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Citation: Scarbrough, H., Chen, Y. & Patriotta, G. (2024). The AI of the beholder: intra-professional sensemaking of an epistemic technology. *Journal of Management Studies*, 62(5), pp. 1885-1913. doi: 10.1111/joms.13065

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THE AI OF THE BEHOLDER: INTRA-PROFESSIONAL SENSEMAKING OF AN EPISTEMIC TECHNOLOGY

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Abstract

New technologies are equivocal, triggering sensemaking responses from the individuals who encounter them. As an ‘epistemic technology’ AI poses new challenges to the expertise and jurisdictions of professionals. Such challenges may be interpreted quite differently, however, depending on the specialized role identities which develop within the wider professional domain. We explore the sensemaking responses of these intra-professional groupings to the challenges posed by AI through an empirical study of professionals playing different roles (front-line, hybrid and field-level) in the field of radiology within NHS England. We found that these intra-professional groupings sought to make sense of AI through a triadic view focused on the interplay of professional, client and technology. This sensemaking, arising from different jurisdictional contexts, led individual professionals to perceive that their agency was diminished, complemented or enhanced as a result of the introduction of AI. Our findings contribute to the literature on professions and AI by showing how intra-professional differences affect sensemaking responses to AI as a jurisdictional contestant.

Keywords: equivocality, sensemaking, profession, jurisdiction, future of work, AI technology

INTRODUCTION

The emergence of machine and deep-learning based AI has helped to reignite debates on the future of work by bringing into question the future of professional groups (Sako et al., 2022). With an outpouring of reports that AI can outperform the judgement of human experts (e.g. Brown and Sandholm, 2018; Cave et al., 2018; Reardon, 2019), commentators argue that AI is about to invade long-established professionally-dominated fields such as the law, medicine and consultancy. This is because AI constitutes an ‘epistemic technology’; that is, ‘a tool that plays a key part in the ongoing construction of knowledge’ (Anthony 2018: 661). As emerging epistemic technologies such as AI become involved in knowledge work previously ascribed exclusively to professionals (Loscher and Bauder, 2022), they impinge on the agency of professional groups by bringing into question their claims to unique expertise and, with them, the jurisdictions controlled on the basis of such claims (Pachidi et al., 2020).

At the same time, it is important not to see this jurisdictional contestation as a simple clash between an insurgent technology and a homogeneous professional group. Professions are not monolithic entities but are ‘segmented’ into different groupings on the basis of their specialized role identities and the agency to deploy their expertise within jurisdictional boundaries (Bucher and Strauss, 1961). These different role identities, in turn, affect how segmented professional groups apply diverse meanings to a new technology and develop jurisdictional claims in relation to it (Barley, 1986). But while intra-professional segmentation has been recognized as an important aspect of individual professionals’ interpretive responses to new technologies (Korica and Molloy, 2010; Adler and Kwon, 2013), scholars have been relatively silent on how and why such responses are produced (Goto, 2022), or the salience of the intra-professional segmentation underpinning them (Koljonen and Chan, 2023). If the encounter between AI and professional groups has the potential to generate contestation about the agency and jurisdictions

of professionals, then it becomes important to understand how different groupings within the same professional field construct meanings in relation to AI and develop differentiated responses to the technology.

To investigate the implications of AI for professional jurisdictions and how these may be interpreted in the realm of differentiated intra-professional responses, we draw on previous work which has highlighted the role of sensemaking in accounting for professionals' responses to the introduction of new technologies (e.g. Barley, 1986; Lanzara and Patriotta, 2001). In particular, we aim to contribute to an interpretive view of the intra-professional responses to AI by building on the notion of 'technology as equivocal'. This term was originally coined by Karl Weick to explain the sensemaking processes that are triggered by the encounter with a new technology (Weick, 1969; 1988; 1990). Weick's notion goes beyond asserting that new technologies are uncertain or ambiguous to indicate that their meaning is plural, contested and emergent from situated processes of sensemaking (Weick, 2020; Berente & Yoo, 2012; Griffith, 1999). Furthermore, individual professionals, having a unique, tacitly known, set of experiences, values, and knowledge, will tend to interpret events differently (Weick 1969). Although consensual meanings do develop within professional communities, they are dynamic and tend towards divergence over time (Zack, 2001). The notion of equivocality is therefore particularly pertinent to addressing the responses of professional groupings faced with the plural and contested meanings of AI as an epistemic technology which brings established notions of professional agency and jurisdiction into question. These encounters around AI are not only important leading indicators of the contested landscape invoked by claims around the future of work, but also a demonstration of the new forms of equivocality which are emerging around the way expertise is constructed and distributed between humans and machines.

The purpose of this paper is to provide new insights into the conversation on AI and professions by examining *how does intra-professional segmentation affect individual sensemaking responses to AI as an epistemic technology?* To address this question, we consider contemporary encounters between AI technology and professional groups in healthcare. Our study explores the patterns of sensemaking that radiology professionals manifest towards the use and implications of AI in their field. We explore the sensemaking process underlying these patterns and observe that professionals accommodated the advent of AI interpretively through a triadic view centred on their service relationships which juxtaposed professional, client and technology. This triadic view varied across groupings of professionals according to their segmented work roles and hence produced widely different interpretations of AI's implications for professional jurisdiction and agency. Specifically, front-line professionals made sense of AI as a disruptive presence in their working environment, viewing it as encroaching on their professional jurisdiction and threatening their autonomy and control of tasks. Other segments, however, interpreted AI more positively, which led them to see the technology as either complementing their role or even expanding their professional agency and jurisdiction. Based upon these findings, we develop a set of contributions on the role of intra-professional segmentation in professionals' sensemaking of AI, and articulate the implications of this sensemaking in relation to professional agency and jurisdictions.

The remainder of the paper proceeds as follows. First, we build on a review of previous studies on sensemaking and professions to develop our theoretical framework around the equivocality of new technologies, relating this, in turn, to the equivocality of AI as an epistemic technology. We then introduce our research design and articulate our data collection and data analysis procedures. Following this, we present and discuss the findings of our study. Finally, we suggest new theoretical understandings of professionals' sensemaking in relation to AI.

THEORETICAL BACKGROUND

The encounter with AI may generate considerable pressure on the sensemaking of professional groups (Anthony, 2018; 2021; Goto, 2022). AI's opacity and its implications for individual agency and control of tasks, as well as its effects on jurisdictional boundaries, may be expected to reveal important variations in sensemaking responses. Sensemaking is triggered when, in the face of the 'ongoing, unknowable, unpredictable streaming of experience', individuals 'search for answers to the question, "what's the story?" (Weick, 2005: 410). In the incipient state of sensemaking, individuals cope with this streaming of experience by 'bracketing', i.e. extracting certain cues which then become objects of the sensemaking process (Weick, 1979, 1995; 2005). Through bracketing, individuals enact particular features of a situation and are eventually able to construct meaning by imposing labels, categories or images on those portions that are set apart. These constructed meanings may contribute to answering the bracketed concerns or questions (Weick, 1995), and thereby allow individuals to stabilize the streaming of experience (Weick et al., 2005).

In applying this sensemaking perspective to the encounter between AI and professional groups, an important first step is to build on Weick's notion of 'technology as equivoque' (Weick, 1990). According to Weick, new technologies are 'equivocal' in that they admit of several possible or plausible interpretations and therefore can generate contested meanings or be subject to misunderstandings. Because of equivocality, new technologies require ongoing sensemaking to monitor, predict, learn about and respond to the multiple states that a machine can assume. In presenting new technologies as 'equivocal', Weick is emphasizing that technology is not equivocal per se, as an object. Rather, equivocality arises from the complex interaction between the technology as a material artefact and the sensemaking efforts by

which particular groups and individuals strive to understand what is going on. In our study, therefore, we need to address both the motivating factors which animate professional groups' attempts to make sense of AI, and what is distinctive about this 'epistemic' technology.

Sensemaking, role identities and professional boundary work

In addressing the first topic, previous literature suggests that professionals' sensemaking efforts towards new technologies in general are intertwined with their role identities (Weick 1995; Vough et al., 2015), that is, 'the goals, values, beliefs, norms, interaction styles, and time horizons that are typically associated with a role' (Ashforth 2000: 475). These role identities serve as a 'filter' for sensemaking since individuals interpret new technologies, and accordingly associate or dissociate with them, depending on whether they perceive them as a threat to their existing identity or as an opportunity for self-enhancement (Dutton and Dukerich, 1991; Weick, 1995).

For individual professionals, role identities are ultimately anchored in professional jurisdictions (Chreim et al., 2007). Jurisdiction, defined as the 'simple claim to control a certain kind of work' based on knowledge claims (Abbott, 1988: 64; Anteby 2010; Heusinkveld et al., 2018), is important because it helps to define the scope of individual professionals' agency and autonomy (Pakarninen and Huising, 2023). The boundaries of jurisdictions are themselves often the product of the professional groups' efforts to 'colonize' the new tasks and forms of expertise emerging under conditions of technological change (Abbott, 1988). By creating new forms of expertise and securing jurisdictional control of associated tasks, professional groups are able to actively exploit new technologies to entrench their jurisdictions and expand their agency (Muzio et al., 2013). Conversely, new technologies may expose professional groups to jurisdictional contestation as the 'invading actors' of other professions seek to extend their control over new tasks and domains of expertise (Heusinkveld et al., 2018; Latour, 1994).

Recent studies of this dynamic interplay between new technologies and professional groups have tended to focus on the ‘boundary work’ (Gieryn, 1993; Faulconbridge et al., 2023) involved in maintaining or securing jurisdictions. This has highlighted the different forms of ‘jurisdictional control’ (Noordegraaf, 2011) which professions may deploy in seeking to defend or blend their expertise in the face of technological change (Pareliussen, et al. 2022). Such elements of boundary work are already beginning to emerge around the introduction of AI into professional domains (Sako et al., 2022), with recent work highlighting the importance of such jurisdictional concerns in sensemaking efforts towards AI. Goto’s recent (2022) study of auditors, for example, found that their sensemaking of AI demonstrated the influence of professional institutions on individual sensemaking.

In the field of radiology specifically, early evidence suggests that the implications of AI for the jurisdictions of radiology professionals are being worked out through various ‘modes of boundary work’ such as ‘defending, negotiating and coalescing’ that seek to carve out a new role for radiologists (Faulconbridge et al., 2023; p. 6). Viewed historically, though, we should note that the sensemaking of new technologies by professionals in this field has long been intertwined with such questions of jurisdiction and agency. Barley’s study (1986) of the introduction of new CT-scanning technology into radiology shows that such sensemaking is critical to the micro-level integration of new technologies into practice, and also serves to underpin wider shifts in professional jurisdiction. Barley not only shows the jurisdictional conflict created around this new technology but also how it triggered a variety of interpretive responses from radiologists at different sites (cf. Anthony, 2018).

Barley’s work and the historical experience of radiology is also a reminder that new technology is important for professionals not only as a threat or opportunity for their current body of expertise and jurisdictional boundaries, but as a driver of internal structuring as new role

identities and forms of expertise emerge (Koljonen and Chan, 2023; Sako et al., 2022). Previous work in the radiology field has shown how the increasing work role specialization associated with new technologies leads professional jurisdictions to not only expand but also to become more internally differentiated. In Bucher and Strauss' seminal (1962) study, for example, different role identities are seen as emerging within the radiology profession in response to the technological developments of that period. Building on this work, Scott (2008) highlights the way in which such intra-professional segmentation may contribute to the maintenance and expansion of jurisdictional boundaries by proposing a classification of intra-professional groupings according to different role identities; 'Creative Professionals', who are typically employed in research universities, help to validate the cultural-cognitive frameworks that underlie the work of their profession; 'Carrier Professionals' are educators, advocates and interpreters, spreading the message to distant locales (p.227); and 'Clinical Professionals' who 'apply professional principles to the solution of problems presented by individual clients' (p.228).

Taken together, these studies speak to the differentiated rather than unitary responses of professionals to new technology, incorporating multivocal claims to expertise and jurisdiction dependent on the agency and embedded work roles of different professional segments (Korica and Molloy, 2010; Currie et al., 2012; Martin et al., 2009; Koljonen and Chan, 2023). Based on this understanding, we are able to appreciate how the equivocality of AI may be experienced quite differently by individuals within the same professional field according to their segmented role identities. This not only highlights the multiplicity of meanings that may be applied to new technologies but also provides some clues as to the differentiated paths by which such meanings may be constructed amongst intra-professional groups. This is an important consideration when addressing existing work on the encounter between AI and professional groups.

AI as epistemic technology and challenges to jurisdictional control

As noted above, one important aspect of AI's equivocality relates to its distinctiveness compared to previous forms of new technology. Our review of recent literature on this topic suggests a contrast with previous forms of technological change which tended to create inter-professional struggles at the margins of existing jurisdictional boundaries (Barley, 1986; Sako et al., 2022; Bechky, 2003; Korica and Molloy, 2010; Heusinkveld et al., 2018). AI, however, is seen as posing an *epistemological* challenge since it questions the fundamental value of the professional expertise on which these boundaries are based. In particular, the opacity of machine learning algorithms is seen as creating a 'black box' which represents a challenge to the knowledge claims of professional groups and prevents them from questioning the judgements and outputs produced by AI (Curchod et al., 2020). Anthony (2018) argues that such epistemic technologies prompt 'questioning' of the assumptions embedded within them and that such scrutiny is enabled not only by relative expertise but also by relative professional status. Thus, by incorporating 'new rationalities, processes and knowledge into organizations' (Loscher and Bader, 2022, p. 92), AI creates a situation where actors other than rival professions can challenge a profession's jurisdictional control and engage in struggles over the boundaries and content of professionals' work (Bouchard et al., 2023). AI technology therefore represents a significant 'invading actor' in its own right (Heusinkveld et al., 2018; Latour, 1994).

One reading of this jurisdictional contestation posed by AI is to see the technology as a direct assault on professionals' expertise (Susskind & Susskind, 2015; Anthony, 2018), and thus a profound threat to their jurisdictions (Anteby, 2010). Roles which are highly dependent on cognitive skills are seen to be vulnerable for the first time to automation and replacement

(Brynjolfsson and McAfee, 2014). Other recent work, however, characterises the encounter with AI in less disruptive terms (Sako et al., 2022, Goto et al., 2022). In particular, Pakarinen and Huising (2023) question this view by counterposing a ‘substantialist’ view of expertise ‘conceptualized as an intellectual possession, mental achievement, or cognitive state performed – by humans or machines’ with a relational view where expertise is seen as being ‘generated, applied, and recognized within interactions’ (p.2). Recent scholarly research has followed this relational ontology to study emerging technologies such as AI, and has highlighted the deeper understanding to be gained from studying the relations and dynamics between different actors (both human and non-human) (Barrett et al., 2012; Bailey et al. 2022).

One important consequence of adopting this relational view is to question the idea that the encounter between AI and the expertise of professionals centres on the capacity of AI to challenge existing jurisdictions simply by emulating or surpassing professionals’ cognitive skills. Rather the encounter is presented by Pakarinen and Huising (2023) as a process in which technologies become ‘embedded in the network of interactions through which the relational expertise of professions is constituted’ (p.1). As these authors note, from a relational perspective ‘entities acquire meaning through their relationship to the action and other interactants they connect with’ (p.8). This relational view presents the encounter between professionals and AI as unfolding within distinct social and material contexts (Barrett et al., 2012; Bailey et al., 2022), and not abstractly as a matter of the displacement or replacement of human capabilities. It suggests that professionals’ responses to AI may be prompted not so much by an overt threat to the boundaries of professional jurisdictions as by its ‘embedding’ in existing assemblages of actors, practices, and relationships which serve to constitute such jurisdictions in practice (Pakarinen and Huising, 2023).

The relational ontology sensitizes us to the conditions under which expertise is formed and applied, and the significance of the network of interactions within which professionals are situated for the advent of new technologies such as AI. Addressing our research question involves exploring intra-professionals groupings' responses to the introduction of AI under such conditions. As the above noted studies have made clear, however, this requires the development of a sensemaking perspective which simultaneously considers the role identity of professionals, the relations in which professional work is inscribed and the equivocality posed by the technology itself. The development of such a perspective is outlined in the remaining sections of this paper.

In summary, to relate our review to our research question, previous work shows how professionals' sensemaking efforts towards the equivocality posed by new technologies are ultimately grounded in their role identities and associated jurisdictions. As a result, professionals' sensemaking is not only bound up with jurisdictional contestation at the boundaries of their expertise, but also becomes segmented over time with associated restructuring and role specialization (Koljonen and Chan, 2023. Goto et al., 2022). Such segmentation represents an important but often neglected component in individual professionals' responses to new technology, and may be especially salient where such technology carries implications for professional jurisdictions and agency based on specialized forms of expertise. These responses reflect the meanings which different intra-professional groupings attach to new technologies through a process of sensemaking. In the case of an epistemic technology such as AI, however, these sensemaking efforts are intensified by features, including opacity and claims to expertise, which render this technology's relation to existing professional agency and jurisdictions especially problematic. The encounter with such

equivocality will therefore likely vary according to the different intra-professional groupings involved, and their role identities and jurisdictions. In the next section, we show both how and why the sensemaking efforts of intra-professional groupings responded in different ways to this challenging encounter with AI.

METHODOLOGY

Empirical Setting

Much of the current debate on AI in healthcare is centred on the field of radiology since this is a specialism in which AI is seen as offering the greatest promise of widespread use and patient benefits (Loder and Nicholas, 2018; Faulconbridge et al., 2023). The introduction of AI into this arena represents an important source of equivocality for professional groups. As a general-purpose technology with a myriad of potential applications, AI has been described as a ‘paradigm change’, offering significant advances in diagnosis and treatment and providing a solution to workforce shortages (Joshi and Morley, 2019). At the same time, the design and delivery of healthcare services remain subject to a high degree of control by powerful professionals. Since the exercise of diagnostic decision-making and judgement in this arena brings with it much higher stakes for all concerned (Challen et al., 2019; Loder and Nicholas, 2018), with life and death decisions being made about patients for which individual professionals are personally accountable (He et al. 2019), the risks and the benefits attached to the introduction of AI are extremely high. Now, the capacity of AI technologies to ‘learn’ from data-sets, and thereby achieve enhanced decision-making capabilities, is seen as creating a new form of agency within healthcare settings; one whose relationship to the expertise of healthcare professionals remains unresolved (Lebovitz et al., 2022). The potential jurisdictional conflict between AI and professionals thus provides an ideal site to examine our research question as

to how intra-professional segmentation affects individual sensemaking responses to AI as an epistemic technology.

Data Collection

In our study, we adopted an interpretivist approach to data collection with the aim of eliciting the sensemaking responses of individual professionals in our sample (Weick et al., 2005). Drawing on the sociology of professions literature and in line with our research question (Noordegraaf, 2011; Scott, 2008; Currie et al., 2012), we purposefully sampled different segments of professionals within the same broad field. The professional associations in this field (Royal College of Radiologists and College of Radiographers) encompass a wide variety of specialized roles involved in the use of radiological techniques for patient care, ranging from the handling of X-ray and CT scanning procedures through to diagnosis and treatment. Many of these professionals were working within or were associated with the NHS England breast cancer screening programme/Breast units. Some were full-time practitioners in the Breast Units within the English NHS, while another group were professionals working in managerial roles in these units. Our sample also included professionals who combined practitioner roles in the NHS with academic or research roles in universities, and the officers of professional associations.

Echoing Scott's framework (2008), which differentiated between groupings according to their specialized roles and involvement in the institutional work, we organised our sample into the following three broad categories: professionals, managers, and leaders. 'Professionals', in our case, meant front-line practitioners who were directly involved in the treatment of patients. 'Managers' referred to hybrid professional-managers who were engaged in managing their fellow professionals. Since professionals in healthcare are typically embedded within large provider organizations such as the NHS in England, many professionals in the radiology field

occupy such hybrid roles. Furthermore, we applied the term Leader to ‘field-level’ professionals whose roles were more concerned with the institutional work of the profession (in effect, conflating Scott’s ‘creative’ and ‘carrier’ groups). In addition, following Dwyer et al. (2021), we assumed that these intra-professional groupings drew on distinctive role identities based on experience and socialisation in a work role, which they applied to extracting certain cues and further bracketing these cues for sensemaking.

We collected our data through interviews, non-participant observation, and the gathering of documentary evidence including online events organised by various institutions. We conducted a total of 40 interviews with individuals working in the radiology field (24 female, 16 male). This sample was comprised as follows; 16 front-line Professionals (10 female, 6 male) working with patients in the Breast Screening program/Breast Units, 8 ‘hybrid’ Managers of the Breast Screening program/Breast Units (4 female, 4 male) , and 16 ‘field-level’ Leaders (10 female and 6 male), including 10 academic practitioners and 6 officers of professional bodies. Interviewees were identified either through various events attended by two of the authors, their organisations’ websites, or via snowballing. Interviews were conducted through face-to-face meetings, and online platforms such as MS teams, or telephone. They lasted between 40 minutes and 2 hours and were transcribed verbatim. Some interviews were followed up by additional short online meetings or phone calls, where clarification and elaboration of the interview was sought. Interviews focused on respondents’ views on AI technology in radiology and included questions such as their understanding of AI in the field, their perceived risks and benefits of AI for patients and users, and the challenges associated with AI technology adoption.

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Two of the authors also engaged in non-participant observation in meetings that were related to the introduction of AI technologies into radiology department/breast units, and notes were

taken on the spot. These notes were subsequently categorised and, together with notes taken from online events, informed our analysis (Table I). Documents related to the introduction and implementation of AI into radiology, e.g. internal reports, workshop presentations, were also gathered (Table II). The research team did not pursue access to documents such as patient records that included sensitive data about individuals. Full ethical approval was granted before the start of the project.

-- INSERT TABLE I & II ABOUT HERE --

Data Analysis

Consistent with the focus of our research question, our analytical strategy was informed by process theorising (Langley, 1999). We initially mapped the sensemaking process of each professional group, seeking to understand how individuals within each professional segment made sense of the introduction of AI into radiology. The aim was to capture distinctive sensemaking patterns stemming from the encounter between different groupings of professionals and an equivocal technology. Consistent with other studies (e.g. Goto, 2022; Vough et al., 2015), we looked for patterns in sensemaking by considering how the previously identified professional groupings bracketed cues around AI (Dwyer et al., 2021). This analysis led us to identify three distinct sensemaking patterns - AI as an antagonistic agent, as a system intervention, and as a catalyst for change - which characterized the Professionals, Managers, and Leaders segments respectively. Table III details how we conducted our analysis during this phase, highlighting the cues bracketed by each group and how these cues were interpreted.

-- INSERT TABLE III ABOUT HERE --

The mapping of the sensemaking process served as ‘an intermediary step between the raw data and a more abstract conceptualization’ (Langley, 1999, p.701). Following the middle-range

theoretical explanation, i.e., the sensemaking patterns, we compared the different responses from the three professional groups and tried to understand why certain sensemaking patterns occurred. This led us to consider the influence of each grouping's role identity and the service relationship they had with their client. For example, we noticed that the Professionals grouping focused on their role identity as front-line practitioners, and bracketed sensemaking cues as intruding on their autonomy and accountability, as well as interrupting the relationship with patients (clients). Progressively, we focused on a theoretical understanding of the dynamics observed, which led us to interpret professionals' sensemaking processes in terms of an interplay between technology, role identity and the service relationship. Our analysis showed that this triadic interplay led to perceptions of AI as constraining, enhancing, or expanding professionals' agency and claims to jurisdiction.

We followed the principles of reflexivity throughout data collection and analysis and were attentive to the trustworthiness of our interpretations (Pratt et al., 2019). First, we drew on multiple sources (interview, observation, and documents) and triangulated observations and documents with interviewees' accounts (Silverman, 2000). Second, in line with sensemaking theory (Weick, 1995), interviewees' accounts were not treated as 'true reality' (Miller and Glassner, 1997; Silverman, 2000), but rather as plausible narratives constructed around the equivocality of AI. Third, we engaged in multiple discussions and reflected on our interpretations around how and why these intra-professional groupings made sense of AI differently. Two of the authors were close to the data and the empirical setting. Conversely, being detached from the field, the other author was able to interrogate emerging interpretations and provide alternative views on the observed phenomena. Through multiple rounds of discussion, we reached a shared interpretation of the data.

FINDINGS

Our findings can be summarised as follows. Upon encountering AI as an equivocal technology, the various professional groupings (professional, manager, and leader) in our sample responded to its interpretive flexibility by drawing on their respective role identities and the service relationship with their focal client, and focussing upon the triadic interplay among role identity, technology, and client. This triadic relationship led to segmented professional groups picking up different cues within the assemblage of actors, practices and relationships and bracketing the technology in distinct ways. The resulting sensemaking patterns affected each group's perceptions of their agency and jurisdiction in relation to AI. Below we present how each segmented group of professionals made sense of this equivocal technology.

Professionals – AI as antagonistic agent

Professionals grounded their sensemaking in a practitioner identity where their expertise was deployed in the service of patient care. They made sense of AI from the position of professional caregivers who strive to do the best they can for their patients – the primary recipients of their professional work:

You can't think about what radiologists think about it, you have got to think about what patients think about it. And the minute you bring AI, you have got to tell patients about it...we need to do the best we can for our patients (Interviewee 29)

Professionals were concerned that the introduction of AI would compromise their relationship with patients and cause them more anxiety with the introduction of AI. This was because, in their view, patients would be reluctant to have a machine performing medically-related tasks, such as planning appointment and carrying out assessments:

The anxiety patients go through with recall, even in those few days between them receiving their letter and coming for their appointment is really quite extreme...If we're

causing people a lot of anxiety and recalling people excessively. Then, they all start to think they can't trust systems if they're being recalled on the basis of a machine. (Interviewee 18)

Every patient you are doing an assessment on, it is causing them anxiety. Unless you had evidence to show AI was more efficient, that is to say you were picking up more cancers, you could possibly justify using it. (Interviewee 30)

Also, for this group, the equivocality of AI resided primarily in its agentic properties, which challenged the jurisdiction associated with their role and task:

It (AI) makes us question ourselves, asking ourselves whether I know what I am doing. I think it is also why people don't want these technologies. It makes them doubt themselves. (Interviewee 38)

This framing of the technology led professionals to personify AI and depict it as an antagonistic agent that disrupted, rather than supported, the core work practices and relationships with patients embedded in their professional role. In their accounts, professionals extracted cues where AI “tells” them what is abnormal, “brings up prompts”, and “calls stuff”, and “guides you”. They found this psychologically challenging and stressful since it was bracketed as an intrusion into professionals’ decision-making autonomy. As a result of the perceived encroachment on the autonomy of their professional work, professionals personified and attributed agency to AI.

Psychologically, the use of AI is really challenging, isn't it? Because if the machine is telling you that's abnormal, that's already challenging you... If it (AI) brings up so many prompts for things that are not quite normal, at which point are you going to sit down and just have a rest and stop being stressed about the fact that it's calling stuff and you are disregarding it?! I think that's really challenging. (Interviewee 19)

If you're working with AI, in a sense it's got control in terms of highlighting an area and, if you've not seen that area on the plain film mammograms then it's guiding you to look back retrospectively. So, essentially, it's in control of you. (Interviewee 40)

Professionals also extracted the cue of AI reducing opportunities for professional training and development. Practitioners were required to scan or interpret a specific number of images annually to maintain professional standards. However, the introduction of AI reduced the volume of scanning or interpreting work for staff members, inhibiting professional skill development and the mastering of expert knowledge. This was perceived as the technology intruding into their jurisdiction:

We also need to prove that we're seeing enough mammograms for our own training and development and sensitivity, so we are told to read 5000 a year. So, we need to push those through and if a machine comes and takes half of those away, now where are we going to get the other 2500 from? (Interviewee 18)

Meanwhile, AI technology posed barriers for collaboration among their peers, which is a key vehicle for professionals to improve their professional knowledge and enhance jurisdiction. Unlike human 'second readers', AI was seen as black boxed, being opaque and resistant to questioning. As the following quote shows, the Professionals grouping were worried about a loss of skills:

We would be deskilled in a way because that you don't know why it has come to this decision. If you are not doing film reading, you might not understand why it is making the decisions it does. (Interviewee 30)

A further cue for sensemaking was provided by concerns that AI might not be able to meet professional standards of quality assurance and patient safety. This cue was bracketed as

damaging to patients' interests and harmful to professional work. Again, this was perceived as a jurisdictional challenge.

I suppose we will get to a point where that AI system may be doing triage of a thousand images, and then a small proportion is left for the radiologist to look at. Then, it is a bit concerning, isn't it? That is a bit more concerning than actually having a human person look at every image. I think at the moment it wouldn't be ethical at all to have a machine decide on how many thousands of images, and if anything goes wrong, how is that going to be Quality Assured? (Interviewee 24)

In addition, uncertainty around collaborative working with AI technology was selected as a cue for sensemaking. These professionals were unclear as to how collaborating with AI as a reader would match up to the existing practice of 'arbitration' between human readers. This extracted cue was thus bracketed as confounding professional accountability. Whereas professionals' control of tasks within their jurisdiction involved accountability for errors, AI could not be apportioned blame:

If the AI picks up a cancer and I've dismissed it, and then the patient comes with an interval cancer, so a cancer that occurs between their first screen and then their subsequent screen, how am I going to feel about that? The fact that the machine picked it up, I disregarded it and now it's a cancer and what did we do...? That's even worse than your friend picking it up, your colleague picking it up, you know – that's terrible – and you've dismissed it, because a lot of the time they will go, 'Oh, we'll go to arbitration.' Then they will recheck it and I'm not sure really, where arbitration is going to sit with AI...(Interviewee 18)

If a computer, AI in this case, makes a mistake, who is responsible? (Interviewee 25)

In summary, triggered by the interpretive flexibility of AI as an equivocal technology, the Professionals grouping made sense of AI from the position of caregivers. Based on their service relationship with patients, they drew on a role identity centred around patient care, and extracted cues that prompted them to personify this technology and attribute agency to it. The bracketing of these cues led them to make sense of AI as an entity that impinged on their professional autonomy and accountability, and the service relationship with patients. As a result, professionals exhibited a sensemaking pattern that prompted perceptions of AI as an antagonistic agent that interfered with their work roles and relationship with patients, constrained their agency, and challenged their professional jurisdiction.

Managers - AI as a system intervention

Managers in our case were characterised by a hybrid work role identity that blended professional work with managerial responsibility. Their role identity was shaped by the service relationship towards the organization, whereby their expertise was deployed to maximise organisational goals and efficiency. Accordingly, their sensemaking towards AI was bracketed by a focus on high quality service and efficient service delivery within their organizational context. From this perspective, AI technology was seen as enhancing managers' ability to exercise control over the organisation.

I am director of the breast screening programme for [location name], and as well as being a consultant breast radiologist. I lead the symptomatic service and I manage the screening service... AI is gaining momentum is because of the workforce crisis. It's not going to help with regards to obtaining the mammograms, but where it could help is in reading the mammograms. What you can then do is create efficiency within your own workforce (Interviewee 20)

For this group, the equivocality of AI resided primarily in its systemic reach. Its black boxing effect would serve the organization through the delegation of tasks. As one member of this group put it” ‘Now, I suppose with AI, the thought is about ‘where does AI fit in’ is, actually, it could fit into all sorts of areas’. As a result of this role identity, the cues extracted related to the role and place of AI within the current organisational context and were bracketed in terms of their implications for service delivery and overall organisational efficiency. Managers thus constructed AI as a beneficial system intervention which could enhance the management of resources and the delivery of targets.

AI was viewed as complementing rather than contesting the jurisdiction and agency of this professional segment. This sensemaking pattern was based on a decoupling of the roles of hybrid professionals and the technology, with the former focusing on discretionary aspects of the task and the latter involving the delegation of bureaucratic and routinized tasks to the technology.

What you can then do is create efficiency within your own workforce because if you don't have the numbers (of staff), then if you can get a machine to do part of the job, then you can release people to do other parts of the job that machine learning can't do.

(Interviewee 20)

Managers’ focal concern was how to utilise AI to help service delivery within organisational contexts which were sometimes characterised as suffering from the inadequacy of current IT systems, or as exhibiting an “extremely paper heavy environment”. They therefore bracketed cues around the implementation of AI technology in their organisations. For example, one of this group emphasized the need to align AI with current IT infrastructures:

What's been a major limitation...has been the current state of our IT software...I feel that our Trust is a bit more progressive but where we are let down is the IT infrastructure is quite old to have AI. (Interviewee 20)

Relatedly, managers selected as a sensemaking cue the attitudes and motivations of staff as a resource vital to organizational functioning. They highlighted the importance of “clinical engagement” and argued that it was crucial to “bring clinicians on board” for the successful implementation of AI. Their bracketing of the AI technology thus centred on effective AI implementation and better service delivery.

I would need to get buy-in from the radiologists (to introduce AI to the department). I think, first of all, the radiologists. I think the clinicians largely are confident in the radiology decision-making. If we felt that AI was going to help us to make the decisions better, they would be happy with it. You have to provide the evidence slowly, introduce it as a thought first of all. (Interviewee 22)

Significantly, in constructing their own meaning for AI as a system-level intervention, managers did not limit their sensemaking to professional radiology work but were sensitive to a wide array of organizational issues affected by AI. They extracted the cue that AI could be deployed across multiple arenas, and thus AI was further bracketed as a tool that could help improve the efficiency of the radiology department as a whole. In this respect, they did not see AI as an intrusion upon professional jurisdiction, but rather as aligned with their core objective of improving the overall efficiency of the radiology department.

I don't see it (AI) only in the clinical environment. I'd like to see it more in the administrative, quality assurance, patient experience, client uptake and yes, in imaging. (Interviewee 17)

AI could fit into all sorts of areas where we have inefficiencies including some really smart booking, smart invitation system. A lot of that is very manual at the moment and that's time-consuming. (Interviewee 22)

Managers also noticed workforce shortage issues in their organizations and, in selecting this cue, bracketed AI as a tool to combat workforce shortages in radiology service.

The opportunities are that we can get a good machine learning and, with AI, the accuracy rate, in the screening space and probably the symptomatic space also, would reduce the number of recalls to interventional work. So, we don't probably need to be performing as many biopsies as we would, which increases our capacity space in terms of where we are really short staffed in terms of the face-to-face engagement. (Interviewee 34)

In contrast to Professionals, this group's sensemaking around AI attended primarily to their organizational context rather than to front-line radiology work. They noticed that AI might enable different ways of organising radiology services, including, for example, national level standardisation or the development of regional consortia for AI deployment. This cue was bracketed around the potential for the technology's functionalities, risks and benefits to be assimilated into organizational systems and structures. AI technology was thus seen as a tool to be deployed in achieving higher level objectives and "delivering better services", thereby enhancing the jurisdiction and agency of the Manager grouping.

There needs to be a directive from the national level to say that we need standardisation, we need equality of care, and if AI can do this, you need to deploy it - not need, you must deploy it, because it doesn't leave the opportunity for egos to override any other decision making, because humans still have the flaw of ego and to say, 'I know how to

run my service, my service is fine.' It's not about your service is fine, we need to be forward thinking of how we can better deliver services. (Interviewee 34)

We should probably be thinking about a consortium for the south-west. I do think these are the sort of thoughts we should be having, if we're going to do AI, it shouldn't just be a single unit doing it, we should be grouping all that resource to make that research more powerful and then move forward, because actually, it means we'll have better evidence, more quickly as well, and it's inclusive. (Interviewee 21)

At the same time, some managers expressed more nuanced views of AI which went beyond an appreciation of its potential organizational benefits. Such views included concerns, for example, as to whether AI could acquire the tacit knowledge of professional staff, as shown in the following quote:

A lot of what we do come with experience and is instinct and getting a feel for what we do, and that comes with years of working. Can something replace that? It is nothing tangible, but I guess it comes to your experience and you are making a judgement on that basis. Can the algorithm do that? (Interviewee 23)

To sum up, Managers mainly responded to AI's interpretive flexibility in terms of its implications for their organisational context. Seeing the organisation as their primary client, they were attentive to organisational issues such as the inadequacy of current IT systems, the importance of clinical engagement in AI implementation, and the incorporation of AI in the broader organisational structure. This grouping were the most attuned to the resource implications of AI, and the most enthusiastic about its labour-saving potential. They bracketed these cues around AI helping to alleviate workforce shortages in radiology and increasing the efficiency of the radiology department. As a result, unlike the contested domains perceived by professionals, the jurisdictions of managers and AI were rather seen as decoupled, with the

latter being viewed as a technical infrastructure that would support this group in performing their tasks. Since Managers' sensemaking towards AI was grounded in its implications for their service relationship with the host organisation, the technology was broadly seen as enhancing their agency.

Leaders - AI as a catalyst for change

Leaders in our case refers to the field-level group of professionals, who are made up of officers of professional bodies and academics whose practitioner work was combined with research and education. They drew on a field-level role identity that involved longer timescales and which focused on growing the profession and serving professional membership. For this group, the equivocality of AI resided in the wider field, and particularly in terms of its potential to bring change in the aims and scope of the profession and its services to members. Their extracted cues focused on research networks, conferences and events related to AI in radiology, and the impact of AI on education and professional standards. Their bracketing of AI was primarily around the role of AI in developing the profession and expanding professional jurisdiction. Accordingly, in their accounts, AI was characterized as an advancing force in the field of radiology and a 'catalyst for change'.

This group of professionals made sense of AI from the position of leaders. As underlined by various documents and the professional associations' official websites, field-level professionals were concerned with the research, development, and promotion of technological innovations in their field. Meanwhile, as shown in the following quotes, they emphasised their role in protecting not only the profession, but also their fellow professionals.

I think we need to adopt technology, but we also have a role as protecting our members, as well. There is a little bit of professional boundary there too in terms of protecting people's roles and jobs. (Interviewee 9)

With the advent of AI, individuals were seeking to serve the profession through the development of education and career frameworks so as to upgrade professional expertise:

Professional officer attending the event contends that work to review the education and career framework will continue to be core to the development of standards of proficiency for the profession. The work will take into account the opportunities for innovation and development of practice and patient care that are afforded by evolving technology, AI, machine learning and deep learning. (Event note 4, Officer)

Although their role identity was primarily defined by their service relationship to the professional body, Leaders echoed the Professionals grouping in emphasizing the paramount importance of patients' interests. As shown in the following extracts, however, they saw this concern with the patient as a way of mobilizing the profession as a cohesive entity:

One of our core roles is patient care, so diagnosis, screening, treatment, surveillance, throughout that runs the patient care. If we maintain our narrative of what difference will artificial intelligence make for patient care. If we focus it back to patient care – rather than people panicking about things, everybody shares that core element of patient care. (Interviewee 4)

The sure thing is that AI is not a thing of the future. AI's already here. We have to learn to live with it and we have to make the most out of it for our patients, because we are all in this for our patients. (Interviewee 1)

Leaders felt that AI could make radiology a more “technologically enabled speciality and discipline”. They bracketed this cue as a new profession emerging with the introduction of AI and perceived it as an opportunity to extend the jurisdiction of professionals in the radiology field.

The people that go into radiology will change over time. They will be people who are much more interested in technology, AI, machine learning, and really viewing radiology as a data-driven specialty rather than just an image-driven specialty. (Interviewee 13)

I think we might end up with a very different kind of radiologist of the future, as we become more technologically enabled as a specialty and a discipline. (Interviewee 6)

In the same vein, Leaders presented their profession as a front-runner in exploiting the potential of AI technology. This sensemaking cue was bracketed in terms of the wider institutional question of future professional boundaries. By situating AI in the wider sweep of institutional history and their profession's relationship with technology, they drew on professional knowledge not in terms of the agency and control of individuals but as an opportunity to reshape professional jurisdictions.

The radiography and radiology profession altogether have been used to technology changes and advancements. We have been evolving and adapting in response to these new technologies and embraced the advanced imaging opportunities offered by these technologies. (Event note 4)

We are well aware that radiology is the most digitised area of healthcare, and quite rightly so...We are well aware that we are probably the front runners for AI development and roll-out. We are not afraid of AI; we have taken on technology since 2006 when we all got digitised with PACS (Picture Archiving and Communications System,) so we've had a huge change in how we work. (Interviewee 5)

Leaders also noticed that AI could reduce the amount of routine work and free up time for decision making in core areas of work. The black boxing effect of AI was not perceived as problematic, being subsumed within the wider opportunity to embrace AI as a new source of

legitimacy and a means of expanding professional claims to expertise. In their view, AI did not interfere with professional work but helped expand their professional jurisdiction and extend the agency of their practitioner colleagues.

Radiologists know what it (AI technology) will do, it will make our lives better; it will remove the mundane tasks. It will make our jobs a lot more interesting and actually use the medical knowledge and the experience that we have gained over the last 13 years before we become radiologists. (Interviewee 5)

This group also extracted as a cue AI's implications for education and professional standards. Leaders viewed the introduction of AI technology as a prompt to plan for the future of the profession through education and other forms of professional development. They bracketed AI as something for the profession to "weave into its structure" to maintain professional "boundaries", i.e., helping to reshape the radiology profession. This bracketing of AI technology in terms of education and professional standards was seen as extending the jurisdiction and agency of this group.

I think we do have AI getting woven into our structure now which I think is useful. We have some specific individuals with a responsibility for it. We have a policy statement which is a little bit around watching brief and a little bit about early tentative support. (Interviewee 9)

So, one of the things we are doing currently, is research at all levels through our students and PhD or master's students on AI; to understand the impact of AI on radiography practice; to create the right plan for the future of the profession, and to understand what areas of research we have to further develop to create the right entrance space. (Interviewee 1)

To sum up, this group of professionals made sense of AI from the position of leaders serving a community of professionals. They interpreted the equivocality of AI as an opportunity to enhance the expertise of the profession and secure its future by exploiting the potential of AI through education and professional standards. These extracted cues were bracketed around the development of the radiology profession and the reshaping of its future boundaries. AI technology did not intrude into the service relationship with the profession as a whole. Rather, AI technology was seen as offering opportunities to serve the profession through the development and upgrading of professional expertise. AI was therefore perceived as a vehicle to extend professional agency and expand jurisdiction.

DISCUSSION

Our study has addressed the question of *how intra-professional segmentation affects individual sensemaking responses to AI as an epistemic technology*. Figure 1 synthesises our findings, delineating how professionals make sense of the introduction of equivocal AI technology and how their sensemaking efforts vary in relation to intra-professional role segmentation. Faced with an epistemic technology whose potential and implications are still emergent, different intra-professional groupings grounded their sensemaking in distinctive role identities ('professional', 'manager', and 'leader' as we termed them) and the professional-client-technology nexus. This triadic view foregrounds AI's intervention in the different service relationships at play (patient, host organization, profession). Based on this triadic view, the groupings in our study extracted different cues and bracketed these cues in ways that reflected varying interpretations of jurisdictional contestation. These variations were then manifested in the distinctive sensemaking patterns found in our study: AI as antagonist, AI as system intervention, and AI as catalyst for change.

INSERT FIGURE 1

As shown in Figure 1, the Professionals grouping highlighted AI's intervention in the relationship with patients, contesting their agency and professional jurisdiction and leading to the sensemaking pattern of 'antagonistic agent'. In contrast, for the Manager grouping AI was seen as enhancing the service relationship with their host organization by improving efficiency and supporting organizational goals. In decoupling AI's jurisdictional claims from their own and enhancing perceptions of their agency, this grouping constructed AI as a 'system intervention' within their organizational context. The Leader grouping, meanwhile, viewed AI's positioning within the triad as supporting the relationship with the professional bodies they served by expanding their jurisdiction and agency as a technology-based profession. This generated the sensemaking pattern of AI as a 'catalyst for change'. The process model depicted in Figure 1 suggests three theoretical contributions, which we elaborate below.

Professions, sensemaking and technology: A triadic view

In broad terms, our study helps to integrate the literatures on sensemaking and the professions respectively. Much of the sensemaking literature is concerned primarily with the process of sensemaking and rather less with the sensemakers involved, emphasizing cognition over agency. Conversely, the professions literature addresses the agency and jurisdictions of the sensemaking actors directly but has less to say regarding the way in which these groups construct meaning. Against this backdrop, our study connects sensemaking with the sensemaker (Patriotta, 2016) by grounding interpretive responses in the jurisdictional questions around control and agency posed by professionals' encounter with AI.

This integrative effort allows us to reconsider the interplay between professions and sensemaking following the introduction of new technologies. We build on recent work in the professions literature which has illuminated the relational character of jurisdictions and expertise (DiBeningno, 2022). The relational view emphasizes the need to situate the generation, recognition and application of expertise (Pakarinen and Huising, 2023) within the wider network of interdependent relations, artefacts and actors which help to constitute professional work (Bailey et al., 2022). Our contribution to further development of this relational view comes from applying our sensemaking perspective to professionals' encounter with AI. Through this we show how professionals' sensemaking efforts towards this technology are guided not by the wider network of relations constituting their expertise but are focussed by a triadic view centred on the service relationship through which such expertise is applied to clients.

This focus can be explained in terms of the sensemaking process itself being grounded in role identities (Weick 1995; Vough et al., 2015), which in turn, as recent work has demonstrated, are profoundly connected to the professional's service relationship with the client (Bourmault and Anteby, 2023). As DiBenigno (2022, p. 895) notes 'clients are often central to what makes professionals' work meaningful and socially valuable'. In the healthcare context, specifically, studies highlight the importance of the classic doctor-patient dyad. with clinicians expected to embrace a professional identity that includes always 'placing their patients first, over and above any personal commitments' Kellogg (2011: 51). Indeed, as Pakarinen and Huising note, from a relational perspective 'one's physician role is activated in relation to the act of treating patients' (p.8).

Our findings reinforce this previous work by showing how the client entity operated as a crucial source of identity for our respondents across the different intra-professional groupings.

However, in the context of their sensemaking around AI, this source of identity was not experienced directly through professional-client interactions but more abstractly by serving as a reference point towards which sensemaking efforts were directed. Thus, our respondents talked extensively about ‘the patient’ and ‘patient safety’, or ‘doing the best for our patients’. These findings bear relevance to work which highlights how identities centred on the service relationship may be ‘expected’ or idealized rather than the ones directly experienced by the professional (Reid, 2015; Kellogg, 2011). Our study underlines how such idealized role identities are nonetheless nourished by the service relationship (DiBenigno, 2022), and goes beyond this to show that they represent resilient frames of reference for the sensemaking process.

Our sensemaking perspective thus connects professionals’ role identities, the relations in which professional work is inscribed and the equivocality posed by AI. It contributes theoretically to our understanding of the links between them by showing how the service relationship with clients played a crucial role in the sensemaking efforts of professional groups towards equivocal technologies. Thus we find that the significance of professionals’ encounter with AI is located primarily at the point of this technology’s intersection with this relationship. In effect, the ‘embedding’ of AI is interpretively accommodated by a shift in view away from the professional-client dyad to a triad encompassing professional, client and technology. Moreover, because this triadic view varies according to the service relationships involved, it encompasses divergent foci and the bracketing of a different set of cues leading to distinctively different sensemaking patterns. This helps to account for the variations across intra-professional segments observed in our study where, echoing Scott’s (2006) account, different types of service relations may be activating professional roles. Contrast, for example, the way the Leader grouping in our study viewed AI within a triad which connected it to the profession’s onward development, with the way Professionals construed it as cutting across interactions

with their patients. These intra-professional variations in sensemaking responses to AI also provide a counterpoint to the more uniform pursuit of the profession's institutional goals as outlined in Scott (2006) and Goto (2022).

Epistemic technology and jurisdictional dynamics

A further contribution which flows from the application of a sensemaking perspective to jurisdictional contexts is the theorising of epistemic technology, typified by AI, as a jurisdictional contestant in its own right. A profession controls a jurisdiction when it holds exclusive rights to interpret and respond to the needs of its clients, with the latter being defined as the recipients of professional work in a given work domain (Bouchard et al, 2023: 3-4; Hughes, 1958/2015; Scott, 2008). Early work on jurisdictional contestation viewed it primarily as a struggle for territory, a 'turf war', amongst different professional groups (Sako et al., 2022). More recent research, though, has investigated how professionals engage clients to maintain or expand their jurisdictional control (e.g., Chan & Hedden, 2023; Huising, 2015; Mukherjee & Thomas, 2023). Bourmault and Anteby (2023), for example, showed how relations with clients helped professionals to reassess and reinvent their long-established work, leading to an expanded jurisdiction. More radically, Bouchard et al. (2023) have focused on clients themselves as jurisdictional contestants and have theorized the processes which lead clients to participate in jurisdictional contestation, and the specific ways in which they do so.

We extend these insights on professional jurisdictions by theorizing the role of AI as a jurisdictional contestant forming a core part of the triad professional-client-technology. Our findings show how AI may intervene in the professional-client relationship and hence produce altered perceptions of jurisdictional boundaries on the part of different intra-professional groupings. More specifically, since such boundaries are flexible and socially constructed, they

impinge on how professionals perceive their agency and jurisdiction in relation to potential challengers (Martin et al., 2009; Bucher et al., 2016). As highlighted above, AI's encroachment on the professional-client dyad led the Professionals, who viewed themselves as practitioners directly serving patients, to interpret this technology as an antagonist. For this grouping, concerns about the potential loss of control of their tasks and the reduction of their professional expertise meant that AI was perceived as a threatening incursion into their professional jurisdiction – in effect an 'invading actor' in their work environment. In contrast, the Manager grouping viewed the implications of AI in terms of opportunities for increased system efficiency, and the need to integrate AI into the organization as an instrument of such efficiency. AI was seen as decoupled from, rather than threatening, their jurisdiction. The Leader grouping, meanwhile, viewed the implications of AI as an opportunity to expand existing professional jurisdictions, exploiting the new technology to legitimise their expertise as a technology-based profession.

Our study thus provides a window into how different segments of a professional group respond interpretively to AI in ways which seek to defend or enhance their jurisdiction and agency. These insights help to address the relative lack of research on the importance of intra-professional segmentation in the workplace adoption of new technologies (Koljonen and Chan, 2023). In particular, they show how different intra-professional groupings' multivocal sensemaking responses to a new technology may reflect their institutionally and organizationally embedded role identities and service relationships. More broadly, they also draw attention to the influence which such responses may exert on work around jurisdictional boundaries (cf. Comeau-Vallée and Langley, 2020; Currie et al., 2012).

Equivocality and epistemic technology

A further major contribution of our study is towards greater understanding of equivocality and sensemaking in the context of epistemic technologies. Weick's original account of 'technology as equivocal' was developed in relation to a previous generation of 'new technologies' such as 'complex production systems that use computers' (Weick, 1990: 38). Here, Weick was concerned with the user's ability 'to reason about the deep structure of new systems' (Weick, 1990: 39). As such, Weick's account of equivocality does not directly address the particular sensemaking challenges posed by AI as an epistemic technology which disrupts knowledge claims and existing professional jurisdictions (Pachidi et al., 2020).

In more recent literature, these sensemaking challenges have been viewed primarily in cognitive terms, with studies highlighting the 'black boxing' associated with AI as an epistemic technology (Lebovitz et al, 2022; Anthony, 2018). The integrative approach of our study, in contrast, presents the sensemaker not as a discrete individual confronting new technology directly but as a professional encountering AI relationally through a service relationship within particular jurisdictional contexts. In doing so, it shows how the equivocality posed by AI went beyond the cognitive challenges posed by such black boxing and was centred rather on the triadic view which different groupings applied to their encounter with this technology. Our findings further show how sensemaking responses to AI and its black boxing effects varied according to this triadic view, being centred on the degree of perceived threat or enhancement to jurisdiction, and not according to the status differences highlighted by Anthony (2018). For Professionals, black boxing contributed to AI being viewed as a disruptive, uncooperative actor in their work environment, constraining and challenging their expertise. For Managers and Leaders, on the other hand, black boxing meant that this technology could be viewed more instrumentally and unproblematically as an extension of their agency (Latour,

1987), constituting either a valuable systemic intervention, or an opportunity to extend and renew the profession's jurisdiction.

In short, our study extends previous understandings by showing how, within jurisdictional contexts, the equivocality of professionals' encounter with an epistemic technology transcends the cognitive challenges of 'reasoning about' or 'questioning' black boxed knowledge and assumptions as previously highlighted by Weick (1990), and more recently by Anthony (2018; 2021). Rather, we find that the equivocality of a black boxed epistemic technology extends to the implications of that technology's reworking of jurisdictions. The encounter with AI is interpreted, in effect, in terms of a collision between overlapping and potentially competing jurisdictions, which for some groupings entails unsettling threats to individual agency and the control of tasks.

Our study thus contributes to previous work in the professions literature by showing how the micro-level dynamics of sensemaking incorporate novel forms of jurisdictional contestation created by an epistemic technology. This is because the equivocal aspects of AI may trigger a plurality of interpretive responses from groups of sensemakers, resulting in divergent perceptions of its implications for professional jurisdictions. The technology here operates less as a capability or potential to be 'colonized' by different professional groups (Abbott, 1988) than as an institutional actor in its own right, with designs upon the control which established professions exert over key tasks. At the same time, we contribute to our understanding of sensemaking in jurisdictional contests by showing how this challenge can be perceived in radically different ways according to the sensemaking patterns of intra-professional groupings.

Important practical and policy considerations flow from our study for different stakeholder groups. First, for managers, regulators and policy-makers seeking to direct the potential application of AI our study counteracts the prevalent framing of technology contra human, or

automation versus ‘augmentation’, with a relational understanding which highlights how embedding AI as an epistemic technology will create a new topology in the service relationship between professionals and their clients. For AI to become transformative it needs to be embedded within a service relationship which helps to define the expertise and identities of the different actors involved. In this embedding, technical capabilities may be less important than overcoming the ethical and practical concerns that the use of AI will raise among client groups as well as professional themselves. In particular, forms of accountability and trust created through the dyadic professional-client interaction may be compromised by a triadic relationship which has to accommodate the agency of an epistemic technology in questions of expertise and judgement (Faulconbridge and Muzio, 2024). As Cabiddu et al. (2022) observe, such a setting may provide limited, or different, signals on which both human-based trust and system-based trust can be established.

Second, our study of the sensemaking process has important implications for professional groups themselves. Such implications arise in part because early interpretations of new technology are likely to be consequential for its use (Fleming, 2019), so the way in which professionals make sense of AI may well shape their engagement (or lack of it) with the technology and their future practices – something already observable in recent studies (Lebovitz et al., 2022). Equally important for professional groups and their members is the need to recognize the importance of intra-professional variation in responses to this equivocal technology. Although the institutional agency of professional bodies in defending their jurisdictions is not to be underestimated (Faulconbridge and Muzio, 2024), especially in healthcare contexts, our study cautions against professional bodies seeking to develop a uniform response from their membership when confronted by an equivocal technology. As we observed, the jurisdictional dynamics of this encounter are in play, and may well vary, across multiple intra-professional groupings.

CONCLUSIONS

The implications of AI for the role of professional groups are at the forefront of contemporary debates on the future of work. Human expertise is regularly contrasted negatively with the capabilities of AI systems based on machine learning and deep learning. This brings with it some existential challenges to the knowledge claims and jurisdictions of professional groups. To better understand how professionals make sense of the challenges posed by AI as such an epistemic technology, we drew on Weick's (1990) notion of equivocality to shed new light on this intersection between technology, sensemaking, and professions. Our work contributes to a better understanding of this intersection by showing how sensemaking in relation to AI results from processes of jurisdictional contestation between the technology, conceived as a knowledgeable agent, and the differentiated roles within professional groups. As highlighted by Barley's (1986) study in the field of radiology, the claimed functionality of a technology such as AI should not blind us to the overriding importance of the human response to such new technologies, which is manifested most vividly in the way that we make sense of them. This study has highlighted the role of epistemic technologies in altering the boundaries and content of a profession's work. In so doing, it contributes to a better understanding of jurisdictional control as grounded in how professional groups relate to emerging technologies that challenge both their expertise and agency.

Acknowledgements

We would like to thank Radhika Sriskandarajah for help with the empirical work, as well as Editor Daniel Muzio and reviewers for their helpful and constructive comments in developing this paper.

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Table I. Meeting observations and event notes

Participant observation note 1	12/11/2019	Discussion of protocol with front-line professionals in the radiology department.
Participant observation note 2	23/01/2020	Three researchers meeting with two officers.
Participant observation note 3	02/03/2020	Discussion of protocol with front-line professionals in the radiology department.
Participant observation note 4	07/07/2020	Two researchers meeting with an Officer
Event note 1	BIR Annual Congress 2017	Rethinking radiology workforce.
Event note 2	02/03/2020	AI scene in radiography.
Event note 3	02/03/2020	AI in radiology.
Event note 4	02/03/2020	The SCoR policy statement: AI
Event note 5	27/04/2020	AI in radiology King's Fund event.
Event note 6	08/07/2020	AI and patient centred care radiography SCoR speaker.
Event note 7	08/07/2020	AI and potential role extension.
Event note 8	08/07/2020	AI and radiography education.
Event note 9	08/07/2020	AI and radiography survey MSc study.
Event note 10	08/07/2020	The position of EFRS on AI for radiography.

Table II. Documents

Date issued	Shortened name	Title
11/10/2017	BMJ News	Five minutes with...Nicola Strickland (president of RCR) by Abi Rimmer, the BMJ (British Medical Journal)
13/01/2020	Review article 1	BJR 125 th Anniversary: review article. Artificial Intelligence: reshaping the practice of radiological sciences in the 21 st century
30/01/2020	SCoR News 1	£140m fund to promote AI for screening and diagnosis, news by SCoR
17/02/2020	SCoR News 2	AI in paediatric radiology survey, SCoR news
2020	Review article 2	AI and the Radiographer/radiological technologist profession: joint statement of ISRRT and EFRS (article about the statement)
April 2020	Joint statement	The joint statement itself
Feb 2020	Topol review	The Topol Review: preparing the healthcare workforce to deliver the digital future: an independent report on behalf of the Secretary of State for Health and Social Care

2020	RCR guidance	RCR (Royal College of Radiologist) guidance on implementation of AI brought in during the Covid-10 pandemic
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Table III. Sensemaking patterns of intra-professional groupings

Intra-professional groupings	Role identity	Extracted cues	Bracketing	Sensemaking pattern
Front-line Practitioners	Practitioner identity as a Professional	AI technology leading to more recalls and consequently more anxiety for patients	AI interrupting relationship with clients	AI as antagonist
		AI technology telling, prompting professionals on their work	AI intruding on professional autonomy	
		AI reducing opportunities for professional training and development		
		AI technology could not provide the same quality assurance as humans	AI undermining professional accountability	
		AI technology bringing uncertainty around collaborative work and responsibilities for mistakes		

Hybrid Professional-Managers	Organisational identity as a Manager	AI technology bringing high quality service and efficient service delivery within their organization	AI enhancing relationship with the organisation	AI as system intervention
		Inadequacy of current IT system	Better service with AI implementation	
		Importance of clinical engagement in AI implementation		
		AI technology in other organisational arenas	AI improving efficiency of the organisation	
		Workforce shortage issues in radiology services		
		New wider organisational structure with AI adoption		
Field-level Professionals	Field-level identity as a Leader	AI technology offering opportunities to review education and career framework for the profession	AI affecting relationship with the profession	AI as catalyst for change
		Opportunity for a renewed profession emerging with AI adoption	AI reshaping future professional boundaries	
		Professionals as front-runners in exploiting AI technology		
		AI taking away mundane tasks		

		Impact of AI on education and professional standards	AI contributing to development of the profession	
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Figure 1. Sensemaking of equivocal AI technology

