people interpret their own beings (in subworlds) and carry out their everyday activities.

To make sense of everyday activities, Dreyfus presents the 'for'-structure, which is this "nonthematic, non-self-referential mode of awareness" (1991, p. 58), followed by a helpful example. First, "[e]quipment is essentially 'something-in-order-to'" (Heidegger 1962, p. 97). Dreyfus clarifies this statement, indicating that equipment is used for something, but it should not be seen as a single object, but instead as part of an 'equipmental whole', where the use of a piece of equipment only makes sense in the context of other equipment (e.g., a hammer and nail) (Dreyfus 1991, p. 62). Dreyfus goes on to explain that "besides the 'in-order-to' that assigns equipment to an equipmental whole, the use of equipment exhibits a 'where-in' (or practical context), a 'with-which' (or item of equipment), a 'towards-which' (or goal), and a 'for-the-sake-of-which' (or final point)" (Dreyfus 1991, p. 92). The example to illustrate this understanding is as follows: "I write on the blackboard *in* a classroom, *with* a piece of chalk, *in order to* draw a chart, as a step *towards* explaining Heidegger, *for the sake of* my being a good teacher" (Dreyfus 1991, p. 92). Here, goals and final points are not intentionalistic, but form part of a self-interpretation that orders activities and defines a being's involvement in the world. The key is that understanding a phenomenon is not a matter of identifying the totality of its features, but instead understanding its interrelationship with other things and with human involvement in the world. This interpretation suggests that one aspect of organizational memory should reside in the realm of the background phenomena that make up our shared world and that form the basis for the intelligibility of being and action in the world.

Connection to Organizational Memory

As an example of this non-reflective but intelligible activity, and the relationship to memory, a young toddler may learn to open the door, not through conscious instruction, but through involved observation and interaction with the existing meanings in the world. The toddler's parents may not provide any conceptual pedagogy about how to do this. They need not explain that one uses a handle to open a door. As Dreyfus describes, "[t]he child imitates not 'models' but other people's actions" (Dreyfus 1991, p. 17). The door handle is a piece of equipment that only makes sense in the context of other equipment (for example the door), an environment (for example, a home), and social norms (for example, those around protection from the elements, family, and property). The world that makes up this background plays a largely implicit role in what we are and how we act in the world. It should be considered a kind of memory. When looking at the implementation of a new information system, these types of background considerations should be expected to play a similar role in the memory subtending the actions of those who are implicated in its use.

These skilled everyday understandings are anticipated to be similarly present in the context of information systems change and represent a form of memory different in kind from explicit and tacit. Specifically, we would expect information system use to only make sense in the context of other equipment, the socialization of different groups, and the referential totality in the environment. The phenomenological perspective also allows for the analysis of explicit and tacit forms of organizational memory, insofar as they are understood as present-at-hand phenomena. This perspective does not abandon these concepts, but delineates their sphere of application.

Heidegger's idea of being-in-the-world, including equipment, socialization, and the environment can revitalize the discussions of organizational memory and provide an enriched understanding of the implications of information systems change on memory in organizational settings. Table 1 sets out some key aspects of implicit organizational memory and compares it to tacit and explicit forms.

	Explicit	Tacit	Implicit
Memory types	Facts and rules (data and code)	Structures (Functional systems, classifications, institutions)	Background (Equipment, socialization, environment)
Instantiation	Conscious	Automatic	Automatic
Focus	Knowledge	Knowledge	Meaningful action

Table 1: Comparison of Explicit, Tacit, and Implicit Forms of Memory

This perspective offers an improvement over current understandings of organizational memory by focusing attention away from memory as what we know towards what we are, what we do, and how we do things. Through this perspective, it is possible to study memory phenomena operating automatically in the background and uncover things that cannot be easily articulated, though they may nevertheless constitute important and stable forms of memory that influence action. Everything in this nexus of equipment, our socialization into involvement in the world, and the reference of things to each other in the environment, is memory. However, "the Background is as invisible to Intentionality as the eye which sees is invisible to itself" (Dreyfus 1991, p. 8), so it needs a particular method to enable its study.

Methodology

This section sets out the case context, ethical considerations, methods, and strategy before describing the analysis using a hermeneutic phenomenological approach. Together, these elements provide details about the progression of the research and the unfolding of the findings through iterative research and analysis.

Case Context

This study focused on the introduction of a centralized enterprise case management system in Ontario's child protection sector, called the Child Protection Information Network (CPIN). This information system was to be used at the front line in service provision by social workers, but also to generate administrative data for operational and strategic-level oversight and decision making both within the agencies and within government. This was to include the transfer of information between organizations.

At the time of the study, each province in Canada operated its own child protection system and digital transformation was pursued at the provincial level (CWRP 2019). In the province of Ontario there were 50 Children's Aid Societies (CAS) and Indigenous Child and Family Wellbeing Agencies that delivered child protection services (MCCSS 2020). These were independent not-for-profit organizations with their own boards of directors that delivered services within a specific region or to a specific population as regulated by provincial government (MCCSS 2020). In all other provinces, the provincial government delivered these services (Trocmé et al. 2019).

Prior to CPIN, each agency had its own independent information system that was customized to meet its local needs but these information systems were not connected. As a result, client records were not easily accessible between agencies. Previously, if another agency wanted records, because a family had moved or for a background check, they would need to contact other agencies in the province and ask them to search their records. Those records would later be faxed over. In the years leading up to the implementation of CPIN, the ministry had progressively expanded its control over the sector, first through funding, but increasingly through changes to standards for service delivery and subsequently through attempts to monitor compliance with the standards (Fallon et al. 2017; MCYS 2016a). The organizational memory demands of the ministry had been increasing for particular types of information and behaviour, specifically those related to compliance with administrative standards.

After a period of development starting in 2010, and led centrally by the provincial Ministry of Children and Youth Services (now the Ministry of Children, Community and Social Services) in partnership with its I&IT cluster, between 2014 and 2019, agencies were gradually transitioned in a series of groups from their legacy information systems to CPIN (OAGO 2017). The objective of CPIN was to enable data sharing between agencies across the province to support service-level decisions, simplify administrative processes, and

facilitate oversight through timely, accurate, and comparable service and expenditure data (MCYS 2016b; OAGO 2015). While the original implementation plan was developed internally within the Ministry without engaging sector stakeholders (OAGO 2015), during later development and implementation, users were engaged, user acceptance testing was completed, and training was provided and built into agency onboarding processes (Participants 5, 6, 7, and 8, personal communication, 25 September 2018; Participant 36, personal communication, 17 October 2019; Participant 39, personal communication, 4 November 2019). As of 2021, there were over 7,600 full-time equivalent staff in Ontario's child protection sector that have at least some interaction with CPIN (OACAS 2021), and 78 staff in the Ministry that worked with CPIN or related information technology (IT) in the child protection sector (Government of Ontario 2021).

Methods

Three key methods were selected to support this research: document analysis, interview, and observation. These methods were selected to support an abductive approach by enabling surprising findings to emerge and be pursued over the course of the research (Timmermans and Tavory 2012). Document analysis played both a practical role, identifying potential participants and establishing research boundaries (Brinkmann and Kvale 2015; Hine et al. 2009; Winter et al. 2014), and an analytical role, as documents carry different meanings depending on their source. They could be understood both on the representational level (what they were about), but also on a phenomenological level (what they tell us about the identities, experiences, values, and interpretations of those who created them) (Foucault 1991; Karppinen and Moe 2012; Laffey and Weldes 2004). Interview was used to elicit worker perceptions and descriptions of their experiences (Brinkmann and Kvale 2015). While interview data was anticipated to include some issues of reliability (Berry 2002), the inclusion of different data sources, such as observation and documents, enabled the identification of discrepancies and helped to make sense of them as the research progressed (Fitzgerald and Dopson 2009; Lincoln and Guba 1985). As the research unfolded, it was possible to ask interviewees to reflect on their practices and a preliminary set of researcher analyses, as generated from the preceding interviews and observations, to elicit participant feedback and reflexivity (Riach 2009). Observation contributed to a deep understanding of how this case management system integrated, or failed to integrate, into the everyday work practices of staff. Observation sessions were based on an adaptation of the walkthrough or go-along techniques (Jørgensen 2016; Light et al. 2018), where the duration of the observational sessions was around an hour, which provided sufficient time for some workers to become comfortable with my presence. Further, during some observation sessions, work came in that needed to be actioned immediately, this often immersed the worker in their task and offered a more authentic view of the work they needed to do. Where work may have been more staged, workers were asked to describe their frustrations and provide examples. These short walkthroughs of particular issues could be corroborated against the experiences of other workers observed, as well as official documentation, to identify system issues as opposed to user issues and tease out where some activities might have been adopted to keep up appearances. Observation, when combined with the other methods, also helped to reveal background organizational memory phenomena, such as equipment dysphoria and subtle influences on socialization stemming from the embedded values in technological systems.

Using these methods, the research began abductively with a focus on the influence of information technology change on the explicit mechanisms of memory storage in organizational settings. Existing theories of organizational memory retention were used to inform the initial research questions and code book (Timmermans and Tavory 2012). After the first few interviews, it became apparent from participant responses that the processes of organizational memory, from acquisition, through storage, to retrieval, as well as the more tacit mechanisms of memory storage were also going to be important in understanding the phenomenon. As a result, overall research questions, interview and observation questions, as well as potential codes in the codebook were adjusted to incorporate these changes. However, this led to intermediate analysis that remained somewhat limited by its knowledge focus (Vogl 2020a). Despite these changes and the progression of the research, it became apparent through some responses and the observational fieldwork that participants were unable to articulate or fully grasp some of the phenomena that were leading to issues in the rollout of the information system. Further, the concepts from the existing research and theoretical contributions about organizational memory storage and the process of organizational remembering, were unable to help explain why certain practices persisted, shaping how things were done, and some of the limitations that were found in the system, despite it having followed a relatively textbook process of development and implementation. While there was a gradual focusing of data

collection, findings from preliminary analysis of the data suggested that some underlying assumptions might need to be adjusted and that a revised approach to data analysis might need to be undertaken to help make sense of anomalous findings.

Interviews and observations were conducted between July 2018 and September 2020. Semi-structured interviews and observation sessions were recorded and transcribed. Over the course of the research, 57 participants were interviewed and observed, either individually or in focus groups, in 58 distinct recording sessions of which 25 were interviews, 6 were interviews with observation, 18 were observation, and 9 were focus groups. Of these sessions, 37 were initial, 19 were follow-up, and 2 were a second follow-up. There were also over 70 separate observational sessions that occurred without audio recordings. Fieldnotes were completed immediately after interactions. Where possible, screenshots of key elements of software applications were taken to capture key features of worker experiences during the audio recordings. Where screenshots could not be taken because of the presence of personally identifiable client information, screenshots of dummy data (from training guidebooks or virtual training environments) were used. In addition to publicly available documents, such as inquests, auditor general reports, policies, legislation, and administrative documents, some participants shared internal documents related to the topics under study. These three methods, as part of the research process, enabled a deep study and helped to create a picture of the various impacts of CPIN on organizational memory in this environment.

Sampling Strategy

The sampling strategy for both interviews and observation was purposive. It targeted individuals identified during both document analysis and preliminary access discussions based on their organization, their region, and whether they were involved in delivery, administration, or decision-making. This approach was taken in order to ensure that participants were interviewed in the positions necessary to achieve the purpose of the study (Brinkmann and Kvale 2015). In this case, this sampling strategy was to ensure that it would be possible to study the influence of CPIN on organizational memory for different groups (i.e., service delivery, administration, strategic decision making) while also ensuring a sufficient diversity of participants to corroborate or disconfirm findings.

In all, 57 respondents were interviewed and/or observed across 10 out of 50 Children's Aid Societies (CASs) and Indigenous Child and Family Well-Being Agencies in Ontario, the Ontario Association for Children's Aid Societies, the Ontario Ministry of Children, Community, and Social Services, information system providers, consultants, and researchers. The breakdown of participants by position is 21 front-line social workers, 4 front-line supervisors, 21 operational staff (including quality assurance, information technology, system trainers), and 3 executive directors from CASs, as well as 8 individuals from other organizations in the sector. In-depth fieldwork occurred in two different children's aid societies at two distinct periods of time. The early stages of the research involved multiple sessions of interview and observation. The middle stages were similar to the early stages, but included modified questions and follow-up research with some participants. Late stages of the research included targeted research on specific topics.

During recruitment, agencies would sometimes select participants. If these workers were in some way not representative, then this may have introduced biases into the findings. This orchestration by the agency could have resulted in the selection of top performing or loyal staff and could have resulted in biased information about the performance of the system or could have been politically motivated and designed to generate data that could be leveraged in discussions with the ministry. For participants who were not selected by the agencies, there may still be self-selection biases, where those who volunteered had different characteristics than those who did not. The decisions to carry out research in more than one agency and to find participants both with the assistance of agencies and through alternative voluntary calls were expected to mitigate some of these limitations. The diversity within the group of participants, in terms of background, length of tenure, and technological proficiency, provided some confidence that the participants represented the right mix to support research into technological change and organizational memory.

Research Ethics

The main focus of the research was on public servants and their interaction with new IT, so standard ethical procedures were followed, for example related to informed consent and confidentiality, set out in the principles and guidelines for research involving humans of organizations including the Social Sciences and

Humanities Research Council of Canada, the Social Research Association, the American Political Science Association, the British Sociological Association, the Academy of Management, and the Association of Internet Researchers. However, given the sensitive nature of the data that these staff were working with, additional measures were taken including foregoing the use of cloud-based services for data collection and processing, signing of non-disclosure agreements with agencies where the personal information of vulnerable children or their carers might be inadvertently disclosed during audio recordings, and removing identifying data about non-consenting individuals (including vulnerable children and their carers) from audio recordings and transcripts. While standards for reporting align with common practice, for example by ensuring the anonymity of participants and some organizations in publications, unlike in standard research projects where identifiable data is destroyed, the informed consent for this research allowed for archiving the data such that future researchers could contact participants for follow-up research. Data will be stored in official archives, such as the UK Data Archive or an archive under the oversight of the Canadian Association of Research Libraries. Archiving will be governed by a research data management plan that will preserve the conditions set out in the original consent (e.g., anonymous reporting) and any specific conditions requested by the participants as part of their consent.

Approach to Analysis

Once data were collected, they were uploaded into NVivo 11 for analysis. Preliminary analysis followed a codebook based on existing theory about explicit forms of organizational memory storage (Walsh and Ungson 1991), as well as theoretical foundations for the study of IT in organizations (Vogl 2020b). The preliminary analysis revealed limitations in this initial categorization choice. As a result, questions were revised and the codebook expanded to include theoretical concepts related to the process of remembering and tacit forms of memory in organizations. As this data was analyzed, the codebook was revised to accommodate emergent themes and concepts that could not be easily categorized under those drawn from the literature (Saldaña 2012). This analysis suggested that some of the fundamental assumptions underlying the study of organizational memory could benefit from revision. An exploration of philosophical ideas outside of those typically adopted in the study of organizational memory was undertaken to try and shed light on discrepant findings and better describe the phenomena. This is why hermeneutic phenomenology was adopted for the latter stage of the analysis.

The latter stage analysis involved a phenomenological hermeneutic circle approach. The reason for this was to explore whether a focus on being-in-the-world and the ready-to-hand could help to reveal a largely hidden background and its relationship to organizational memory. As Dreyfus has suggested, "what phenomenology deals with must be something that is not already obvious" (Dreyfus 1991, p. 32). In order to understand this non-obvious background, phenomenology proposes a hermeneutic method that "is an alternative to the tradition of critical reflection in that it seeks to point out and describe our understanding of being from within that understanding without attempting to make our grasp of entities theoretically clear" (Dreyfus 1991, p. 4). This method is hermeneutic because one "can only point out the background practices and how they work to people who already share them", and further, one "cannot spell out these practices in so definite and context-free a way that they could be communicated to any rational being or represented in a computer. In Heidegger's terms, this means that one must always do hermeneutics from within a hermeneutic circle" (Dreyfus 1991, p. 4). Unlike the traditional hermeneutic circle,

> *the phenomenological-hermeneutic circle involves a stronger methodological claim: (1) Since we must begin our analysis from within the practices we seek to interpret, our choice of phenomena to interpret is already guided by our traditional understanding of being. (2) Since it deals with what is difficult to notice, this traditional understanding may well have passed over what is crucial, so we cannot take the traditional interpretation at face value. (3) Thus we must be prepared to revise radically the traditional account of objects, subjects, language, space, truth, reality, time, and so on, on the basis of the phenomena revealed by our interpretation. (Dreyfus 1991, p. 36)*

This perspective allowed for two important activities in the research. First, it provided a means to both build on the traditional conceptual approach to organizational memory by means of the epistemological pluralism available through the present-at-hand, and explore a more phenomenological understanding of what forms the background of everyday practices. Second, by incorporating the organizational memory role of this

background, there is a way to better understand a) epistemological pluralism among different groups, b) how different backgrounds may lead groups to have different interpretations and potential conflicts where these worlds overlap, and c) why certain equipment may not fit into the practices of these groups. According to Dreyfus, "phenomenology becomes a way of letting something shared that can never be totally articulated and for which there can be no indubitable evidence show itself" (Dreyfus 1991, p. 30). The hermeneutic approach, rather than requiring the collection of new data, was based on a second analysis of the same data under different assumptions. It enabled a meaningful re-interpretation of the existing data.

Findings

This section provides examples from the fieldwork to illustrate how explicit, tacit, and implicit memory phenomena manifest. The examples include (1) an older worker requesting assistance from a younger worker to create an educational shell (a digital repository attached to a person's file where education-related attachments can be uploaded), (2) worker responses to the monitoring of compliance with standards, and (3) administrative staff responses to their reporting interface. These examples are related to equipment, socialization, and the environment, but show how these are holistically interlinked.

Example 1: Record Keeping and Equipment

This example involves the creation of an 'educational shell' in CPIN, where a child's educational information and attachments could be uploaded. This example suggests that information systems embed contemporary understandings of what constitutes relevant information and best practices in information system design, but that this may not align with the background understandings and experiences of some staff, even in contexts where they have persistent access to staff training and support. This example involves an interaction between an older worker nearing retirement (participant 18), the case management system, and a younger worker (I did not have the younger worker's consent for recording, so only a description of the interaction is provided from my fieldnotes). In dialogue, I am abbreviated to TV and the older worker is abbreviated to P18. Excerpts from this single extended example are presented as quotes and are followed by descriptions stating their relevance.

> *P18: I have to do an educational shell for one of the children. [mouse clicking, typing] … I don't know if this is interesting for you, but, to show you how complicated this could be when you don't have the ability, or when you don't do this [frequently]. 'Educational shell needed'. (Participant 18, personal communication, 31 October 2018)*

This excerpt shows that complicated rules embedded in CPIN challenged the memories of some workers when they were trying to complete their recording, illustrating the interplay that can exist in the cognitive mechanisms of memory storage.

> *TV: So, what is an educational shell?*
>
> *P18: Please see below [throws pen on desk]. … I don't know. … [mouse clicking]. (Participant 18, personal communication, 31 October 2018)*

This excerpt shows how this worker expressed frustration with the information system, throwing the pen on the desk, a physical expression indicating that this information system did not feel like a familiar piece of equipment and that the interaction was present-at-hand.

> *TV: So, is this a space where a specific type of document can be uploaded?*
>
> *P18: Yes, yes. You have to have it first. Ah, yeah, yeah, yeah, I know it. Now I know.*
>
> *TV: And it's not in-built to the system?*
>
> *P18: No.*
>
> *TV: The space doesn't exist. You have to make it?*

> *P18: You have to create it. Yeah. And I, yeah. … [picks up the pen and starts writing on a notepad]*
>
> *TV: What information are you taking down now?*
>
> *P18: The names. The names of the children.*
>
> *TV: Because you have to do a search for them later?*
>
> *P18: Because I need to know the name of the child that I am going to do the educational shell [for].*
>
> *TV: Okay. Because you can't access that information once you're in the interface trying to do it?*
>
> *P18: No, no. (Participant 18, personal communication, 31 October 2018)*

This excerpt illustrates how while the information system can create periods of disruption, workers can recall experiential elements of the task and fall into everyday practice using ready-to-hand equipment. On a phenomenological level, the notepad was the clearest piece of equipment for this worker. The notepad was an invisible and familiar tool that this worker used to complete everyday tasks, which, in this practical context, involved taking down names to be able to more easily navigate to the relevant fields in the information system. With familiar tools for remembering things, the worker and their equipment become one in practice. In this case, the worker and the notepad become one in order to gather the information needed to complete the educational shell.

When the older worker was unable to make further progress, they walked over to another cubicle and invited a younger coworker to help create the educational shell. They walked back together, the older worker sitting back down, and the younger worker leaning over from behind to take the mouse and navigate to the appropriate location in the interface. The younger worker talked through this activity, explaining how to do it. There is an education section under the background tab of the person file. In that section, an entry for the school needs to be created, then it is possible to upload education related attachments. Without this entry, workers may erroneously upload education documents to the 'general' attachments tab, where they could be missed during subsequent searches because they are not in the location where you would expect to find them. While the younger worker was inputting information, everything was lower case. To complete the shell, the younger worker looked up the school address using Google, switching between web browser and CPIN interface. Once the shell was created, the coworker left (Fieldnotes, 31 October 2018).

While the educational shell had been created, there were still some school details that needed to be filled out. My participant tried to create a new tab in the web browser, as the coworker had done, but could not remember how to do so and ended up asking me (Participant 18, personal communication, 31 October 2018). Web browsing and Google searching seemed to have equipmental status for the younger worker, but not for the older one.

In terms of explicit memory, this example illustrates how CPIN embedded rules about how to record and how, within that system of rules, case related information could be stored. While there were rules for collecting data, they could be ignored, and this could negatively impact the ability to retrieve information at a later date (Vogl 2020c). However, this did not explain why system logic and worker logic might not align. In terms of tacit memory, this example also illustrates ideas about distributed cognition and social stores of knowledge, insofar as knowledge about how to use the system (expertise in system use) existed in one of my participant's co-workers. The worker who was invited over to help was younger and only had experience working in CPIN. This person had facility working not only in the information system interface, but also online, when searching for school information. These two workers represent individuals whose backgrounds, though both from social work, show differences relative to familiarity with equipment, but also potential differences relative to socialization into the goals and final points of the social work profession, with the older worker showing resistance to the new information system and its logic, while the younger worker took that logic for granted in the conduct of everyday work.

Finally, from a phenomenological perspective, observation of practical activity revealed that the worker took notes *in* their office *with* a pen and notepad (defaulting to familiar equipment) *in order to* gather relevant information needed to create an educational shell as a step *towards* completing case recording *for the sake of* being a good social worker. However, during the course of this work, while the notepad was a familiar piece of equipment that vanished in the task, the CPIN interface disrupted the flow of this worker's practice, requiring problem solving with the assistance of a younger worker, who was able to more or less achieve practical flow within and around the interface. When a new piece of equipment, such as an information system, is introduced, the failure of that equipment to disappear into the background of everyday activity may simply indicate that something about that equipment does not fit into a worker's 'for' structure. This interaction between an older and a younger worker also suggests that the memory embedded in professional socialization has changed over time, influencing worker familiarity with IT, the extent to which IT represents their equipment, and the part that IT plays in shaping expectations about what it means to be a social worker, but socialization change will be discussed in greater detail in the next example.

Example 2: Compliance and Socialization

This next example shows how the introduction of transparent compliance metrics shifts worker focus towards data outcomes and creates a new competing form of socialization. It shows how information systems can embed worldviews based on socialization, but that this can lead to incompatibilities and conflicts with worldviews that were not embedded. In this case, there was a conflict between administrative and social work worldviews. This example includes some historical context setting provided by a participant during a focus group interview, an interaction surrounding a new business intelligence tool from the observational fieldwork, and worker perceptions of the practical implications of this tool from another focus group interview.

Workers noticed changes in the various information systems used for case management over time. One supervisor stressed how changes in rules, either within or surrounding various information systems, impacted front-line social work and the balance between narrative and administrative memory, comparing three different information systems that had been in the organization over the years. The first, "was narrative in terms of the strengths and needs of the family, the child, and so forth. So, it was very user friendly" (Participant 15, personal communication, 25 October 2018). Narrative records were crucial pieces of equipment that social workers relied on to support service delivery. A system that aligned with the memory requirements of the social work role was perceived to be user friendly. The second information system "was very complicated and … it required a lot of assessment … it captured all of the risk factors … It was very comprehensive, but it was very detailed, right. And, as a result, workers' recordings were never done" (Participant 15, personal communication, 25 October 2018). A front-line worker who was present interjected, "Was the system, not me, was the system" (Participant 18, personal communication, 25 October 2018), which made the other front-line workers in the room laugh. Administrative rules and procedures became elements of the second information system, but they were largely ignored. But there was a specific change with the introduction of CPIN. The supervisor said that with CPIN, "there is a focus on that administrative component to get the recording done, so that it's in there because now it's very public, everyone sees and you just almost compete with each other in terms of … compliance, right. How compliant is one children's aid versus another" (Participant 15, personal communication, 25 October 2018). According to this supervisor, narrative was primary in an older information system, but systems have become increasingly informational, compliance driven, and competitive over time.

After attending the demo of a business intelligence tool that highlighted a worker's caseload and important milestone deadlines, a worker came in and asked about a non-compliant file (fieldnotes, 25 September 2018). They were worried by the fact that it was not green (or compliant), because they wanted to be a 'green' worker (fieldnotes, 25 September 2018). This worker was specifically wondering how to get the late file out of the system (fieldnotes, 25 September 2018). They had done the work, but it was showing late because they did not correctly complete the recording. Recording mistakes were common, as data entry had to be done in a very particular way, there were many ways that workers could make mistakes, and CPIN did not automatically flag those mistakes to workers. This was one of the reasons why data for oversight at the ministry level was not readily available (OAGO 2015). The demo presenter went to assist this worker, but when they returned, they indicated that they were worried that this worker would do certain tasks to satisfy the system rather than doing those tasks to provide a good service to the client (fieldnotes, 25 September 2018). Besides mistakes, workers were also finding ways to avoid non-compliance in the system through

administrative exceptions, such as approved departures, which allowed for divergences from standard timelines for the completion of tasks (Participant 2, personal communication, 6 September 2018). With staff having both access to the monitoring tool and awareness that their performance was transparent, there was an increasing focus on compliance and away from professional expertise.

One worker provided a comparison between their experience of service provision before the introduction of CPIN and performance monitoring after, indicating that there had been a shift from 'social work outcomes' to 'data outcomes' (Participant 21, personal communication, 20 November 2018). This suggests at least two ways of interpreting the being, towards-which, and for-the-sake-of-which of a social work professional: clinical professional or compliant administrator. The worker went on to describe their experience of the performance monitoring component of the information system, stating that "CPIN adds the notion that you're being tracked … I know colleagues in other branches that can say, 'oh, my supervisor talked to me about my stats this month', right. Whoa! Not your recording, they came to you about your stats" (Participant 21, personal communication, 20 November 2018). Another worker interjected saying that it's not about "the relationships that you're building or that you're fostering or that you're supporting, it's about numbers (Participant 20, personal communication, 20 November 2018). CPIN's reduction of social work to administrative compliance impacted what data was prioritized and thus what memory was privileged. Overall, social workers felt as if their job was more about satisfying recording requirements than doing social work.

In terms of explicit memory, all data could be stored, but the ease with which it could be collected and retrieved depended on whether it was for administrative or social work purposes. In terms of tacit memory, privileged categorizations and standards in the functional system were shifting towards administrative compliance. In terms of implicit memory, the combination of privileged rules, information system rigidity, and increased transparency around compliance, was shifting the way that child protection workers self-interpreted, and while there was some resistance, the affordances of the equipment may have influenced socialization towards being 'green' workers, especially for those workers who more seamlessly integrated into the logic of the information system, such as the younger worker in the previous example.

Example 3: Information System and the Environment

This example looks at the agency-level operational administrator perspective and the analysis that was possible in the information environment. It shows how information systems can create a new environment within the existing environment. It first looks at what information was privileged. A quality assurance worker presented a distinction between case notes, which were rich in information, but difficult to retrieve from CPIN, and the structured data fields such as check boxes and drop-down menus that were simple to retrieve, but that did not provide much context. The worker explained: "the contact logs [case notes], for example, they can have really rich narrative, but it's not something easily accessible … it's not even accessible for downloading … and doing a content analysis … So, then you're beholden to just dates [striking the desk], really dates [striking the desk again], and ticky tacky, tick boxes, and that can only get you really so far, if you're really trying to understand the work" (Participant 2, personal communication, 18 August 2018). Information related to compliance and performance were easier to retrieve than the narrative content of the records. This worker went on to describe the limitations associated with this imbalance "CPIN is … meant to measure whether something has been entered or not … [However,] if you're really wanting to know whether something's working or not, or what somebody's doing or not, probably the worst thing you can do is just measure whether you see something entered or not, because you don't know the quality of that, or what's been done" (Participant 2, personal communication, 18 August 2018). While the emphasis in these passages was on knowledge and in particular the imbalance between the knowledge needed to meet the managerial demand for compliance metrics and the knowledge needed to understand service quality, it reveals how the norms and values associated with different groups can come into conflict when a new piece of equipment, which privileges the values of one group, is introduced into a shared environment.

The quality assurance worker also explained that some types of work that the agency carried out did not have structured fields in CPIN to easily capture those activities, typically in cases where those activities were not part of standard administrative reporting. As a result, when trying to search and retrieve certain pieces of information about service types that were not included, "it'd be like finding a needle in a haystack to try to identify this [information] unless there was a protocol for how you document that type of interaction, which, you know, there is none of that. So, what ends up happening is that … if that becomes a big chunk of

your work, this kind of ad hoc, type of work, how do you measure it? Well, then you've got to put something in place to do that, and you can't use CPIN to do that … there's the hurdles [to] doing it that are probably not worth it if you can do it somewhere else … in a more efficient way" (Participant 2, personal communication, 18 August 2018). A misunderstanding of the world in which social workers provide services meant that certain types of information related to direct service provision, but not required by regulation or standard, could not be collected in the system, and so social workers and agency administrators needed to find ways to document this information outside the system. In this context, CPIN as an environment for relevant social work information was seen as inadequate. On an explicit level, this meant that CPIN was not the repository for all agency-level information, on a tacit level, this meant that some sectoral requirements were secondary to government administration requirements, but on an implicit level, the CPIN environment did not align with the agency's unique work environment.

Discussion

When these examples of memory in equipment, socialization, and the environment are taken holistically, the relationships between information systems and organizational memory goes well beyond the content of memory held explicitly in records, rules, and processes, or the tacit standards, categories, and functional systems that shape thought, and suggests that the conditions of the worlds that different groups inhabit set a foundation of memory that influences being, action, and knowledge in a non-conscious, non-obvious way. In the absence of an analysis of this background, any attempt to develop and implement an information system to support organizational memory could prove inadequate. On a practical level, these findings suggest that there is a need for more observation of situated practice prior to and during implementation, improved understanding of the background worlds of different stakeholders, and greater attention to the values embedded in information systems and their long-term implications for oversight, service quality, and outcomes.

These examples also show how individuals can be consciously aware of issues, but at the same time unaware of the specific aspects that make them unsettled. For example: equipment may have limitations that prevent it from remaining ready-to-hand and that continuously make it present; subtle changes to socialization may misalign with what workers understand themselves to be; the workplace environment may misalign with the administrative recording environment embedded in an information system; and, most importantly, the interconnections between these things may combine to generate a general sense of unease about what is going on in the background. This cannot necessarily be identified by asking workers to describe issues or needs with new information systems, but only through direct observation of their situated use in practice. This suggests the value of exploring a holistic interpretation of memory in the background during periods of information systems development.

Finally, as intimated in the example with the younger worker, as the workforce changes and the system is enhanced, CPIN may become an invisible piece of equipment. However, it may lead to administrative compliance becoming the norm, with limited capacity to understand the outcomes for vulnerable children and their families, instead focusing on whether they received services within prescribed timelines. It is unclear if timely completion of tasks is a sufficient proxy for service quality or desired outcomes for clients. This suggests that learning from an hermeneutic phenomenological approach can help information system developers to avoid taking traditional interpretations of their use and function at face value and interrogate how the background worlds of different actors may influence and inform what is remembered.

The interrelationships between these implicit phenomena, and the way they embed memory in the background, means that the introduction of a new piece of equipment is already inflected by that holistic background and, when put into use, has a ripple effect across everything that makes up that referential whole. This paper has been an attempt to shed light on these latent forms of memory, suggest a method to carry out this clarifying work, and, in so doing, revitalize the study of organizational memory.

Conclusion

This study suggests that there are forms of organizational memory that make up the background of our everyday activity and that these can accompany information systems change. Despite efforts to engage sector stakeholders through development and implementation, and provide training and maintenance, CPIN had unanticipated impacts on memory in workplace activity. As Dreyfus says, "New technological and

social developments are constantly changing specific ways for Dasein to be" (Dreyfus 1991, p. 161). The contribution that this paper makes is a phenomenological interpretation of organizational memory. This interpretation improves our ability to understand how the holistic background of equipment, socialization, and environment animates the possibilities for information systems and, in turn, how a new information system may change the possible ways of being in the world it enters. Under this interpretation, it is only possible to make sense of implicit organizational memory phenomena holistically.

Hermeneutic phenomenology offers a means to get at the holistic background world that is the foundation for meaningful action. Through the methodological contribution of a hermeneutic approach, this paper offers a means to deepen our understanding of organizational memory and overcome some of the challenges encountered when treating organizational memory as a purely cognitive phenomenon. Future research could delve into this phenomenon in greater detail, in other sectors or application areas, or by clarifying the interrelationships between present-at-hand and ready-to-hand instantiations of organizational memory when organizations bring information and experience from the past to bear on present decisions and actions.

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