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Talking about machines: discursive sensemaking and workplace learning in the age of AI

Martin Viktorelius [a] and Simon Larsson [b]

[a]Department of Education, Halmstad University, Halmstad, Sweden; [b]Centre for Multidisciplinary Research on Religion and Society (CRS), University of Uppsala, Uppsala, Sweden

ABSTRACT

The diffusion of artificial intelligence (AI) into organisational settings presents new challenges for professional learning. Unlike earlier technologies, machine-learning systems are characterised by opacity, adaptability, and indeterminate outputs, which complicates how professionals understand, trust, and integrate them into practice. While research on workplace learning has examined digital tools as mediators of knowledge acquisition, less attention has been paid to how professionals discursively negotiate the meaning of AI itself. This article examines sensemaking during the development and attempted implementation of an AI tool for maritime operations. Based on an ethnographic study of a two-year innovation project involving developers, data scientists, captains, and shore managers, the analysis focuses on interactional episodes of dialogue and negotiation. The study shows how developers' sensegiving, often framed through metaphors of improved vision and prediction, clashed with maritime professionals' counter-narratives grounded in pragmatic routines, institutional constraints, and conceptions of competence. These discursive tensions limited the possibility of collaborative learning and hindered adoption. By conceptualising sensemaking as a situated discursive accomplishment embedded in sociomaterial practice, the article contributes to research on workplace learning and technology by advancing a contextual model of inter-professional sensemaking that illuminates the conditions under which emerging technologies are integrated, reinterpreted, or resisted.

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Introduction

The discourse on the digitalisation of work has recently refocused on the consequences of introducing emerging technologies, such as artificial intelligence (AI), in organisations, including their implications for professionals' knowledge and learning (Beane 2024; Edwards and Fenwick 2015; Pakarinen and Huising 2023). The proliferation of AI systems that build on machine-learning algorithms and rely on large datasets to generate

CONTACT Martin Viktorelius martin.viktorelius@hh.se Department of Education, Halmstad University, Box 823, Halmstad 301 18, Sweden

classifications or dynamic predictions creates increasing challenges for professionals to make sense of technologies and learn how, or whether, to use them (Faraj, Pachidi, and Sayegh 2018). Unlike earlier technologies, machine-learning systems are characterised by features such as 'constant change, invisibility, and inscrutability' (Anthony, Bechky, and Fayard 2023, 3). They are inherently adaptable, meaning their functioning and output are not determined by a stable inner structure but change depending on the data and methods used to train them. The vast applicability and rapid development of AI technologies, along with their uncertain accuracy, opacity, and indeterminable outputs (Lebovitz, Lifshitz-Assaf, and Levina 2022), make it difficult to plan, prepare for, and predict the situated sensemaking and learning required during their implementation and use.

Since the trustworthiness, adequacy, relevance, and risks of AI are determined by the architecture, design, and data on which it has been trained – that is, by its context of application – professional learning in relation to AI cannot be based on general theory or reified concepts alone but must be elicited in practice (Reich, Rooney, and Boud 2015). While formal education can create foundations for integrating professional and artificial knowing, the heterogeneity of AI challenges traditional educational approaches and requires continuous sensemaking and learning at work (Fenwick and Nerland 2014; Gherardi 2006; Hager, Lee, and Reich 2012; Littlejohn and Margaryan 2014). Nor does traditional workplace learning, which primarily aims at socialisation and reproduction of established knowledge (Malloch, Evans, and Cairns 2010), always adequately address technologies that question the status quo (Lehtinen, Hakkarainen, and Palonen 2014).

Workplaces are thus becoming increasingly important as sites where professionals create new knowledge, learn, and make sense of how to deploy and cope with innovations tailored to specific work domains. Interaction and knowledge sharing – or 'knotworking' as Engeström (2008) calls it – between developers (AI experts, developers, data scientists) and practitioners are growing sources of workplace learning and integration of AI into practices of knowing (van den Broek, Sergeeva, and Huysman 2021; van Krimpen and van der Voort 2025; Waardenburg and Huysman 2022).

Despite the growing number of studies on AI at work (see next section), research explicitly investigating how practitioners and AI developers collaborate to learn and make sense of AI remains scarce. Workplace and continuing professional learning scholarship has not yet sufficiently examined sensemaking related to AI development and implementation in organisational settings. Current studies focus mainly on learning mediated by digital technology (learning through AI) (Callari and Puppione 2025; de Laat, Joksimovic, and Ifenthaler 2020; Holmes and Littlejohn 2024), but less on how professionals make sense of emerging technologies designed for their work (learning of AI). This constitutes a major research gap because, as we argue, discursive sensemaking plays an important role in shaping the trajectory of learning mediated by digital technology (Engström et al. 2024). Hence, studies are needed that investigate sensemaking during actual instances of AI development, implementation, and use (Waardenburg and Huysman 2022).

In this study, we investigated the interaction between professionals and developers during a collaborative project that aimed to develop and deploy an AI tool to support ship officers and captains onboard ships and managers on shore. We conceptualise sensemaking as a discursive accomplishment (Potter 1996; Shotter 1993) and dialogical negotiation of meaning (Bruner 1990; Linell 2009), performed in situated social interactions shaped by existing textures of work practice (Gherardi 2006). Based on an ethnographic study of the work and interactions of developers and maritime professionals, we argue that learning related to AI development and implementation is dependent on mutual discursive sensemaking. We show how misalignments between IT professionals' sensegiving and practitioners' sensemaking can negatively affect collaborative learning and technology adoption. Drawing on research on sensemaking (Cunliffe and Coupland 2012; Maitlis and Christianson 2014; Sandberg and Tsoukas 2020) and the social construction of technology (Leonardi and Barley 2010), this paper contributes to workplace- and professional learning (Billett, Harteis, and Gruber 2014; Fenwick and Nerland 2014) and practice-based studies of AI at work (Waardenburg and Huysman 2022). The research question we address is: How do AI developers and professionals negotiate the meaning of machine-learning algorithms, and what are the implications of this situated sensemaking for technology adoption, learning, and change?

Artificial intelligence, sensemaking, and learning at work

Learning triggered by the introduction of new workplace technology depends on how users make sense of it (Beane and Anthony 2024; Boudreau and Robey 2005; Hsiao, Wu, and Hou 2008; Korica and Molloy 2010; Orlikowski 2000; Orlikowski and Gash 1994; Sergeeva, Faraj, and Huysman 2020; Vaast and Walsham 2005). Recent ethnographic studies on AI suggest that professionals' situated actions – and often invisible sensemaking – play an important role in how it is deployed, used, and made functional (Lindberg, Tyskbo, and Styhre 2025; van den Broek 2025; van den Broek, Sergeeva, and Huysman 2021). Research shows, for instance, how expertise and work practices are reconfigured by practitioners' active enactment of algorithmic technology (Grønsund and Aanestad 2020; Willems and Hafermalz 2021); how opacity, complexity, and uncertainty are handled (Lebovitz, Lifshitz-Assaf, and Levina 2022); how AI outputs are translated into practice (Waardenburg, Huysman, and Sergeeva 2022); how breakdowns and technological limitations are repaired (Sachs 2019; Schwennesen 2019); and how apprenticeship relationships are restructured (Anthony 2021; Beane 2019).

Technology sensemaking also shapes how professionals trust, accept, or question algorithms (Anthony 2018), how they perceive agency and professional jurisdiction (Scarbrough, Chen, and Patriotta 2025), and how they conceptualise change and coexistence with AI (Einola and Khoreva 2023). Sensemaking of AI varies considerably between professional groups (Cruz 2024; Einola and Khoreva 2023). Some see AI as a disruptive presence threatening autonomy, while others perceive it as complementing or expanding their professional agency (Scarbrough, Chen, and Patriotta 2025).

The socially constructed and interpretative nature of technology sensemaking (Maitlis and Christianson 2014), and its grounding in material-discursive practices (Hultin and Mähring 2017), mean that professionals from different communities of practice often produce divergent narratives. Operating under distinct regimes of knowledge (Pachidi et al. 2021), perspectives (Boland and Tenkasi 1995), and interests (Carlile 2002), groups may express conflicting understandings of technology and its fit within a practice (Leonardi and Barley 2010). Consequently, conflicting sensemaking can hinder collaborative and expansive learning (Brown 1998; Orlikowski and Gash 1994; Pachidi et al. 2021), especially if epistemic and pragmatic boundaries are too large to bridge (Bechky 2003; Carlile 2002; Oborn and Dawson 2010; Ramsten and Säljö 2012; van Krimpen and van der Voort 2025).

Despite growing research on AI at work, few studies explicitly investigate how practitioners make sense of AI through interaction with developers. Within workplace and professional learning, interest in materiality has grown (Hopwood 2016), but the role of sensemaking in technology adoption has often been implicit rather than explicit. To move beyond individual cognition towards the social and discursive nature of sensemaking, we adopt a discursive approach as advocated in recent scholarship (Whittle, Vaara, and Maitlis 2023). The next section introduces the theoretical framework.

Discursive sensemaking in sociomaterial practice

Sensemaking and learning, through which technologies are socially constructed and enacted in practice, rest fundamentally on discursive interaction and communication (Brown, Colville, and Pye 2015; Filliettaz 2014; Heath and Luff 2000; Maitlis and Christianson 2014; Orr 1996; Patriotta 2003; Sandberg and Tsoukas 2020; Suchman 2007; Whittle, Vaara, and Maitlis 2023). Social interaction, including the verbal enactment of roles, identities, and positions, plays a pivotal role in how actors co-construct and frame the world, and in how they produce shared or diverging meanings (Linell 2009; Taylor and Robichaud 2004; Weick, Sutcliffe, and Obstfeld 2005; Wenger 1998). Shotter (1993) describes this as *joint action*, the relational mechanism that links individual and collective processes of sensemaking. In organisational contexts, this interaction is often intertwined with sensegiving – the attempt to influence others' understandings of organisational reality (Gioia and Chittipeddi 1991; Maitlis and Lawrence 2007). Thus, sensemaking is not an isolated cognitive activity but an ongoing interactional process accomplished through language, narratives, and rhetorical devices such as storytelling (Brown, Stacey, and Nandhakumar 2008; Cunliffe and Coupland 2012; Orr 1996; Patriotta 2003; van Hulst and Tsoukas 2023) and metaphor (Billig 1996; Cornelissen 2012; Potter 1996).

Situated discursive sensemaking does not occur in a social vacuum. It is shaped not only by immediate communicative encounters but also by broader discourses, networks (Latour 2005), activity systems (Engeström 1987), and textures of practice (Gherardi 2006; Nicolini 2012) that render artefacts and material arrangements intelligible. As O'Leary and Chia (2007, 392) argue, following Foucault, such discursive processes are enabled by *epistemes* – the underlying codes of an era that structure its language, logics, schemas of perception, values, and techniques. What counts as meaningful or intelligible action depends on the practices and activity systems within which sensemakers are embedded (Sandberg and Dall'Alba 2010; Schatzki 1996).

This perspective accounts for why sensemaking is frequently marked by multiplicity, contestation, and tension across professional groups. Different actors, grounded in divergent communities of practice and regimes of knowledge, draw upon contrasting discursive repertoires to explain and legitimise their actions (Bechky 2003; Brown 1998; Østerlund and Carlile 2005). As a result, discursive sensemaking in sociomaterial practice is rarely unified. Instead, it involves ongoing negotiation and, at times, conflict between alternative interpretations of technology and its implications for work. These dynamics form the basis for analysing how developers and maritime professionals in our study struggled to establish shared meaning around the implementation of an AI system.

Methods and research context

Case description

This case study examines an innovation project that aimed to develop AI for ship operation and involved developers from two collaborating maritime technology companies, data scientists from a major Swedish technical university, and maritime professionals (captains, ship engineers, and shore managers) from three different shipping companies. The goal of the collaborative project was to develop an analysis tool based on massive amounts of weather and ship engine data for predicting fuel consumption and determining the optimal (most energy-efficient) ship propulsion. Over the two years of model training and refinement, developers frequently met with the maritime professionals to discuss the progress of the project, explain what they were doing, answer questions, share knowledge and, most importantly, coordinate the intended deployment of the system onboard several of the ships in the shipping companies' fleets. In these meetings, developers often reiterated the project rationale, described the affordances of the AI tool, and argued for the potential opportunities and benefits of using the system. However, despite the developers' efforts to socially construct the system's perceived usefulness and their apparent satisfaction with the results, the project ended with minimal utilisation of the tool onboard the ships and among the shore managers. The analysis explains this in terms of a failure to align sensemaking in action, resulting in an absent rationale for further integration and learning in the organisation.

Data collection

Both authors of this paper engaged in collaborative ethnographic work by participating as social scientists among technical managers, engineers, and data scientists in the AI project. Our goal was to follow the project and study the interactions between the developers and maritime professionals to analyse the factors and conditions for technologically mediated change and learning in the workplace of the captains, ship officers, and shore managers. To collect the data needed, we attended every bi-weekly project meeting over two years and interviewed all 15 project participants (data scientists, technical managers, ship captains, and shipping managers) on several occasions during the project. We also followed the data scientists during their everyday work by joining their weekly meetings and conducted field work onboard one of the ships involved in the project, altogether generating a substantial amount of audio recordings, field notes and other ethnographic materials used to analyse the practices and collaborative learning among the participants. However, the primary data source for this paper, focusing on dialogical sensemaking between developers and professionals, consisted of audio and video recordings made during meetings between developers (AI experts and technical project managers), captains, chief engineers, and operational managers (Table 1). The recordings during these project meetings produced a corpus of approximately 15 h of conversation captured in 15 meetings (out of 80 h of recorded material, including internal project meetings not focally analysed here). Owing to the worldwide location of the ships, all meetings took place online via a web-based conference tool, allowing participants to see each other and share screens. E-mail conversations between developers and users, including documents regarding the system (user cases, manuals, and user instructions) sent by developers to the shipping companies, and requests and questions from captains and shore managers were also relevant for the purpose of this study.

Table 1. Focal data collection occasions (recorded meetings).

Session	AI developers	Shipping company 1	Shipping company 2	Shipping company 3	Duration (hour:min:sec)
1	1 Implementation manager	1 Captain, 1 Navigating officer			00:53:30
2	1 Implementation manager	1 Captain, 1 Navigating officer			01:09:05
3	1 project coordinator, 1 AI expert, 1 AI scientist, 2 Project managers	2 Ship managers			00:57:26
4	2 Project managers	3 Ship manager			01:06:26
5	1 Project manager		1 Ship manager		01:07:52
6	1 Project manager		1 Ship manager		00:50:29
7	2 Project managers		1 Ship manager		00:55:22
8	1 Project manager		1 Captain		01:00:33
9	2 Project managers		2 Ship managers		00:49:31
10	1 Project manager		1 Captain		00:59:59
11	1 Project manager		2 Ship managers		00:38:20
12	2 Project managers		1 Ship manager		02:00:09
13	1 Project manager			2 Ship managers 1 Captain	01:03:20
14	2 Project managers			1 Ship manager	01:00:36
15	1 Project manager			2 Ship managers	01:06:39
	Total number of unique participants: 7	5	5	3	*Total duration:* 15:34:23

Data analysis

To analyse the discursive sensemaking among the participants during the project reported in this paper, we drew on two complementary approaches, enabling a 'zooming in and out' on different aspects of the practices under investigation (Nicolini 2009). A micro-ethnographic approach (Streeck and Mehus 2005), focusing on the communicative activities and interactions among the developers and maritime professionals, was used to analyse, in detail, the real-time unfolding of discursive practice and negotiation of meaning as accomplished in situ. However, we also adopted a broader analytic view focusing on practical concerns (Schatzki 1996), lifeworld (Sandberg and Dall'Alba 2010), or 'lived directionality and telos' (Nicolini 2009, 1403) of the actors' everyday practices (both developers and maritime professionals) to contextualise and interpret their encounters and individual utterances. Although we do not present a full-blown account of the practices (this was not the purpose of the paper), the analysis of the practices, that is, participants practical understandings or collective sense of 'what needs to be done', still served as a necessary hermeneutic background for abductively understanding the interactions and situated sensemaking. It also allowed us to avoid falling into either interactional or structural reductivism in the final analysis of the data.

The first step of the analysis involved scrutinising each individual interactional turn in the conversational data corpus to identify what the developers said, how they said it, and how the practitioners responded. This was done to avoid 'jumping over the use of language' (Alvesson and Kärreman 2000) and the sequential organisation-in-action of the joint production of discursively and interactionally shaped in situ sensemaking (van Hulst and Tsoukas 2023). Each turn was coded for the ante-narrative (story-like) sensemaking or sensegiving fragment it contained (Boje 2001). However, this analysis was not separated from our more general analysis of maritime professionals' and developers' practices. For instance, to understand why shore managers resisted the idea of data-driven predictions and did not display any keenness to learn new ways of working in conversations with developers, it was necessary to contextualise the discourse against the background of their habitual practices and sociomaterial arrangements. The analytical oscillation between situated communication and the texture of practice generated core themes (sensemaking content) within the developers' and practitioners' narratives and revealed several tensions between their accounts and lifeworlds. The interaction analysis was then written up as a 'composite narrative' (Vaara, Sonenshein, and Boje 2016) of the participants sensemaking, reflecting the result of combining the different analytic approaches but also the role of the researcher in interpreting and re-presenting data.

Findings: making sense of predictive AI in the work of seafarers

Developers' rhetorical attempts and discursive strategies to construct and frame a problem

Early on in the project, developers often initiated meetings with managers and captains with a notable idealistic optimism, explaining that their ambition was not merely to develop a technical system but also to accomplish a 'behavioural change' and a 'change in perspective or mindset' in the shipping industry by supporting organisational learning:

> We want to change shipping. We want to launch this technology to help ship owners operate their vessels more efficiently, with focus on better parameters. (AI developer)

The developers' desired change, also attributed to the mariners, was motivated by an allegedly common ambition throughout the shipping industry to enhance energy efficiency and reduce fuel consumption. Developers claimed, in a tone signalling uncontroversial obviousness, that traditional ship operation relies on a 'bad habit' where captains maintain a constant speed during voyages instead of adapting it to fluctuating currents and weather conditions. However, the goal of improvement was described as being hindered by a specific epistemic problem thought to affect managers and captains: the inability to predict the optimal propulsion power required for each voyage which would enable more dynamic speed regulation. In particular, the current way of operating the ship was metaphorically described as 'operating in the dark':

> Now it's like … you could say … like driving the boat blindfolded. (AI developer)

As part of their rhetorical strategy, developers asserted that captains and managers lacked the right tools to resolve this issue and thus 'needed help' in learning how the combination of weather factors and engine settings affected the ship's performance. The metaphorical trope of blurred perception was further elaborated in the developers' specification of the solution to the conceived problem. In this utilisation of the metaphor, the AI system was portrayed as resolving the epistemic problem attributed to maritime professionals' practice by augmenting their 'seeing into the future'. Thus, the developers, whose practices revolved around conceiving the world through the lens of data, described the AI system as providing ship operators, charterers, and crews with new perceptual abilities, allowing them to execute voyages more efficiently. Moreover, the metaphorically framed perceptual affordances of the system (improved seeing) were described as almost magical in character, allowing shipping companies to avoid undesirable events:

> What we are doing now gives you the opportunity to look into the future, into the next one, two, three days. And that's what makes it a bit magical, so to speak, that you can look into the future. And then you can actually avoid a bad trip before it has happened. That's the idea. Because it means you don't have to act in the fog of not actually knowing how long it will take and what the costs for bunkers [fuel] will be. (AI developer)

Hence, the system was framed as increasing precision in operational decision-making and enabling more predictable operations with fewer ad hoc adjustments and unexpected events during voyages. It was also argued that the data-driven 'improved vision of the future' would enable captains to operate ships on simplified instructions: 'the crew will receive that instruction automatically and be able to start executing it'. Managers would be able to replace their current coarse-grained methods 'stuck in the past' (in the sense of both being old and restricted to retrospective data analysis) with a new future-directed practice:

> Being able to look into this crystal ball [*sic*] enables you, in a slightly more fine-grained way than today, where you use rather rough consumption figures, so to speak, to take weather forecasts into account in a more precise way. (AI developer)

The developers often tried to ensure that the conversational topic stayed focused on these issues by moderating the discussion and returning to the goal and problem formulation if any digression was noticed. Seldom did they open up the conversational floor for any alternative versions of reality in this regard.

Maritime professionals' discursive counteractions

While maritime professionals and developers initially agreed on the value of testing the system, the mutuality of meaning attached to the AI was superficial, hiding deeper discursive divergences in sensemaking and socio-material practice, undermining knowledge integration and the tool's deployment.

First, ship managers and captains did not recognise the problem, as framed by the developers, that the tool aimed to solve. The maritime professionals explained to the developers that their work was not primarily concerned with reducing fuel consumption and predicting optimal propulsion but more importantly with executing as many voyages as possible while taking commercial and social considerations (related to the workload and well-being of the crew) into account, as expressed by a captain:

> Normally we don't really work like that, we try to get there [to their destination] as quickly as possible with a reasonable bunker consumption and then we see what arrival time we get. We also usually adjust the speed to the comfort on board. If we drive too hard, the ship vibrates and shakes so much that it can affect both sleep and work. (Captain)

In contrast to developers' discursive problematisation focusing on precision in ship performance and prediction of complex physical forces, captains' and ship managers' accounts often expressed disbelief in the value of accounting for all factors affecting performance and emphasised their preferred pragmatic approach to operating ships instead:

> I don't know if these fuel optimising systems will actually have any real effect since at the end of the day it is sailed distance that determines the fuel consumption if you get bad weather conditions, right? (Captain)

In utterances like these, managers and captains expressed a preference for conceptualising their world of work through the frames and categories established through decades of shipping, treating detailed predictions of environmental variability as outside their normal concerns. The re-claiming of their problem, as being concerned with voyage execution (doing) rather than prediction (planning), was, for instance, expressed by a manager responding to the developers' framing in this way: 'In our world there are only three speeds: economical speed, charter party speed and full speed'. He continued by admitting the crudeness of their practices and simultaneously defending their practicality and proven utility so far: 'Our starting point is that the ships in the fleet are identical, that they will have the same consumption. And although we know that there are variations due to ship age and hull fouling, there are a lot that affect it, but we are very pragmatic about the ships having the same consumption even though we know that it is not like that. But it is easier to treat it that way'. A developer felt he had to confirm his understanding of the managers' disinterest in exact numbers: 'So how much do you need a spot on cost … that is, fuel cost estimation before you sell a trip?' (AI developer). The ship manager answered: 'The numbers we use are not spot on. Consumption doesn't determine whether we take a trip. We evaluate consumption, but not weekly, monthly, or before every voyage. It's more like an ongoing dialogue. If she uses more than other boats, we investigate but we lack a routine for detailed consumption analysis'.

Moreover, maritime professionals explained their practices as being attentive to commercial conditions and opportunities rather than theoretical possibilities of mathematical optimisation and detailed planning by emphasising the importance of adaptive action and flexibility, which they said gave them 'an edge in the market':

> For us, positioning and flexibility to substitute and swap ships if needed is important and appreciated by the customer. As long as the boats are approved and can make the trip, we book it and evaluate [the energy consumption] afterwards. (Ship manager)

> We take it as it happens. We are superficial, finding out what the market is. We are not market makers. It's like brokerage business; we take ownership but it's 'bam bam bam'. After a trip, we don't look back. This may be wrong, but it's a commercial, not technical approach. (Ship manager)

Furthermore, discursive tensions during the interactional sensemaking of the AI system also emerged between developers' formulations of the need and possibility of change and the maritime professionals work practices as shaped by current institutional arrangements in the industry. Specifically, energy efficiency was seen as a secondary priority compared to the commercial goal of maximising voyages per year: 'If the market is good, you just want to drive quickly so that you can start the next trip faster and make more money' (Ship managers). A captain echoed this in an email to a developer: 'Unfortunately, we work with slightly different input values. Even though we on board and the shipping company want to save bunkers for the environment and economy, some of our customers think differently. For them, it's about getting there quickly to be ready for the next cargo. With these oil companies, it's more about making money than saving money (and the environment)'. The developers' hopes of changing shipping were thus seen by managers as misplaced or counterproductive to many of the current practices onboard and onshore. Talking about the institutional conditions shaping their practices, a manager noted that the system had limited applicability and relevance due to the difficulty of changing the practice of how charter party agreements (contracts) between customers and shipping companies, specifying average ship speed, are formulated:

> There will be challenges with cargo versus ballast voyages. This AI tool might be useful on a long ballast voyage, but in laden mode, we have a contractual speed. The ETA should be calculated by multiplying the speed by distance, as it can be monitored by the counterpart. (Ship manager)

Managers explained their focus on assuring reliable ship operations and emphasised the importance of integrating the system into current rather than new practices to mitigate potential disruptions to the social order that system implementation could entail. For instance, some managers questioned the system's ability to ensure timely arrivals: 'We need to have a guarantee that we will be there at the time we should be there' (ship manager). Delays can lead to customer claims or loss of a harbour timeslot, incurring costs. In response to this, developers often altered the meaning of their accounts by emphasising the necessity for captains and ship officers to monitor the technology and continually question its predictions:

> We are very honest and open about that you cannot blindly trust the calculation from our side and say this will always 100 percent give you the correct result. It does require a little bit of, you know, looking out the window, checking, does this seem to make sense? And in the end of course you're the – you're the decision-maker. (AI developer)

> The system itself does not replace … the captain's competence to 100%. It can, like, never do that. This is a … I mean, this is a decision support system in a way that makes a very, very educated guess about what's coming in the future, but the captain's judgment … depending on how experienced the captain is, he will be able to make better judgments in some cases than the system does. (AI developer)

However, this new monitoring role of the crew was met with scepticism from the managers, cautioning the developers that any increase in the workload onboard the ships would not be accepted by the crews.

In summary, the findings illustrate how AI developers, in an attempt to convince professionals about the utility of a machine learning system (sensegiving), discursively frame the reasons and motivation for introducing it by first rhetorically constructing a problem to be solved by the technology and then by invoking professionals' improved ability to engage in evidence-based prospective sensemaking. At the core of the developer's discursive strategy and attempt to create a solid and factual account (Potter 1996) of the technology was the rhetorical use of an optical metaphor of seeing, phrased as the overcoming of myopic vision by the adoption of the system. However, the developers' attempt to impose their narrative on maritime professionals was unsuccessful. Professionals responded to the developers' description of reality by questioning the AI (producing a counter-narrative) based on the practitioners' perceived inaccuracies of the developers' underlying account of the mariners' practices and lifeworld. In contrast to developers account, they expressed a conception of the AI that construed it as a technology disrupting functional and purposeful, albeit admittedly imprecise, categories, practices, and concepts rather than augmenting work. Although developers highlighted AI's role in predictive rather than retrospective analysis, it was difficult for maritime professionals to abandon their old interpretative scheme and conceive of the use of data as anything else than a retrospective activity, that is, an activity they had little time and interest in pursuing. Interestingly, they did not reject the AI system because of its opacity or inscrutability but because it allowed them to see 'too much'.

At the end of the study, only one ship had implemented the system, although it functioned as expected and could, in theory, be used on other ships, according to the developers. The final project report concluded that 'a greater understanding of how to complement an AI-based system with the necessary training of the individuals using the systems has been gained'. After the study ended, the companies continued to develop the AI system in another government-funded R&D project. Four years after the first project's initiation, the system was still not commercially available and had been put on ice because of a lack of interest from the shipping industry.

Discussion

According to Guiette and Vandenbempt (2016), learning under conditions of dynamic complexity, such as those created by the rise of AI, requires sensemaking. Motivated by the increasing role of machine learning algorithms in shaping professional learning and knowledge (Waardenburg and Huysman 2022) and the scarcity of research on AI in the workplace and professional learning community, this study explored how professionals make sense of AI during the development and early 'persuasion phase' of technology implementation (Seligman 2006) and its implications for subsequent adoption, learning, and change (Boudreau and Robey 2005). Drawing on the hitherto separate research streams on sensemaking, AI, and professional learning at work, and by combining a micro-ethnographic and practice-based case study approach, we investigated maritime managers and captains discursive sensemaking of an AI tool developed for improving energy efficiency in ship operation. This study aimed to increase our understanding of how developers and practitioners engage in mutual (inter-professional) sensegiving and sensemaking of AI technology and how professionals' sensemaking influences technology adoption and learning. More specifically, this study sought to shed light on the social and interactional circumstances in which AI attains its meaning. Based on the findings we propose the following contextual model (Figure 1) of inter-professional sensemaking of AI and reason about its implications for professional development and learning.

First, inter-professional sensemaking (of AI) in the context of a workplace was seen to consist of a dialogical relationship between actors influenced by their diverse practice backgrounds and epistemes: sensegiving and sensemaking emerged and were manifested in situated linguistic interaction between individuals; that is, they were formed in the

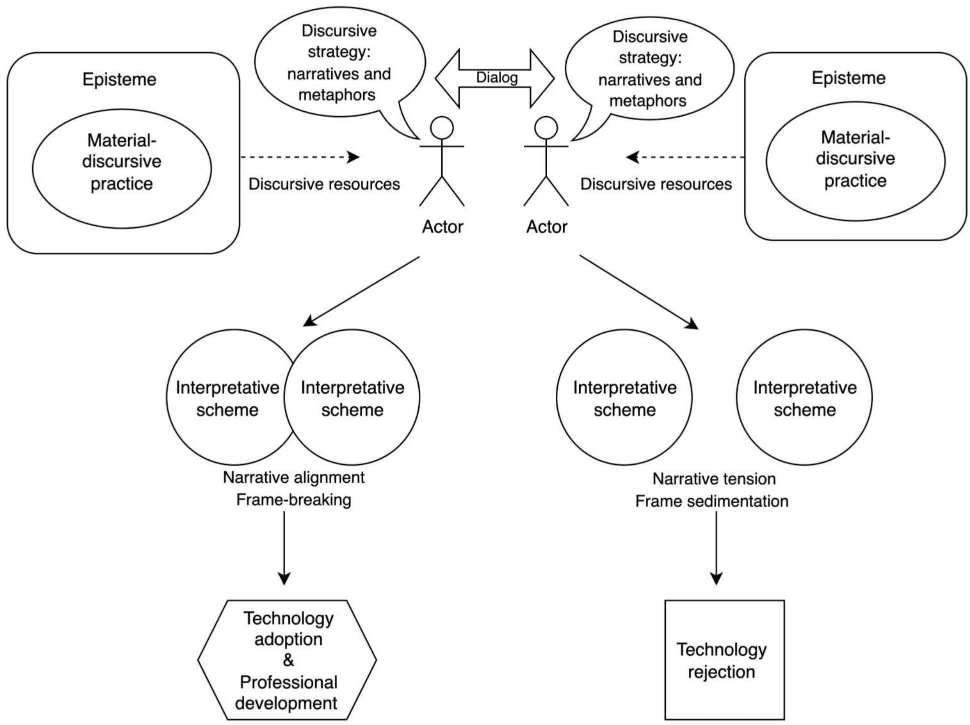

Figure 1. Discursive sensemaking enacted in social interaction.

conversational context enacted by the actors. This was, for instance, seen in developers' discursive strategy in which they tried to convey their conceptualisation of the AI by the use of metaphors and in maritime professionals' counternarratives elicited in response to developers' accounts of shipping practices. However, while being situated and accomplished in interaction, the sensegiving and sensemaking of the participants was, at the same time, clearly embedded in their respective practices and wider discursive resources upon which they drew to motivate their differing standpoints. Indeed, developers' and practitioners' discursive sensegiving and sensemaking of the AI system involved multiple narratives with inherent tensions and underlying epistemological differences explained by the actors' different practices. From the perspective of developers' practice and episteme (O'Leary and Chia 2007), shipping was seen as an industry with huge potential for becoming more efficient and rational through a proper foundation in data-driven and scientific knowledge, supporting informed action. Their discursive sensegiving was fuelled by a desire to master complexity by breaking it down into its constituent elements and systematically examining the data for predictable patterns. Their quest for finer representations of reality using big data management and AI analytics to model, control, and manipulate the world was a logical constituent of their data science practice. However, it expressed an episteme that maritime managers and captains did not acknowledge as pertinent to their practice. In managers' and captains' responsive sensemaking, pragmatic considerations, simplicity, and practical rationality were described as the logic of their method of managing complexity. Hence, while developers emphasised innovation, optimisation, and change, managers' and captains' accounts – reflecting their practices – evolved around maintaining stability in the concepts used and creating an easily manageable work environment. While developers' narratives promised an augmented vision of the future, for managers and captains, this only meant 'seeing more than what was necessary' for performing a good job and an increase in uncertainty, potentially threatening current work practices and predictability. Thus, the developers' sensegiving of the AI did not make sense to practitioners, and their sensemaking did not present sufficient motivation to adopt and learn how to use the tool. Although developers and practitioners held many meetings throughout the two-year project, with several opportunities to negotiate the meaning of the tool, little evidence of an alignment of perspective, from either side, was seen.

Second, the model suggests that technology adoption does not automatically occur as a result of the introduction of an allegedly powerful AI tool for improving decision-making and proposes a close relationship between prospective sensemaking and professionals' motivation to adopt technology, change practices, and engage in professional workplace learning. Numerous studies have been made within the field of workplace learning about the ideal conditions for professional development at work (Webster-Wright 2009), including features such as participation (Lave and Wenger 1991), mutual reflection (Engeström and Kerosuo 2007) and engagement (Billett 2001). However, the motivation to engage in learning activities or professional development requires a sense of meaningfulness (Bruner 1990) which comes from identification with a narrative of desired change. Without an initial sensemaking resulting in a sense of meaningfulness to pursue a (technologically mediated) developmental process, the expansion of the object guiding practice and further learning is unlikely. However, this necessarily means a partial break or reframing of established interpretative schemes and discursive patterns (Vlaar, van Fenema, and Tiwari 2008) and a ' (re)imagining of past and future' (Hernes and Obstfeld 2022). It can be reasoned that this sensebreaking is more likely to occur if the situated negotiation of meaning (situated sensemaking) results in a discursive alignment rather than discursive tensions, as shown in the present case, between diverse participants (Gherardi and Nicolini 2002). This alignment does not necessarily require a deeper intersubjective overlap or knowledge sharing, but a common language and congruence in narrative framing, where sensemaking is shared without the differences in practice and boundaries being fully overcome (Bechky 2003). This model does not suggest that all changes are for the better or that all technologies should or need to be adopted for professional development. However, it emphasises that change often requires new perspectives and novel technologies. Thus, we propose that engagement and motivation for professional development through AI springs from a process of inter-discursive sensemaking, leading to the creation of new senses of how work could be performed and to the creation of a sense of meaningfulness to do, develop, or change something or oneself.

Conclusion

The notion of discursive sensemaking elaborated in this study contributes to research on professional and workplace learning by emphasising its key role in technology adoption (including AI and other emerging technologies) and practice development. How an innovation, such as emerging technology, is discursively made sense of will influence, presumably through motivation, how practitioners engage in continuous professional development and learning.

It is important to further study the discursive dynamics of technology sensemaking in the workplace and organisations, exploring how professionals make sense of AI and how they make new sense of their work and knowledge through AI. Future research should therefore engage in further longitudinal studies of ongoing sensemaking interactions with AI systems, how different sensemaking patterns affect learning trajectories, and how professionals learn to use AI and how that shapes their practice and expertise.

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ORCID

Martin Viktorelius http://orcid.org/0000-0003-3373-2171
Simon Larsson http://orcid.org/0000-0002-2589-7964

References

Alvesson, Mats, and Dan Kärreman. 2000. “Varieties of Discourse: On the Study of Organizations through Discourse Analysis.” *Human Relations* 53 (9): 1125–1149. https://doi.org/10.1177/0018726700539002

Anthony, Callen. 2018. “To Question or Accept? How Status Differences Influence Responses to New Epistemic Technologies in Knowledge Work.” *Academy of Management Review* 43 (4): 661–679. https://doi.org/10.5465/amr.2016.0334.

Anthony, Callen. 2021. “When Knowledge Work and Analytical Technologies Collide: The Practices and Consequences of Black Boxing Algorithmic Technologies.” *Administrative Science Quarterly* 66 (4): 1173–1212. https://doi.org/10.1177/00018392211016755.

Anthony, Callen, Beth A. Bechky, and Anne-Laure Fayard. 2023. ““Collaborating” with AI: Taking a System View to Explore the Future of Work.” *Organization Science* 34 (5): 1672–1694. https://doi.org/10.1287/orsc.2022.1651.

Beane, Matt. 2024. *The Skill Code: How to Save Human Ability in an age of Intelligent Machines*. New York: HarperBusiness.

Beane, Matthew. 2019. “Shadow Learning: Building Robotic Surgical Skill When Approved Means Fail.” *Administrative Science Quarterly* 64 (1): 87–123. https://doi.org/10.1177/0001839217751692.

Beane, Matthew, and Callen Anthony. 2024. "Inverted Apprenticeship: How Senior Occupational Members Develop Practical Expertise and Preserve Their Position When New Technologies Arrive." *Organization Science* 35 (2): 405–431. https://doi.org/10.1287/orsc.2023.1688.

Bechky, Beth A. 2003. "Sharing Meaning across Occupational Communities: The Transformation of Understanding on a Production Floor." *Organization Science* 14 (3): 312–330. https://doi.org/10.1287/orsc.14.3.312.15162.

Billett, Stephen. 2001. *Learning in the Workplace: Strategies for Effective Practice*. New York: Routledge.

Billett, Stephen, Christian Harteis, and Hans Gruber, eds. 2014. *International Handbook of Research in Professional and Practice-Based Learning*. Dordrecht: Springer.

Billig, Michael. 1996. *Arguing and Thinking: A Rhetorical Approach to Social Psychology*. New York: Cambridge University Press.

Boje, David. 2001. *Narrative Methods for Organizational and Communication Research*. London: Sage.

Boland, Richard J., and Ramkrishnan V. Tenkasi. 1995. "Perspective Making and Perspective Taking in Communities of Knowing." *Organization Science* 6 (4): 350–372. https://doi.org/10.1287/orsc.6.4.350

Boudreau, M. C., and D. Robey. 2005. "Enacting Integrated Information Technology: A Human Agency Perspective." *Organization Science* 16 (1): 3–18. https://doi.org/10.1287/orsc.1040.0103.

Brown, Andrew D. 1998. "Narrative, Politics and Legitimacy in an IT Implementation." *Journal of Management Studies* 35 (1): 35–58. https://doi.org/10.1111/1467-6486.00083.

Brown, Andrew D., Ian Colville, and Annie Pye. 2015. "Making Sense of Sensemaking in Organization Studies." *Organization Studies* 36 (2): 265–277. https://doi.org/10.1177/0170840614559259.

Brown, Andrew D., Patrick Stacey, and Joe Nandhakumar. 2008. "Making Sense of Sensemaking Narratives." *Human Relations* 61 (8): 1035–1062. https://doi.org/10.1177/0018726708094858.

Bruner, Jerome. 1990. *Acts of Meaning*. Cambridge: Harvard University Press.

Callari, Tiziana C., and Lucia Puppione. 2025b. "Can Generative Artificial Intelligence Productivity Tools Support Workplace Learning? A Qualitative Study on Employee Perceptions in a Multinational Corporation." *Journal of Workplace Learning* 37 (3): 266–283. https://doi.org/10.1108/jwl-11-2024-0258.

Carlile, Paul R. 2002. "A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development." *Organization Science* 13 (4): 442–455. https://doi.org/10.1287/orsc.13.4.442.2953.

Cornelissen, Joep P. 2012. "Sensemaking under Pressure: The Influence of Professional Roles and Social Accountability on the Creation of Sense." *Organization Science* 23 (1): 118–137. https://doi.org/10.1287/orsc.1100.0640

Cruz, Ignacio Fernandez. 2024. "Expert-AI Pairings: Expert Interventions in AI-Powered Decisions." *Information and Organization* 34 (4): 100527. https://doi.org/10.1016/j.infoandorg.2024.100527.

Cunliffe, Ann, and Chris Coupland. 2012. "From Hero to Villain to Hero: Making Experience Sensible through Embodied Narrative Sensemaking." *Human Relations* 65 (1): 63–88. https://doi.org/10.1177/0018726711424321.

de Laat, Maarten, Srecko Joksimovic, and Dirk Ifenthaler. 2020. "Artificial Intelligence, Real-Time Feedback and Workplace Learning Analytics to Support in Situ Complex Problem-Solving: A Commentary." *The International Journal of Information and Learning Technology* 37 (5): 267–277. https://doi.org/10.1108/IJILT-03-2020-0026.

Edwards, Richard, and Tara Fenwick. 2015. "Digital Analytics in Professional Work and Learning." *Studies in Continuing Education* 38 (2): 213–227. https://doi.org/10.1080/0158037x.2015.1074894.

Einola, Katja, and Violetta Khoreva. 2023. "Best Friend or Broken Tool? Exploring the co-existence of Humans and Artificial Intelligence in the Workplace Ecosystem." *Human Resource Management* 62 (1): 117–135. https://doi.org/10.1002/hrm.22147.

Engeström, Yrjö. 1987. *Learning by Expanding*. New York: Cambridge University Press.

Engeström, Yrjö. 2008. *From Teams to Knots: Activity-Theoretical Studies of Collaboration and Learning at Work*. New York: Cambridge University Press.

Engeström, Yrjö, and Hannele Kerosuo. 2007. "From Workplace Learning to Inter-Organizational Learning and Back: The Contribution of Activity Theory." *Journal of Workplace Learning* 19 (6): 336–342. https://doi.org/10.1108/13665620710777084.

Engström, Annika, Daniel Pittino, Alice Mohlin, Anette Johansson, and Nina Edh Mirzaei. 2024. "Artificial Intelligence and Work Transformations: Integrating Sensemaking and Workplace Learning Perspectives." *Information Technology & People* 37 (7): 2441–2461. https://doi.org/10.1108/ITP-01-2023-0048.

Faraj, Samer, Stella Pachidi, and Karla Sayegh. 2018. "Working and Organizing in the age of the Learning Algorithm." *Information and Organization* 28 (1): 62–70. https://doi.org/10.1016/j.infoandorg.2018.02.005.

Fenwick, Tara, and Monika Nerland. 2014. *Reconceptualising Professional Learning: Sociomaterial Knowledges, Practices and Responsibilities*. New York: Routledge.

Filliettaz, Laurent. 2014. "Understanding Learning for Work: Contributions from Discourse and Interaction Analysis." In *International Handbook of Research in Professional and Practice-Based Learning*, edited by Stephen Billett, Christian Harteis, and Hans Gruber, 225–255. Dordrecht: Springer Netherlands.

Gherardi, Silvia. 2006. *Organizational Knowledge: The Texture of Workplace Learning*. Oxford: Blackwell.

Gherardi, Silvia, and Davide Nicolini. 2002. "Learning in a Constellation of Interconnected Practices: Canon or Dissonance?" *Journal of Management Studies* 39 (4): 419–436. https://doi.org/10.1111/1467-6486.t01-1-00298.

Gioia, Dennis A., and Kumar Chittipeddi. 1991. "Sensemaking and Sensegiving in Strategic Change Initiation." *Strategic Management Journal* 12 (6): 433–448. https://doi.org/10.1002/smj.4250120604.

Grønsund, Tor, and Margunn Aanestad. 2020. "Augmenting the Algorithm: Emerging Human-in-the-Loop Work Configurations." *The Journal of Strategic Information Systems* 29 (2), 1–16. https://doi.org/10.1016/j.jsis.2020.101614.

Guiette, Alain, and Koen Vandenbempt. 2016. "Learning in Times of Dynamic Complexity through Balancing Phenomenal Qualities of Sensemaking." *Management Learning* 47 (1): 83–99. https://doi.org/10.1177/1350507615592112.

Hager, Paul, Alison Lee, and Ann Reich, Eds. 2012. *Practice, Learning and Change: Practice-Theory Perspectives on Professional Learning: Professional and Practice-Based Learning*. Dordrecht: Springer.

Heath, Christian, and Paul Luff. 2000. *Technology in Action*. Cambridge: Cambridge University Press.

Hernes, Tor, and David Obstfeld. 2022. "A Temporal Narrative View of Sensemaking." *Organization Theory* 3 (4): 26317877221131585. https://doi.org/10.1177/26317877221131585.

Holmes, Wayne, and Allison Littlejohn. 2024. "Artificial Intelligence for Professional Learning." In *Handbook of Artificial Intelligence at Work*, edited by Martha Garcia-Murillo, Ian MacInnes, and Andrea Renda, 191–211. Cheltenham: Edward Elgar Publishing.

Hopwood, Nick. 2016. *Professional Practice and Learning: Times, Spaces, Bodies, Things: Professional and Practice-Based Learning*. Cham: Springer.

Hsiao, Ruey-Lin, Se-Hwa Wu, and Sheng-Tsung Hou. 2008. "Sensitive Cabbies: Ongoing Sense-Making within Technology Structuring." *Information and Organization* 18 (4): 251–279. https://doi.org/10.1016/j.infoandorg.2008.01.002.

Hultin, Lotta, and Magnus Mähring. 2017. "How Practice Makes Sense in Healthcare Operations: Studying Sensemaking as Performative, Material-Discursive Practice." *Human Relations* 70 (5): 566–593. https://doi.org/10.1177/0018726716661618.

Korica, Maja, and Eamonn Molloy. 2010. "Making Sense of Professional Identities: Stories of Medical Professionals and new Technologies." *Human Relations* 63 (12): 1879–1901. https://doi.org/10.1177/0018726710367441.

Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. New York: Oxford University Press.

Lave, Jean, and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
Lebovitz, Sarah, Hila Lifshitz-Assaf, and Natalia Levina. 2022. "To Engage or Not to Engage with AI for Critical Judgments: How Professionals Deal with Opacity When Using AI for Medical Diagnosis." *Organization Science* 33 (1): 126–148. https://doi.org/10.1287/orsc.2021.1549.
Lehtinen, Erno, Kai Hakkarainen, and Tuire Palonen. 2014. "Understanding Learning for the Professions: How Theories of Learning Explain Coping with Rapid Change." In *International Handbook of Research in Professional and Practice-Based Learning*, edited by Stephen Billett, Christian Harteis, and Hans Gruber, 199–224. Dordrecht: Springer Netherlands.
Leonardi, Paul M., and Stephen R. Barley. 2010. "What's under Construction Here? Social Action, Materiality, and Power in Constructivist Studies of Technology and Organizing." *The Academy of Management Annals* 4 (1): 1–51. https://doi.org/10.1080/19416521003654160.
Lindberg, Kajsa, Daniel Tyskbo, and Alexander Styhre. 2025. "Producing Images and Making Judgement: The Ongoing use of Epistemic Technologies in Expert Work." *Organization Studies* 46 (9): 1283–1305. https://doi.org/10.1177/01708406251326693.
Linell, Per. 2009. *Rethinking Language, Mind, and World Dialogically*. Charlotte: Information Age Publishing.
Littlejohn, Allison, and Anoush Margaryan. 2014. *Technology-enhanced Professional Learning: Processes, Practices, and Tools*. New York: Routledge.
Maitlis, Sally, and Marlys Christianson. 2014. "Sensemaking in Organizations: Taking Stock and Moving Forward." *Academy of Management Annals* 8 (1): 57–125. https://doi.org/10.5465/19416520.2014.873177.
Maitlis, Sally, and Thomas B. Lawrence. 2007. "Triggers and Enablers of Sensegiving in Organizations." *The Academy of Management Journal* 50 (1): 57–84. https://doi.org/10.5465/amj.2007.24160971.
Malloch, Margaret, Karen Evans, and Len Cairns. 2010. *The SAGE Handbook of Workplace Learning*. London: Sage.
Nicolini, Davide. 2009. "Zooming in and Out: Studying Practices by Switching Theoretical Lenses and Trailing Connections." *Organization Studies* 30 (12): 1391–1418. https://doi.org/10.1177/0170840609349875.
Nicolini, Davide. 2012. *Practice Theory, Work, and Organization: An Introduction*. Oxford: Oxford University Press.
Oborn, Eivor, and Sandra Dawson. 2010. "Learning across Communities of Practice: An Examination of Multidisciplinary Work." *British Journal of Management* 21 (4): 843–858. https://doi.org/10.1111/j.1467-8551.2009.00684.x.
O'Leary, Majella, and Robert Chia. 2007. "Epistemes and Structures of Sensemaking in Organizational Life." *Journal of Management Inquiry* 16 (4): 392–406. https://doi.org/10.1177/1056492607310976.
Orlikowski, Wanda J., and Debra C. Gash. 1994. "Technological Frames: Making Sense of Information Technology in Organizations." *ACM Trans. Inf. Syst* 12 (2): 174–207. https://doi.org/10.1145/196734.196745.
Orlikowski, W. J. 2000. "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations." *Organization Science* 11 (4): 404–428. https://doi.org/10.1287/orsc.11.4.404.14600
Orr, Julian E. 1996. *Talking about Machines: An Ethnography of a Modern job*. New York: Cornell University Press.
Østerlund, Carsten, and Paul and Carlile. 2005. "Relations in Practice: Sorting through Practice Theories on Knowledge Sharing in Complex Organizations." *The Information Society* 21 (2): 91–107. https://doi.org/10.1080/01972240590925294.
Pachidi, Stella, Hans Berends, Samer Faraj, and Marleen Huysman. 2021. "Make Way for the Algorithms: Symbolic Actions and Change in a Regime of Knowing." *Organization Science* 32 (1): 18–41. https://doi.org/10.1287/orsc.2020.1377.
Pakarinen, Pauli, and Ruthanne Huising. 2023. "Relational Expertise: What Machines Can't Know." *Journal of Management Studies*, 2053–2082. https://doi.org/10.1111/joms.12915.

Patriotta, Gerardo. 2003. "Sensemaking on the Shop Floor: Narratives of Knowledge in Organizations." *Journal of Management Studies* 40 (2): 349–375. https://doi.org/10.1111/1467-6486.00343.

Potter, Jonathan. 1996. *Representing Reality: Discourse, Rhetoric and Social Construction*. London: Sage.

Ramsten, Anna-Carin, and Roger Säljö. 2012. "Communities, Boundary Practices and Incentives for Knowledge Sharing? A Study of the Deployment of a Digital Control System in a Process Industry as a Learning Activity." *Learning, Culture and Social Interaction* 1 (1): 33–44. https://doi.org/10.1016/j.lcsi.2012.04.001.

Reich, Ann, Donna Rooney, and David Boud. 2015. "Dilemmas in Continuing Professional Learning: Learning Inscribed in Frameworks or Elicited from Practice." *Studies in Continuing Education* 37 (2): 131–141. https://doi.org/10.1080/0158037X.2015.1022717.

Sachs, S. E. 2019. "The Algorithm at Work? Explanation and Repair in the Enactment of Similarity in art Data." *Information, Communication & Society* 23 (11): 1689–1705. https://doi.org/10.1080/1369118x.2019.1612933.

Sandberg, Jörgen, and Gloria Dall'Alba. 2010. "Returning to Practice Anew: A Life-World Perspective." *Organization Studies* 30 (12): 1349–1368. https://doi.org/10.1177/0170840609349872.

Sandberg, Jörgen, and Haridimos Tsoukas. 2020. "Sensemaking Reconsidered: Towards a Broader Understanding through Phenomenology." *Organization Theory* 1 (1): 2631787719879937. https://doi.org/10.1177/2631787719879937.

Scarbrough, Harry, Yaru Chen, and Gerardo Patriotta. 2025. "The AI of the Beholder: Intra-professional Sensemaking of an Epistemic Technology." *Journal of Management Studies* 62 (5): 1885–1913. https://doi.org/10.1111/joms.13065.

Schatzki, Theodore R. 1996. *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.

Schwennesen, N. 2019. "Algorithmic Assemblages of Care: Imaginaries, Epistemologies and Repair Work." *Sociology of Health & Illness* 41 (S1): 176–192. https://doi.org/10.1111/1467-9566.12900.

Seligman, Larry. 2006. "Sensemaking throughout Adoption and the Innovation-Decision Process." *European Journal of Innovation Management* 9 (1): 108–120. https://doi.org/10.1108/14601060610640050.

Sergeeva, Anastasia V., Samer Faraj, and Marleen Huysman. 2020. "Losing Touch: An Embodiment Perspective on Coordination in Robotic Surgery." *Organization Science* 31 (5): 1248–1271. https://doi.org/10.1287/orsc.2019.1343.

Shotter, John. 1993. *Conversational Realities: Constructing Life through Language*. London: Sage.

Streeck, Jürgen, and Siri Mehus. 2005. "Microethnography: The Study of Practices." In *Handbook of Language and Social Interaction*, edited by Jürgen Streeck, Siri Mehus, Robert E. Sanders, and Kristine L. Fitch, 381–404. New Jersey: Lawrence Erlbaum Associates, Inc.

Suchman, Lucy. 2007. *Human-machine Reconfigurations: Plans and Situated Actions*. New York: Cambridge University Press.

Taylor, James R., and Daniel Robichaud. 2004. "Finding the Organization in the Communication: Discourse as Action and Sensemaking." *Organization* 11 (3): 395–413. https://doi.org/10.1177/1350508404041999.

Vaara, Eero, Scott Sonenshein, and David Boje. 2016. "Narratives as Sources of Stability and Change in Organizations: Approaches and Directions for Future Research." *Academy of Management Annals* 10 (1): 495–560. https://doi.org/10.5465/19416520.2016.1120963.

Vaast, Emmanuelle, and Geoff Walsham. 2005. "Representations and Actions: The Transformation of Work Practices with IT use." *Information and Organization* 15 (1): 65–89. https://doi.org/10.1016/j.infoandorg.2004.10.001.

van den Broek, Elmira. 2025. "Unpacking AI at Work: Data Work, Knowledge Work, and Values Work." *Information and Organization* 35 (3): 100584. https://doi.org/10.1016/j.infoandorg.2025.100584.

van den Broek, Elmira, Anastasia Sergeeva, and Marleen Huysman. 2021. "When the Machine Meets the Expert: An Ethnography of Developing AI for Hiring." *Management Information Systems Quarterly* 45 (3): 1557–1580. https://doi.org/10.25300/misq/2021/16559.

van Hulst, Merlijn, and Haridimos Tsoukas. 2023. "Understanding Extended Narrative Sensemaking: How Police Officers Accomplish Story Work." *Organization* 30 (4): 730–753. https://doi.org/10.1177/13505084211026878.

van Krimpen, Floris, and Haiko van der Voort. 2025. "Co-creation with Machine Learning: Towards a Dynamic Understanding of Knowledge Boundaries between Developers and end-Users." *Information and Organization* 35 (2): 100574. https://doi.org/10.1016/j.infoandorg.2025.100574.

Vlaar, Paul W. L., Paul C. van Fenema, and Vinay Tiwari. 2008. "Cocreating Understanding and Value in Distributed Work: How Members of Onsite and Offshore Vendor Teams Give, Make, Demand, and Break Sense." *MIS Quarterly* 32 (2): 227–255. https://doi.org/10.2307/25148839.

Waardenburg, Lauren, and Marleen Huysman. 2022. "From co-existence to co-creation: Blurring Boundaries in the age of AI." *Information and Organization* 32 (4), https://doi.org/10.1016/j.infoandorg.2022.100432.

Waardenburg, Lauren, Marleen Huysman, and Anastasia V. Sergeeva. 2022. "In the Land of the Blind, the One-Eyed Man Is King: Knowledge Brokerage in the Age of Learning Algorithms." *Organization Science* 33 (1): 59–82. https://doi.org/10.1287/orsc.2021.1544.

Webster-Wright, Ann. 2009. "Reframing Professional Development through Understanding Authentic Professional Learning." *Review of Educational Research* 79 (2): 702–739. https://doi.org/10.3102/0034654308330970

Weick, Karl E., Kathleen M. Sutcliffe, and David Obstfeld. 2005. "Organizing and the Process of Sensemaking." *Organization Science* 16 (4): 409–421. https://doi.org/10.1287/orsc.1050.0133.

Wenger, Etienne. 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

Whittle, Andrea, Eero Vaara, and Sally Maitlis. 2023. "The Role of Language in Organizational Sensemaking: An Integrative Theoretical Framework and an Agenda for Future Research." *Journal of Management* 49 (6): 1807–1840. https://doi.org/10.1177/01492063221147295.

Willems, Thijs, and Ella Hafermalz. 2021. "Distributed Seeing: Algorithms and the Reconfiguration of the Workplace, a Case of 'Automated' Trading." *Information and Organization* 31 (4): 100376. https://doi.org/10.1016/j.infoandorg.2021.100376.