THE CHANGING CONSTITUTION AND ECOLOGY OF EXPERTISE

Ruthanne Huising[a], Kasper T. Elmholdt[b] and Elina I. Mäkinen[c]

[a]*ESSEC Business School, France*
[b]*Aalborg University, Denmark*
[c]*Tampere University, Finland*

INTRODUCTION

Expertise is a force that quietly shapes and reshapes the institutional and organizational contexts that house and leverage it. It winds its way through and around seats of power, piles of money, and pockets of violence – authorized and illicit – within societies. Traditionally, expertise has been understood as "a historically specific type of performance aimed at linking scientific knowledge with matters of public concern" (Eyal & Medvetz, 2023, p. 5). Expertise, in the sense of technical knowledge and specialized skills, was central to early theories of bureaucracy and management (Taylor, 1912; Weber, 1922), as well as in theories of the division of labor (Durkheim, 1893; Smith, 1776). Use of the term expertise in public discourse grew in the 1960s. This coincided with the increased production of specialized knowledge, the expansion of the technocratic management of the state, and the complexity and specialization of modern economies and corporations (Eyal, 2013). The centrality of expertise in the operation and governance of society is underscored and reinforced by contemporary challenges to it (Eyal, 2019).

Professions made expertise manifest in the past century and, thus, the terms profession and expert became interchangeable. Abbott (1988, p. 323) studied professions because of his broader interest in how "societies structure expertise" and identified professions as "the main way of institutionalizing expertise in

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industrialized societies." Through an abstract, propriety knowledge system and related technical practices professions convince clients, the public, and the state that their definition and treatment are most appropriate to the problems at hand and thus they should control any interventions. While *The System of Professions* is often interpreted as a treatise on credentialled or certified professions (lawyers, physicians, accountants), Abbott argued jurisdiction is "established in the processes of actual professional work" via the capacity of knowledge systems to control problem definition within a given era and society (Abbott, 1988, p. 33). Abbott, and as many have since, examined the division of expert labor, observing competition among groups for the recognition – in very few cases the monopoly – to apply their expertise within a domain of social problems.

Professions, through their expertise, work to inject scientific knowledge and interpretation into the design and operation of large swaths of society. Beyond inter-professional competition, historically, one could argue that professions faced few other challenges. For a good part of the 20th century, professions in the Anglosphere worked in standalone practices, eluding managerial control, or in professional bureaucracies that buffered their practices from managerial interference (Barley & Tolbert, 1991). When working in groups or alone, professions self-governed within and across organizations. At the same time, clients, patients, and customers had limited rights, charters, advocates, and information that allowed them to question the work of these experts (Hughes, 1958). Acts of inference through which professions generated diagnoses, judgments, and advice were shielded from the observation and questioning of organizations, managers, and clients. The autonomy of professions to diagnose and treat could suggest trust in their expertise. Yet the relative dependence, and limited recourse of those who sought their advice suggest it may be more a matter of faith in the project of modernity (Giddens, 1990).

However, both trust in expertise and faith in modernity may be waning. Changes in the context in which expertise operates, the constitution and basis of circulating expertise, and the adjudication (deciding who qualifies as an expert) and evaluation (assessing the credibility and quality) of expertise are significant (Huising, 2023). Scientific knowledge and the abstract expertise of professions are losing standing in matters of public concern (Weingart, 2023). Although organizations and institutions have evolved to depend on myriad experts, collective trust in the conventional abstract, rationalist approaches is in decline (Eyal, 2019; Eyal & Medvetz, 2023). Inference and interventions may no longer be authorized and deferred to on the basis of their rationalist or scientific origins.

These changes have opened up realms of social problems to a plurality of incommensurable yet competing forms of expertise and to what was historically absent: the observation, questioning, and critique of expertise itself. The boundary between those historically considered experts and others is dissolving, as participation in inference and interventions is extended independent of the informational and analytical bases of inference and interventions (Collins & Evans, 2002). Alternative logics of openness and participation in matters typically deferred to those with specialized knowledge and training is where the politically left and right commune. Efforts to enhance participatory democracy, decolonize

institutions, "open" science, and decarbonize economies have contributed to this shifting ground as much as efforts to reinstate religious authority, challenge the "deep state," undermine universities, and reinforce patriarchy. Experiential knowledge, do-it-yourself trial and error, religious conventions, cultural heritage, and celebrity status have emerged as a base of expertise (e.g., Epstein, 1995; Sheehan, 2022). These alternative claims of expertise and performances are supported and diffused via diverse communication technologies, in particular social media platforms, that saturate the transactions of daily life (Arnoldi, 2023; Preda, 2023). Expertise claims and performances are further complicated by the emergence and expansion of AI agents that provide output on almost any topic. Citizens, patients, and clients have the means to search for and reach whom they determine to be the appropriate expert on any given issue.

FROM THE SYSTEM OF PROFESSIONS TO THE ECOLOGY OF EXPERTISE

Retreating from the assumption that expertise is institutionalized in professions raises the question of "how forms of expertise can acquire value as public interventions" (Eyal & Buchholz, 2010, p. 120; Eyal & Levy, 2013, p. 225). In this way, expertise is understood more broadly as the potential to have an effect (Eyal, 2013). However, expertise as the capacity to have effect may be independent from expertise as recognized as having value. That is, virologists have the expertise to make vaccines that protect us from viruses, yet some people refuse to recognize that expertise. In contrast, astrologist's forecasts have no predictive power, yet some people believe astrologists impart expertise. We live in a time where what constitutes and counts as expertise is fractured.

Conceptualizing expertise as a capacity for intervention or effect that competes within a complex ecology for recognition unleashes a significant new research agenda. Abbott's idea of an ecology of actors (read broadly to include technology, networks, and other systems), competing to control the interpretation and treatment of a domain of problems remains wholly relevant to answering this question. Rather than reading Abbott through the lens of professions, it can be more productively read through the lens of expertise (Huising, 2023, p. 454).

Expertise shapes – it is self-consciously interested in shaping – the ways in which we interpret, classify, and understand particular phenomenon and then take action in relation to the phenomenon.[1] This raises questions about how forms of expertise generate a context of demand and the implications for public interventions. Likewise, the supply of expertise – its basis, representations, and claims – requires examination. The "well-woven web of arguments, procedures, measurements, and institutions, all supporting each other" (Eyal, 2019, p. 86), intermediaries (Turner, 2023; Waardenburg et al., 2022), collective action (Epstein, 2023), and technologies (Collins, 2018; Pasquale, 2023) provide crucial bases for interventions. Through what mechanisms and infrastructures do forms of expertise become accepted as appropriate in relation to social problems and needs? Further, we need to understand the adjudication processes through which interventions

are deemed expert. If expertise is no longer claimed in alignment with modernist logics, how are claims and outcomes of expertise evaluated and legitimated? How have the roles of audiences and publics changed? To capture the expanding constitution, the changing basis of circulating expertise, and the new processes through which expertise acquires value, we must expand our research agenda.

REALIST AND RELATIVIST PERSPECTIVES ON EXPERTISE

The expanded research agenda should not degrade the conversation into one in which everything is coded as expertise, and everyone becomes an expert (Collins, 2014). We need both realist and relativist studies of expertise as together they build a comprehensive understanding of how expertise is generated, applied, and recognized, and the reciprocal dynamics among these processes. By realist we mean a verified capacity to have effect developed through specialized knowledge and techniques (Abbott, 1988) acquired through deep training in a community of specialists (Collins & Evans, 2007). This includes substantive expertise (Barley, 1996) and contributory and interactional expertise (Collins & Evans, 2007). The term relativist can be understood in two ways. In the first (relativist one), expertise is understood as constructed through social processes and thus its generation, application, and recognition are vulnerable to social dynamics. This first definition relates roughly to the second wave of science studies (Collins & Evans, 2002) in which "real" expertise was shown to be subject to social forces and dependent on social consensus about the legitimacy of specific claims of expertise. In the second (relativist two), expertise is understood to be a claimed and recognized capacity that does not depend on a single social consensus. Various, incommensurable claims of expertise may be recognized as legitimate simultaneously by different communities. This definition relates roughly to the third wave of science studies (Collins & Evans, 2002) in which participation in expert domains is increasingly extended to actors who claim a range of identities, experiences, and positions as sources of expertise.

Realist and relativist "one" understandings of expertise have much in common, although this is not generally recognized, as expertise is *generated*, *applied*, and *recognized* through communities that develop processes of verification and social consensus. In contrast, relativist "two" understandings of expertise focus on the *recognition* of expertise as participation in social interventions has been extended to include anyone who claims expertise (Collins & Evans, 2019). As alternative capacities – including folk knowledge, life experience, and religious tomes – are elevated and verifiable capacities to understand physical processes are accelerated, efforts to analyze expertise as a claimed or verifiable capacity and to examine the processes through which such capacities achieve or do not achieve social consensus are important.

The COVID-19 pandemic illuminated these points. From a realist standpoint, scientific experts – such as epidemiologists, virologists, and public health officials – who relied on specialized, verifiable knowledge had the capacity to intervene (e.g., prescribing social distancing, personal protective equipment, developing vaccines,

and prescribing vaccines). Yet, a global comparison of the functioning and advice of these experts showed how their prescribed interventions were shaped by institutional, political, and economic forces. Medical and scientific advice was shown to be contingent and mutable – although with limited variation – and thus socially constructed (relativist one standpoint). Small differences in medical and scientific advice were leveraged by anti-science communities to cast doubt on the legitimacy on the advice and more generally rational, scientific approaches to dealing with viruses. At the same time, a range of actors – drawing on position, identity, or experience – claimed to have relevant expertise for dealing with a virus (relativist two standpoint). A president, skeptical of the value of social distancing and wearing masks, suggested that ultraviolet light or injecting disinfectants should be tried. A range of alternative-health practitioners prescribed essential oils, apple cider vinegar, and other household treatments. Those who experienced the virus also prescribed their treatments. This range of interventions was recognized by many as superior and preferred to medical and scientific interventions; thus, they were recognized as forms of expertise.

Unpacking both relativist and realist ontologies of expertise depends on a relational or interactional[2] conception of expertise; however, "differences arise when defining interactional" and relational (Preda, 2023, pp. 35–36). Realist and relativist one conceptions of expertise understand expertise to be generated and applied relationally or interactionally. Expertise is created, learned, acknowledged, and made manifest interactionally through communities of practice (including professions and occupations) (e.g., Collins, 2014, pp. 64–65). This capacity is relationally constituted within a domain of activity. Relativist two conceptions of expertise understand expertise to be recognized and authorized via interactions with audiences of clients, patients, the public, and decision-makers. Unfortunately, a relational ontology is often conflated with relativist analyses of expertise and a substantivist ontology is conflated with a realist analysis of expertise. To examine the expansion of forms of expertise and the ecology of expertise, we depend on a relational ontology to understand how relativist and realist constitutions of expertise evolve and interweave (Pakarinen & Huising, 2025).

EXPERTISE IN AND AROUND ORGANIZATIONS

The volume is divided into two sections focusing on the changing constitution of expertise and the expanding ecology of expertise. The papers explore how understandings of expertise are evolving beyond rationalist, scientific forms of knowing and beyond professions. The epistemological, performative, and political bases of expertise are opened up. In doing so, the papers consider the changing political and technological contexts in which expertise is performed to make interventions, as well as changing notions of expert performance and intervention. Together the papers motivate new and important avenues of research.

The first section in the volume expands conceptualizations of expertise beyond domain expertise to offer new forms of expertise that undergird and facilitate domain expertise. Aesthetic expertise (Pakarinen & Baldessarelli, 2025),

decomposition expertise (Mäkinen, 2025), process expertise (Treem & Barley, 2025), institutional expertise (Ortiz Casillas, 2025), alignment expertise (Preda, 2025), and groundwork (Lindberg & Raviola, 2025) are forms of expertise that work in tandem with rationalist, scientific expertise to leverage them into an intervention. Similarly, organizations generate new forms of expertise in the context of emerging technologies. Technologies may lead to new forms or configurations of de/centralized expertise (Ungureanu, 2025) and shape how expertise is acquired and how it evolves (Cohen & Bui, 2025).

The second section begins with a provocative review that reveals how ecologies of expertise – past and present – are shaped by and shape processes of inequality (Occhiuto, 2025). It goes on to examine how the ecology of expertise has expanded to include intermediaries (Benjamin-Pollak & Karunakaran, 2025), allies (Berr, 2025), lay people (Ritwick & Koljonen, 2025), classification systems (Monteiro, 2025), algorithms (Heimstädt & Heimstädt, 2025), and clients (Elmholdt, Leynadier & Bourgoin, 2025). This expanding ecology illustrates the various forms of expertise and actors that refract and generate what counts as a "legitimate basis for intervention" (Eyal & Buchholz, 2010, p. 128). Such an ecology highlights the multiple, often competing forms of expertise that operate in organizations and the public, challenging the scientifically and technically constituted expertise. Below we work across these volume sections and papers to synthesize their collective contributions to the enlarged, emerging research program.

BEYOND DOMAIN EXPERTISE: OBSCURED, UNDERVALUED, AND EMERGENT FORMS OF EXPERTISE

Traditionally, expertise is understood as *domain expertise* – specialized knowledge and techniques based on a canon of abstract knowledge – that ties a basis of knowing to a space of effect (Abbott, 1988). Collins and Evans (2007) call this contributory expertise: the knowledge and skills acquired through prolonged interactions with specialists in a domain that contribute to a domain of practice. Rising through the ranks – novice, advanced beginner, competence, proficiency, and finally expert – one learns abstract, practical, moral, and social notions about how to practice within and eventually contribute to a domain (c.f. Dreyfus & Dreyfus, 2005). Most studies of expertise, as well as studies of occupations and professions, draw on this notion of expertise. Labor markets, educational institutions, and organizational charts are largely organized around domain expertise. Domain or contributory expertise is thus the dominant form of expertise, understood explicitly or implicitly as the "real" expertise against which another knowledge is contrasted and understood.

Identifying new forms of expertise that are useful for conceptualizing expertise beyond domains is to walk a fine line. It entails examining and naming obscured, devalued, or emergent ways of knowing and practicing within or across domains. It avoids replicating polemic distrust in and displacement of specialized systemized ways of knowing about a domain. Elucidating new forms of expertise across

domains that resist reduction to social constructions is unabashedly part of the realist agenda. As the papers in the first section show, mitigating the complex problems related to domains, organizations, institutions, and new technologies will depend on governing through detailed, historically grounded knowledge of sociotechnical systems (Bratton, 2021). At the same time, the relativist agenda appears as domain expertise is the ultimate point of reference for "alternative" articulations of expertise. To navigate this, it is crucial to recognize and categorize the diverse forms of expertise that, while often overlooked, play a vital role in complementing and enhancing domain-specific knowledge. We organize the forms of expertise presented in this collection as obscured, undervalued, and emergent. *Obscured* forms of expertise are those that cultivate, support, and extend the practice of domain expertise in ways that are often not explicitly articulated or consciously recognized by experts within the domain. Tacit components of knowing (Polanyi, 1962), knowledge that cannot be made explicit, and intuition (Bessis, 2024; Villani, 2015) are partially obscured forms of expertise in the sense that domain experts know they rely on them, but their role is rarely acknowledged. In the first section of the volume, Pakarinen and Baldessarelli introduce *aesthetic expertise*, expertise "that resides in cultivated sensory judgments that experts employ to work with and through materiality" (Pakarinen & Baldessarelli, 2025, p. 25) and Mäkinen introduces *decomposition expertise*, expertise that enables a practitioner "to break down the products of their work into individual components, assess each part, and evaluate how the components come together to form the whole" (Mäkinen, 2025, p. 46).

Pakarinen and Baldessarelli distinguish sensory sources of knowledge from tacit and embodied sources of knowledge, taking the materiality that informs, surrounds, and sustains all domains of expertise seriously. Aesthetic expertise is generated, applied, and recognized through sensory experiences. It is an elusive form of expertise that may be easy to displace or dismiss. To be methodological, to be rational, is often understood to be guided by systems of thought and practice. This perspective obscures the role of sensory experience and the materiality of expertise. Aesthetic expertise recognizes how knowledge is developed through close engagement with materials; thus, aesthetic expertise, in contrast to tacit knowledge, highlight how expertise is developed and applied as individuals engage with materials through their senses (hearing, sight, touch, smell, and taste).

Mäkinen extends the concept of professional vision (Goodwin, 1994) – how members of a profession "see and discursively articulate phenomena in their perceptual field" (Mäkinen, 2025, p. 45) – by examining how vision can be trained to deconstruct and question the practice of the profession. Observation and analysis of journal club meetings, a typical training practice in academic science, shows how early-career scientists come to see and critically evaluate the process of creating scientific knowledge (others and their own) by taking apart published scientific articles. Through this regular, collective practice, young scientists learn to identify ambiguous knowledge claims, critically deliberate on supporting visualizations and analytical tools, and then turn this critical gaze on their own research process and projects. Decomposition expertise – also recognizable to social scientists – is developed proactively, allowing emerging researchers to develop the capacity to interrogate analytical strategies, knowledge claims, and knowledge

representations. This previously unarticulated expertise feeds back into and alters the practice and production of domain expertise by creating critical taste and standards regarding knowledge production and claims.

Undervalued forms of expertise are those that, despite and possibly because of their necessary and continuous performance, are treated as subordinate to and less than domain expertise. These forms of expertise are complements to domain expertise, working in parallel to and across domain expertise. Treem and Barley, building on earlier work (Treem & Barley, 2016, 2018), considers the troubling status of *process expertise* and experts in organizations that persist in valuing domain expertise. Ortiz Casillas, writing in the context of public administration, introduces *institutional expertise* as an alternative to domain expertise and perhaps the foremost expertise of public administration. Both process and institutional expertise are invisible forms of expertise whose effect is consistently devalued in relation to domain expertise.

Process expertise is used to manage "information and communication both within and across domains but does not, in itself, represent those domains' practices" (Treem & Barley, 2025, p. 69). This paper considers the troubling status of process expertise and experts in organizations. Despite the continued importance of information and massive growth of rich information in organizations, the ability to select, compress, and represent relevant information in serve of organizational problems remains underappreciated. Treem and Barley consider three ways – assimilation, brokerage, and commodification – through which process experts may work in relation to domain expertise and experts to alter the identity, visibility, and accessibility of their work. The paper motivates the need for more research and organizational awareness of the important, yet underappreciated role of process experts in organizations.

Understandings of the form and function of expertise in public administration (the departments and agencies tasked with planning, implementing, and evaluating public policy and regulations), revolve around the joint legacy of Weber (1978) and Wilson (1887). Ortiz Casillas argues that Weber's view of expertise as something best produced, organized, and applied through bureaucracy, together with Wilson's insistence that expertise should transform politically derived problems into apolitical, technocratic solutions, has generated an uneasy relationship between expertise and politics. This legacy has resulted in significant examination of the presence, absence, and implications of politics for expertise and expertise for politics. However, this focus has detracted from examining the expertise needed to "keep the lights" on in governments around the world. Beyond apolitical and professional expertise, Ortiz Casillas introduces the concept of institutional expertise: specialized knowledge of and skills developed within and about the interlocking institutions that make up the state. Most members of the public administration fulfill policymaking and administering roles that depend first and foremost on their skills working in a complex institutional system and knowing that system helps them generate, apply, and recognize expertise. This paper outlines a research agenda intended to take public administration beyond the continuous tension between expertise and politics and to examine institutional expertise as a fundamental resource in the operation and governance of societies.

Emerging forms of expertise are those needed to commensurate and stabilize (however, momentarily) an increasingly complex set of intersections among technical, administrative, material, and epistemic worlds. The intersections of these worlds are not or cannot be anticipated and designed for compatibility, thus capacities are developed to facilitate these intersections. These processes of development are focused on making an object, a technology, a process, or an organization "viable," "workable," "useable," and "functioning." The expertise is formed in relation to a new configuration of conditions that may continuously evolve, requiring the contemporaneous evolution of expertise. These same conditions can simultaneously conceal and devalue the expertise developed. Papers by Preda, Lindberg and Raviola, Ungureanu, and Cohen and Bui examine expertise – its emergence and dynamics – that contribute to commensuration, stabilization, and functioning in complex contexts.

Preda shows how the production of global market indices depends on *alignment expertise*; expertise that intersects the worlds of econometric formulae and computing machines. This is possible as software engineers and financial analysts collaborate to first purify or "clean" price and volume data, weeding out the strange, and second to purify the data even further by removing excessive data that would prohibit the machine to run smoothly or slow down or even malfunction. As Preda demonstrates, these acts of purification gradually turn indices into objects of expertise. By intersecting multiple forms of domain expertise, market indices are made of layers – the sedimentation of expertise from multiple and heterogeneous domains – that require continuous collaboration to maintain these laminations.

Lindberg and Raviola examine how experienced nurses develop the expertise needed to integrate robots into a surgical unit, making them useable. The *groundwork* necessary to make robot surgery safe and efficient depends on nurses expanding (out of necessity not organizational instruction) beyond their domain expertise to develop expertise in setting up, positioning, cleaning, and maintaining the robots. The authors show how this amalgam of forms of knowing depends on a deep material and processual awareness through which nurses develop a commitment to and capacity for attending to the robots that tends toward moral. The nurses take responsibility for the care and domestication of the robots in service of patient safety. This ethical commitment depends on creating new forms of expertise that make technology useable in a complex setting.

Although the papers by Ungureanu and Cohen and Bui range from the technological complex to the technological mundane, they demonstrate how the organizational need for expertise is dynamic and how this dynamism is experienced within the organization. Ungureanu examines how a Bitcoin community balances the ideal of decentralized participation with the periodic functional need for centralized control. This dichotomy reflects the broader struggle in the community to balance the efficiency and reliability that centralized expertise can provide with the inclusivity and resilience that decentralization promises. When the system is working, the Ethereum community visibilizes collective expertise and invisibilizes individual expertise, upholding the ideals of blockchain technology (wide consensus, better code). However, critical events require that control

be quickly centralized with individual expertise and accountability moving to the fore with the crowd offering general problem solving and monitoring (rough consensus and running code). The dynamics of shifting from maintaining routine operations to addressing critical events reveal the visibility and accountability of experts and the challenges of broad community participation.

Cohen and Bui examine how organization-specific expertise develops in relation to menial tasks in an early technology start-up and observe how developing expertise around these tasks – and staying with them – enables employees to advance in the hierarchy. The authors discuss the distinction between *core expertise* (expertise required to perform a specific task) and *produced expertise* (expertise developed through performing a task that can be applied to other tasks). This distinction problematizes a tension between how expertise is typically understood (as static and tied to specific tasks) versus the reality that performing tasks can generate new forms of expertise that extend beyond the original task, enabling new forms of work and jobs. Like scut work, doing such tasks is "a means of developing knowledge of and relations…that enhances a professional's ability" to expand their role in the organization (Huising, 2015, p. 6). Cohen and Bui demonstrate how expertise, tasks, and jobs closely co-evolve. By pointing at the continuous interplay between tasks and the evolution of both core and produced expertise, the authors point out the importance of considering tasks in expertise development.

Looking across these newly articulated forms of expertise, we observe more than a list of flavors. There are important themes woven through them that require further empirical exploration and theorizing, suggesting future pathways for research. First, these papers unearth forms of expertise that have largely been delegitimized by organizations and scholars. Their invisibility and value become apparent when they are absent or of low quality. These dynamics are ripe for study. How does expertise that is fundamental to running our institutions become sidelined both in practice and in theory? What does this indicate about the processes and conditions that legitimize expertise? Second, these forms of expertise are embedded within and emerge from a knowledge of a complex context with significant contingencies. This does not mean that these forms of expertise are specific to one context. These forms of expertise are found across contexts despite a lack of unifying domain expertise. Abstract knowledge and related specialized practices can be material inputs, but they do not structure and guide the basis for action. Examining how expertise emerges from within and about complex organizational and institutional contexts requires more consideration. Third, because these forms of expertise are not part of managerial and professional discourse, they are not given attention (observation, tracking, and measuring). This lack of articulation and recognition has important implications for whether and how this expertise is developed, who develops it and for what reasons, and ultimately its quality and availability. Beyond examining these implications, how might observation, tracking, and measuring alter such expertise?

This section of the volume aims to encourage a more empirically grounded exploration of forms of expertise that enhance and extend domain expertise, including those that undergird the continuous functioning of organizations and institutions, and develop in response to continuously emerging configurations of

new technologies, sources and qualities of data, organizational forms, and institutional demands. Revealing, valuing, and articulating forms of expertise beyond categories of domain expertise and tacit knowledge is also likely to refine these age-old, often too-general conceptualizations.

THE EXPANDING ECOLOGY OF EXPERTISE: INTERMEDIARIES, ALLIES, LAYPEOPLE, AND AUDIENCES

The erosion of scientific authority and the emergence of alternative, sometimes competing sources of expertise, are well documented in science studies (Epstein, 1995; Jasanoff, 2003). Over the past 50 years, a series of failures (Three Mile Island, AIDS, Chernobyl, mad cow disease, the pandemic), debates (nuclear power, genetically modified food, vaccines, climate change, conspiracy theories), and controversies in scientific conduct (data fraud, plagiarism, peer review manipulation, research misconduct) have ended "scientific exceptionalism" (Weingart, 2023). The organization, operation, and claims of science have, since the 1970s, been under increasing pressure to be accountable, accessible, explainable, responsible, and relevant to the public. Such processes "leave scientific experts in a precarious constellation of forces in which their credibility based on claims to certified knowledge is challenged by claims to public legitimacy" (Weingart, 2023, p. 30).

Expertise, stemming from scientific inquiry and advances, is subject to increased public accountability, activities – including citizen science (Baudry et al., 2022), open science (Leonelli, 2023), science communication (Horst, 2022) – that have oriented and opened science to the public dialogue and participation, and to the changing media through which science is represented and scrutinized. Not only is the public "looking into" science, but they are also participating in it, shaping it, and challenging it. Matters of science and technology have stakeholders who want their perspectives or standpoints included and recognized. Deciding how and when to extend and enlarge participation in matters traditionally tended to exclusively through credentialed expertise has been discussed as the process of extension (Collins & Evans, 2002). At issue, for scholars who take a realist perspective on expertise is how extension can improve rather than degrade the constitution of expertise not reducible to social construction. At issue, for scholars who take a relativist perspective on expertise is how extension expands and orders the sources of expertise.

Studies of professions in sociology and organizational theory have focused less on societal efforts to challenge professional credibility, to politicize and question the role of professions, and to reject and replace professional control. However, professional authority is no longer a given as alternative sources and manifestations of advice giving in relation to social problems emerge (Huising, 2023). Domain expertise is questioned by those who have taken advantage of public availability of information about and knowledge of domain expertise. As Treem and Barley note, the volume, variety, and distribution of information in the form of videos, blogs, interviews, peer-reviewed (or not) academic articles, courses,

course material, and so on available about any given domain expertise is crushing. If you are curious about shoulder surgery, a few hours or days of scrolling and reading is likely to provide enough interactional expertise (Collins & Evans, 2007) to allow you to speak confidently about conducting shoulder surgery without having stepped into a medical school. Vaguely aware of this possibility, we have not meditated on its myriad implications for who can put themselves forward as an expert and how we recognize expertise. It no longer takes privileged, physical access to a community of experts, social scientific methods, and 30 years of communication within the community to pass oneself off as a gravitational wave physicist (Giles, 2006).

The mediums through which domain expertise is available are also the channels through which those who want to increase the social and epistemic diversity of expertise share and seek recognition of expertise developed based on one's life experience or self-practice, or through epistemic travel (Huising, 2024) and trespassing (Ballantyne, 2019). DIYers (Gauntlett, 2018), celebrities (Caulfield, 2015), and influencers (Bishop, 2019) are a few examples of the increasing supply of those claiming to have the capacity to make knowledgeable and effective interventions. Claims of expertise – from outside of scientific and professional communities – and efforts to have those claims recognized as having value in interventions expand the set of actors to be studied and theorized. At the same time, those who seek expertise – patients, clients, colleagues – are more organized, informed, and agentic than in the past. Enter in the "public" who are observing the health of their sheep (Wynne, 1989), their community (Epstein, 1995), and their children (Eyal, 2013). Those who would in the past be recipients of expertise increasingly actively shape advice and interventions directly by generating hybrid forms of expertise (Epstein, 2023) or indirectly by evaluating and requiring reformulations of expertise (Chan & Hedden, 2023). Clients, patients, and advisees feel empowered to make claims on expertise.

Abbott conceptualized the expert division of labor as an ecology, one in which actors compete to attach their expertise to a set of problems, creating a dynamic system in which the success of claims of appropriate expertise "reflects as much the situation of its competitors and the system structure as it does" claims themselves (Abbott, 1988, p. 33). This dynamic ecological apparatus is theoretically powerful as it continues to capture the expert division of labor despite significant changes in the actor groups claiming expertise and the basis of these claims. The idea that the generation and application of expertise could be cordoned off or patrolled by experts, with laypeople as "a resource available for use, or an ally available for enrollment" (Epstein, 1995, p. 409), now seems quaint. Making distinctions between "experts" and "others" is fraught as the ecology contains a more complex set of relations and resulting hybridities (Epstein, 2023). As the ecology expands, the increased cacophony of claims and counterclaims (Crease, 2023), as well as the processes of evaluation, alteration, and hybridization of expertise, promise to be complicated. Increasingly we are talking, however implicitly, about the societal conditions and spaces in which needs for expertise and offerings of expertise are formed, represented, and adjudicated. This suggests a need to trace the structure and operation of the infrastructures – technologies, practices, actors, and organizations – through

which forms of expertise are developed as offerings, adjudicated as appropriate and acceptable, and evaluated and performed.

We consider the expanding ecology of expertise in the second section of the volume including the range of actors who contribute to processes of selection, variation, and retention of expertise. Occhiuto, and Benjamin-Pollak and Karunakaran examine the social processes through which certain categories of people are selected into the ecology of expertise and the reciprocal relations between the production of expertise and representations of expertise. Berr, and Ritwick and Koljonen reveal the increasing variation in participation in the ecology of expertise, complexifying our understanding of lay expertise to include allies and reluctant challengers. Papers by Monteiro, Heimstädt and Heimstädt, and Elmholdt, Leynadier, and Bourgoin speak to how various processes of assessment, audiences for expertise, organizations, and clients reformulate and contain the territories experts can claim within the ecology. Through processes of organizing, evaluating, and editing expertise, audiences are important participants in the ecology of expertise. Thus, the papers in the second section of the volume inquire into the expanding ecology of expertise and the roles of intermediaries, allies, laypeople, and audiences.

Implicitly shrouded in notions of universalism, studies of expertise have eluded examination of the experts themselves. The first paper examines exclusionary processes within the expanding ecology of expertise. Occhiuto argues that studies of expertise largely decontextualize or conceal who the expert is in socio-economic terms, "treating experts as seemingly unaffected by or above social processes that generate or reproduce […] inequalities" (Occhiuto, 2025, p. 223). Reading the literature on inequality with an eye to how social and economic inequalities shape the production and recognition of specialized knowledge; this paper challenges the notion that expertise can be or should be studied as unembodied or uninhabited by people in a particular historical and social context. While the literature on expertise has extensively considered the diversification of participation in matters requiring expertise, the diversification of participation in matters requiring expertise, consideration of how racist, xenophobic, sexist, and classist beliefs, and the institutionalization of these ideas in the structures and processes that contribute to producing and recognizing expertise have received limited attention. Occhiuto shows that who is considered an expert, authorized to produce, and recognized as having expertise is consequential to the constitution of expertise and the reproduction of inequality. Weaving together realist and relativist perspectives, this paper shows how social exclusion shapes epistemic exclusion and vice versa.

These socio-economic processes are institutionalized in organizations, shaping choices and decisions. Taking up Occhiuto's call, Benjamin-Pollak and Karunakaran turn their focus to the *intermediaries* of expertise. The authors examine the inter-organizational, social processes through which a narrow, homogenous demographic become selected as public experts, reinforcing dominant cultural ideas about who can be an expert. In developing their model of expert amplification, the authors argue that the market through which scientific expertise is diffused to a general audience is shaped in significant ways by supply-side and demand-side intermediaries, leading to a skewed selection and

representation of experts to the public. First, experts themselves may opt out of participation in the public discourse, anticipating sanctions from within the expert community. Second, supply-side intermediaries (press officers, public relations, and communications specialists) selectively market a subset of willing public experts. Third, demand side intermediaries (media organizations) preferentially invite experts to perform for the public. Drawing on prior research, Benjamin-Pollak and Karunakaran suggest that these processes screen out those invested in their expert community, namely women and racialized minorities. As the drive for public engagement has increased in many universities, we can reflect on such screening processes and their criteria in our own institutions. Beyond identifying the process through which a demographic subset of experts dominates, the authors consider the consequences for the selection and representation of experts for public discourse and how expert amplification may have implications for the production and recognition of expertise.

Studies of *lay expertise* have increasingly recognized the range of actors, motives, and basis for expertise (Epstein, 1995, 2023). Lay expertise also operates in relation to scientific or professional expertise in increasingly complex, hybrid configurations (Epstein, 2023). Berr reveals that not all laypeople want to influence or challenge the scientific production and application of expertise. In a post-truth era, communities of laypeople may attempt to champion and support knowledge and advice produced through the scientific method in expert communities, leverage social media techniques to promote such expertise. A two-year digital ethnography of an online community shows how citizens supported scientific expertise and antagonized those who challenged it in the context of the Covid-19 pandemic. *Allies of expertise* did not claim to have expertise themselves instead they represented and defended scientific values, findings, and advice in on-line forums, "copying their post-truth antagonists by leveraging the logics and infrastructures of social media" (Berr, 2025, p. 272). These citizens made themselves subservient to scientific knowledge and the scientists producing it. Beyond trying to convince other laypeople to focus on scientific knowledge and advice regarding the virus, the allies went out of their way to engage those tending toward misinformation. In conceptualizing a form of public engagement with expertise, Berr's study emphasizes how citizens have taken the work of recognizing expertise into their own hands and how the cacophony of claims across the endless expanse of the multiple social media platforms feeds these efforts.

The processes through which those seeking help, advice, counsel, or treatment search, adjudicate, and accept a claim of expertise is a relatively open frontier of research. Ritwick and Koljonen examine how patients who continue to suffer gastroesophageal reflux disease despite medical treatment turn to online communities and the alternative treatments proposed by members of these communities. The volume of both certified medical information (Mayo Clinic, NHS, etc.) and alternative ideas about how to diagnose and treat medical conditions is astounding. This information is shared, dissected, and adjudicated in online communities dedicated to a particular diagnosis or set of symptoms. A community of "sufferers" shares experiences of unmitigated pain, negative interactions, poor treatment, and disappointing prescriptions at the hands of physicians. They also

share alternative treatments and how they mix medical and lay expertise to manage their conditions. Neither medical nor lay expertise address their condition and sufferers experience a spiral of increasing anxiety. This paper reflects how we increasingly – as patients, clients, and advisees – determine our own treatment by mixing "professional expertise" with ideas and suggestions offered by others who have faced the same problems in managing a medical condition, renovating a house, or managing a financial portfolio. Where such problems are persistent, Ritwick and Koljonen show that people get caught in a spiraling dynamic in which anxiety grows as potential solutions are grasped. This study generates questions about how people work with multiple sources of information, with various epistemic foundations, to develop their own solutions to complex problems or projects. This DIY treatment can reflect a distrust in certified expertise, a need for control, overconfidence, suffering, or any number of motives and narratives. Understanding such DIY processes opens questions about conditions, responsibilities, and consequences.

Audiences play another key role in the ecology of expertise both by valuing expertise and recognizing who counts as an expert. Recognition processes are largely the domain of audiences (Abbott, 1988, pp. 60–68). However, our conceptualization of audiences often remains circumscribed to clients and patients and forms of acceptance and rejection. There are important ways in which our understanding of retention processes can expand to include a range of actors and more dynamic processes of feedback. The processes through which organizations comprehend the landscape of expertise embodied in their employees, for example, have significant implications for what is recognized, labeled, and retained as expertise. As organizations trend toward disaggregating jobs into a dynamic assignment of revolving projects, ad-hoc assignments, committees, and add-on roles, the allocation of expertise to work (vs expertise to job) becomes complex. This strategic and administrative challenge is often managed through internal platforms in which employees' knowledge, skills, and availability are roughly represented. Monteiro considers how contemporary efforts to map expertise risk flattening, eclipsing, and marginalizing expertise. In the critique of conventional understandings of expertise, Monteiro argues that traditional systems for mapping and matching expertise often fail to capture the complexity and social nature of expertise, leading to various forms of "expertise invisibilities." The concepts of flattening, eclipsing, and marginalizing are central to this critique. Flattening occurs when the multidimensionality of expertise is reduced to a single dimension, oversimplifying and thereby obscuring the rich interplay of skills and contextual knowledge. Eclipsing happens when some forms or versions of expertise are highlighted while others are pushed to the background, thus only partially visible, often reinforcing existing hierarchies. Marginalizing takes this a step further by actively pushing certain forms or conceptions of expertise to the fringes, often due to power dynamics or competing bodies of knowledge. Through such processes and conceptions of expertise, Monteiro argues, poor alignment between workers and tasks is likely, ultimately hampering the recognition and development of expertise.

Organizations also reformulate the expertise they offer and, thus, the expertise of the specialists that they employ in efforts to expand, attract customers,

and capture more markets. In such cases, audiences – especially clients – play an important role in recognizing claims of expertise. Heimstädt and Heimstädt examine the advent of what they call "algorithmic expert services" – expert advice generated algorithmically through a mobile app. The authors focus on an app for farmers to gain insights on problems related to agriculture and how to handle plant diseases, and explore how organizational aspirations to scale such expertise reshaped the character of the expertise diffused. In the paper, they show how organizational efforts to make agricultural expertise scalable was at odds with the experts' preference of providing more specified, customized advice and their efforts to decrease the health and environmental externalities of agricultural practices. Tracing changes in expert advice over an eight-year period, they show how the app providers cycle through the challenge of producing scalable advice while maintaining diffusion of the expertise intended to reduce social harm. Their study points to the need to understand the organizational and technological processes through which expertise is curated, reformulated, and redacted in ways that trouble experts. Notably, the authors indicate how an audience can be complex and hold rivalry values to those aspiring to deliver expert services, which in the end may alter the expertise delivered.

Continuing the focus on audiences Elmholdt, Leynadier, and Bourgoin hone in on the dynamic, relational nature of expertise in a study of how consultants' expertise is both challenged and produced through interactions with clients. Because consultants and clients share overlapping knowledge, clients may shape how expertise comes to operate through consultants' work. Based on an ethnographic study of a consultancy project, the authors analyze three practical tests through which clients assess the consultants' expertise. Skills tests evaluate the consultants' ability to translate abstract and specialized knowledge; results tests measure the speed, impact, and value for money of the consultants' work; and loyalty tests assess the consultants' adherence to the client's authority. These three forms of evaluations allow clients to specify what they want as well as what expertise they recognize as relevant. Consultants must pass these tests by making their expertise visible while incorporating and coordinating, at times, divergent client inputs. Aligning with relational views of expertise (Pakarinen & Huising, 2025), these findings demonstrate how expertise is never taken for granted as experts must demonstrate their specialized abilities within a "relational context of the client system" (Elmholdt et al., 2025, p. 390) as well as rely on material objects in their efforts to assert their expertise. These findings are helpful for further understanding the client system's role in the ecology of expertise.

In sum, by advancing an ecological understanding of expertise, the second section of the volume seeks to move beyond relativist versus realist perspectives and understand the heterogeneous, distributed, and infrastructural elements of expertise. Noticing the range of actors, procedures, devices, and institutions that are part of the ecology of expertise, provides important insights into how expertise is relationally conditioned within and around organizations. Notably, an ecological view highlights the structure of the broader system and the positioning of competing actors, which remains essential for understanding expertise in an ever-evolving landscape of claims to expertise and contestation.

CONCLUSION AND CAUTIONS

Woven through this essay and the papers in this volume is a research agenda focused on expanding our conceptualizations of what constitutes expertise and the ecology of expertise. We argue these expansions hold several implications for future studies of expertise. First, a significant fissure has emerged between realist observations of expertise and relativist observations of expertise. Fifty years ago, expertise was domain expertise – grounded in training in a domain of verifiable and verified knowledge and techniques – and scientists and members of professions who operated based on domain expertise were recognized as experts. Realist and relativist conceptions held together in the past. The papers in the volume suggest that the fissuring of these two – the techno-scientific basis of expertise and the recognition of this as expertise – is likely to grow in society. Domain expertise is just one source of advice and treatment among many to choose from; selected, ordered, and considered relevant to different degrees by different parties. People do and are likely to continue to recognize multiple sources of advice and treatment as expertise relevant to their problem. Changes in the public recognition of what forms of knowing count as relevant are certain to change what the public counts as knowing and knowledge. That is, as the relative role of domain expertise decreases in interventions, the status of domain expertise as expertise is likely to erode in interventions. As papers in the second section of the volume show, what is recognized as expertise and the processes and infrastructures through which this recognition occurs may not only be estranged from domain expertise but contribute to its decline. Ironically, the papers in the first section of the volume show that what is *not* recognized as expertise, are the forms of expertise that undergird, leverage, complement, and expand domain expertise. Together, the papers of the volume underscore the important relationship between realist and relativist dynamics of expertise in society.

The importance of this comprehensive agenda is highlighted by the opposing challenges to expertise observed in contemporary discourse. Those interested in reducing the role of science and technological rationalism in society narrate the relativist character of expertise to create doubt about whether there is any "real" expertise about, for example, climate change, viruses, or human origins. In contrast, those interested in maintaining or elevating the role of science and technological rationalism in society challenge the relativist character of expertise to reveal realist qualities of expertise. As the fissure between realist observations of expertise and relativist observations of expertise in society grows, the dynamics will become more complex.

The articulation and analysis of this gap, as well as related dynamics, will be central to understanding expertise. As we do this work, we should be mindful of our language, assumptions, and explications of expertise. For example, we cannot continue to conflate professions with experts. Professions exist within broader ecologies in which forms of expertise, other than domain expertise, compete as interventions. Abbott remains relevant to our understanding of ecologies of expertise; however, not all of the experts in this ecology will be professions (Huising, 2023, p. 454). Thus, expertise rather than professions or occupations is

the focus of inquiry. We also need to reorient our focus to the alternative epistemological and political resources that fuel performances aimed at linking a form of knowing with matters of public concern. Beyond studies of professions, studies of new sources of expertise as well as obscured, undervalued, and emergent forms of domain expertise must articulate richly generation, application, and recognition of these forms of expertise. Our work is to continue identifying the changing resources, performances, and politics through which forms of knowing win and lose ground in the ecology.

Second, as the conceptual and theoretical ground shifts, we will lose our footing. Prior concepts may begin to lack relevance, losing their capacity to provide abstract narratives that help us think about and explain empirical patterns. The absence of strong middle range theory, in the age of "every paper must build a new concept," indicates that we may be without theoretical bearings for some time. There is opportunity to build new middle range theory, but such work requires going beyond one setting, one snapshot, one analysis. As the original vision of grounded theory building proposed (Glaser & Strauss, 1967), concepts and theories are built across numerous settings and thus depend on ambitious and rich empirical projects (e.g., Barley, 1996). Doing ambitious empirical work that develops insights through working across contexts, time, and geography will be essential to grasping the changed quality, mobilization, and effects of expertise in this century. We should invigorate our methodological imagination and stimulate our sociological imagination with fresh approaches to observe, trace, and compare how expertise emerges and matters across various contexts. This may involve developing innovative methods to capture expertise in digital environments or incorporating insights from historical methodologies. By doing so, we can deepen our understanding of how expertise evolves and its impact in a rapidly changing world.

Third, as we attend to building new knowledge about expertise, we must be explicitly reflexive about how our ways of conceptualizing – our choices about how to contextualize and what to emphasize – ripple out to shape the academic and public discourse on expertise. Theoretical conversations and efforts of knowledge building should not depend on sensationalized claims about the crisis, overthrow, or death of expertise (Eyal, 2019; Nichols, 2017).[3] How we perform our own expertise will have implications for how others approach and talk about expertise (Preda, 2023). We can fuel attacks on and doubts about expertise or we can generate constructive inquiry and dialog. The appropriation of Bruno Latour's work to delegitimize science and question its authority is more than a tale of warning. Academics can lose control over ideas in sometimes spectacular ways. Latour admitted that "it felt good to put scientists down a little" but attempted to repair the effects of this "juvenile enthusiasm" for much of the last two decades of his life (de Vrieze, 2017, p. 159; Kofman, 2018). The language we choose, the explanations we put forth, and the performances we create around an evolving concept matter.

Finally, this volume includes a heterogeneous collection of efforts to create knowledge about a dynamic, complex phenomenon. Our approach has not been to ask the established "experts" on expertise to contribute, but to issue an open

call for papers and draw on our typical methods of professional sorting and evaluating of contributions. As a result, this volume features many emerging voices on expertise. Our intention is to extend participation in this conversation with the hopes of diversifying lines of thought, contexts of consideration, and intersections of literatures. We hope it is fruitful for your own lines of thinking and writing about expertise.

NOTES

1. For example, during the COVID-19 pandemic, various actor groups actively attempted to shape how the public understood the virus and influence public health actions like lockdowns, mask mandates, and vaccination campaigns (Lakoff, 2023).

2. Interactional here is not a reference to or related to Collins and Evans (2007) concept of interactional expertise. Rather, interaction and interactional should be read as social transactions (Emirbayer, 1997) – actions among interactants through which the social world and its meaning are generated, informed by the prior history of transactions that shape actions and interpretations.

3. Eyal (2019) is concerned with the ongoing "pushmi-pullyu" status of expertise and criticizes other authors for sensationalizing the status of expertise in society.

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