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# Generating, Grading, and Ghosting: How Organizing Experts Shapes Expertise

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**ABSTRACT** Experts increasingly refine their expertise into specialties as they labour in and around organizations. Yet, previous research assumes that experts are organized in the workplace in ways that passively accommodate or mirror pre-existing specialties and focuses on organizational structures that codify the content of experts' knowledge as an encroachment. Drawing on a qualitative field study in an aeronautical organization's engineering unit, this paper examines the organizational structures that chart the area of experts' knowledge, i.e., their specialties. The findings show that organizational structures are generative, defining the contours of existing expertise and catalysing the formation of new ones (*generating*). However, organizational structures also encode criteria that implicitly rank some forms of expertise over others, thereby reinforcing status hierarchies (*grading*), and misalignment across organizational structures renders some forms of expertise invisible (*ghosting*). By showing the active role of organizational structures in shaping expertise rather than simply housing it, this paper contributes to our understanding of expertise development as well as status dynamics and access to resources among experts. Further, the paper reveals how misalignments across multiple organizational structures may impact the management of knowledge and human capital.

**Keywords:** specialties, expertise, organizational structure, classification, departmentalization, bureaucracy

## INTRODUCTION

Experts are a fixture of the contemporary economy and increasingly refine their expertise into specialties as they labour in and around organizations (Abbott, 1988; Blackler et al., 1993; Muzio et al., 2019). For example, in professional service firms, new hires rapidly progress from broad-based exposure to focusing on particular types of services

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and clients (Gardner, 2016, p. 22). Scientists in crime labs – formerly a realm of generalists – now specialize in different techniques (e.g., DNA vs. toxicology analysis) and types of forensic evidence (e.g., firearms vs. narcotics) (Bechky, 2021). Even experts with specialties traditionally tied to professional education and regulations, such as in the law (Anleu, 1992; Mangel and Brivot, 2015) and healthcare fields (Aiken and Sloane, 1997; Noordegraaf, 2016, p. 796), increasingly specialize further in the workplace. Yet, although scholars have proclaimed that ‘modern organizational structure makes our whole category of occupations problematic ... [and] we can no longer assume that a name represents a coherent group of people’ (Abbott, 1991, p. 40)<sup>[1]</sup>, how experts are organized into multiple specialties in the workplace has been less explored.

Much prior research has focused on specialties in the context of the challenges they pose for accomplishing work across specialist domains (e.g., Gherardi and Nicolini, 2002; Postrel, 2002; Tuertscher et al., 2014). Scholars have thoroughly examined how specialization breeds knowledge boundaries due to differences in tools, understandings, and interests across domains (Bechky, 2003; Carlile, 2004; Langley et al., 2019) and documented the enablers – including brokering forms of expertise (Barley et al., 2020; Levina and Vaast, 2005) – helping experts work together. Yet, in this debate, how experts’ specialties are organized remains the foil (Worren and Pope, 2024), thus leaving unexplored the ‘purposeful effort and structural support to ... establish and maintain specialized work’ (Barley et al., 2018, p. 300).

Studies more directly exploring experts’ specialized knowledge in organizations have focused, for example, on how specialties or forms of expertise emerge (Anand et al., 2007; Gherardi and Nicolini, 2010; Orlikowski, 2002), how novices acquire competence in a particular specialty (Beane, 2019; Gherardi et al., 1998), or how experts navigate (distinct) conceptions of expertise (Anteby and Holm, 2021; Sandberg, 2000). However, these studies usually focus on one or only a few groups of experts and seem to assume that experts’ specialties are organized in ways that passively accommodate or mirror pre-existing distinctions, such as specialties at the occupational level.

In reality, organizing experts into specialties in the workplace is a complex and consequential affair. Organizations, especially those in the knowledge economy, often employ ‘highly differentiated structures ... so that deep specialization can be achieved along a range of dimensions and so that it can be continually refreshed’ (Greenwood et al., 2010, pp. 173–6). For example, professional service firms organize experts into practice areas and overlay them with market-facing units based on sectors or client types so that they can specialize accordingly (Morris et al., 2012).

How specialties are organized, in turn, impacts experts’ opportunities to specialize (Lam, 1996), and experts have sometimes brought lawsuits when organizations thwarted career objectives to develop expertise in specific areas (Ariens, 1993). Similarly, the organization of specialties also interplays with an organization’s strategy (Morris and Empson, 1998). For example, while central for most news organizations, specialized beats for journalists – subject matter or geographic divisions between areas of reporting – vary considerably depending on resources, audience tastes, and competition (Czarniawska, 2011; Magin and Maurer, 2019). Despite such high stakes, our understanding of how and with what consequences multiple experts are organized into specialties at work is still nascent.

Drawing on data from a qualitative field study in an aeronautical organization's engineering unit, this paper finds that organizing experts shapes expertise. Specifically, organizational structures are generative, making experts' specialties explicit. They define existing expertise and catalyse the formation of new ones (*generating*). However, organizational structures also cement status hierarchies, ranking some forms of expertise higher than others (*grading*) and rendering invisible expertise that falls in between organizational structures (*ghosting*). The paper contributes to research on expertise by demonstrating the active power of organizational structures in expertise development. It also foregrounds the role of criteria and labels underpinning organizational structures for status dynamics and access to resources among experts. Further, the paper contributes to organization and management theory more broadly by revealing some potential sources of misalignments across multiple organizational structures with implications for managing knowledge and human capital.

## STRUCTURES FOR ORGANIZING EXPERTS: FROM CODIFYING TO CHARTING

Organizing multiple experts into specialties is a hallmark of the modern economy. Analysts from Adam Smith to Frederick Taylor have long noted the power of the division of labour and specialization for efficiency (Smith, 1776; Taylor, 1916). Weber also famously theorized how specialized roles staffed based on expertise are integral to bureaucratic organization and its associated rationality and effectiveness (Weber, 1978). As employees specialize, 'not only do they become more expert at the jobs they each do without interruption, but they can be engaged on the basis of suitability for a particular job' (McClelland, 1962, p. 163). Yet, the organization of experts in the workplace only became a distinctive topic of organizational and management research around the '90s following debates on the emergence of a post-industrial knowledge economy (Boisot, 1998; Grant, 1996; Powell and Snellman, 2004).

As specialized knowledge became heralded as a source of competitive advantage in the economy and more professional experts entered the workplace, merely organizing individuals into specialized roles in a division of labour became insufficient. Thus, organizations also started to deploy more structures to codify the abstract body of knowledge that experts apply to tasks (O'Dell and Grayson, 1998; Zack, 1999). Typically, these are knowledge management systems designed to make experts articulate their specialized knowledge (Kamoche and Maguire, 2011; Morris and Empson, 1998). This can be done, for example, through enlisting the creation and sharing of standard procedures (Huising, 2014), lessons learned (O'Dell and Grayson, 1998), or databases with exemplary work documents (Brivot, 2011).

Scholars have long pointed out the limits of these organizational structures that codify experts' know-how, often portraying them as an encroachment on experts' discretion and authority (Brown and Duguid, 1991; Gorman and Sandefur, 2011; Robertson and Swan, 2003; Tsoukas and Vladimirov, 2001). In particular, a rich tradition theorizes knowledge as situated in practice (Nicolini, 2011), thus effacing attempts to codify it into databases, work procedures, instruction manuals, etc. (Brown

and Duguid, 2001; Nicolini et al., 2003). Highlighting the tacit and relational aspects of knowledge (Hadjimichael and Tsoukas, 2019; Pakarinen and Huising, 2023), these scholars emphasize the role of informal means for organizing and managing experts. Yet, such previous research has primarily focused on (the limits of) organizational structures aimed at *codifying the content* of experts' knowledge, thus overlooking the fact that organizing experts often also involves structures aimed at *charting the area* of experts' knowledge, notably, their specialties.<sup>[2]</sup>

Departmentalization has traditionally been the key organizational structure for charting experts and entails grouping individuals under a shared scope and associated label (Lawrence and Lorsch, 1967). While deceptively straightforward, departments present experts with distinctive work contexts and tasks, thereby allowing them to accumulate expertise around particular areas (Black et al., 2004). Depending on how the departments are designed (e.g., varying levels of formalization), they can support specific goals, such as knowledge exploitation or exploration (Lavie et al., 2010). Further, how experts are grouped within or across departments impacts opportunities for them to share knowledge, develop ties with colleagues, and influence organizational operations (May et al., 2002).

However, departmentalization is increasingly unable to chart the variety of experts at work in organizations accurately. For one, it is not sufficiently granular to capture experts' specialties in particular tasks, services, or clients. Moreover, experts are regularly affiliated with multiple departments and move increasingly across groups and projects (Biancani et al., 2014; Majchrzak et al., 2012). For example, in the case of journalists, 'the break-up of news reporting into beats is ... not equivalent with a total separation of reporters' areas of expertise because they can and do switch between beats easily and often' (Magin and Maurer, 2019, p. 3). Therefore, organizations often employ additional structures to chart experts, such as classification structures (Bowker and Star, 2000; Cervantes et al., 2017).

Classifications have been widely used in bureaucratic organizations (especially in the public sector) for administrative purposes vis-à-vis clients (Yanow, 2015) – e.g., handling requests from asylum seekers (Vogler, 2021) or distributing social benefits (Barnard, 2019). They are also central to constructing and preserving knowledge, as evidenced by the use of taxonomies, indexes, etc. in the fields of science and information management (Lambe, 2014). Thus, in light of concerns for managing knowledge, organizations increasingly utilize classifications to assess and organize experts' knowledge (Oshri et al., 2007; Ribeiro, 2013).

While departmentalization works primarily by grouping experts under broad labels, classifications work through more detailed labels that categorize experts across the organizational hierarchy. Employing multiple structures helps organizations illuminate distinct dimensions of expert knowledge and better respond to various administrative requirements. Academia provides vivid illustrations of organizational structures for charting experts. Although universities traditionally organize academics broadly by discipline into formal departments (Chubin, 1976), they increasingly rearrange and create new organizational structures to foster advancement in particular specialties. As Blau describes:

For scientific progress to occur, academics must have opportunities to work in specialized fields and incentives to move into them. To furnish these opportunities and

incentives, universities must be flexible enough to adapt their existing structures to changing scientific developments and establish departments in new fields (Blau, 1994, p. 191).

That is, depending on how organizational structures in universities – such as departments – are set up, they can promote or weaken specialization among academics, which, in turn, impacts scientific progress. Classifications likewise abound in universities. They are used, for example, to categorize faculty's expertise in directories to facilitate online searches for experts or produce statistics for accreditation bodies.<sup>[3]</sup> Further, academics increasingly accrue recognition and benefits depending on whether and how their work fits classifications – such as journal lists – with downstream consequences for knowledge production, career progress, and mobility (Pardo-Guerra, 2022; Willmott, 2011).

Despite being omnipresent and consequential, how these organizational structures group and label experts is seldom examined. Most of the literature often assumes that experts are embedded whole cloth into organizational structures that passively accommodate or mirror pre-existing specialties. One exception is research on practice areas (i.e., specialties) in professional service firms (Malhotra and Morris, 2009). However, studies have concentrated thus far on how new areas emerge – and organizational structures grow around them (e.g., Anand et al., 2007) – rather than the complexities and consequences of organizing multiple experts into existing specialties. Understanding this, however, is essential in our current knowledge economy as it may influence opportunities for experts and the very content of their expertise. Thus, this paper asks: *How do organizational structures chart experts' specialties, and with what consequences for experts and expertise?*

## METHODS

### Research Setting: PlaneCo's Engineering Unit

I conducted a qualitative field study in the engineering unit of an aeronautical organization, PlaneCo (a pseudonym). The highly specialized nature of aircraft product development makes organizing specialists a salient concern in PlaneCo, which is thus an ideal setting for answering the above question.<sup>[4]</sup> There are dozens of different specialties in PlaneCo's engineering unit, many of which are somewhat specific to the organization and the industry – as typical in the aeronautical sector (Altfeld, 2016). For example, a document from the chief engineering office lists around two dozen engineering specialties (e.g., aeronautical physiology) not taught in the universities from which PlaneCo engineers typically graduate. Besides the volume and specificity of specialties, organizing experts is also challenging due to their potential scarcity. While experts are in high demand across aircraft projects, becoming proficient in a specialty is a decades-long process, given aircraft development's complexity and extensive duration.



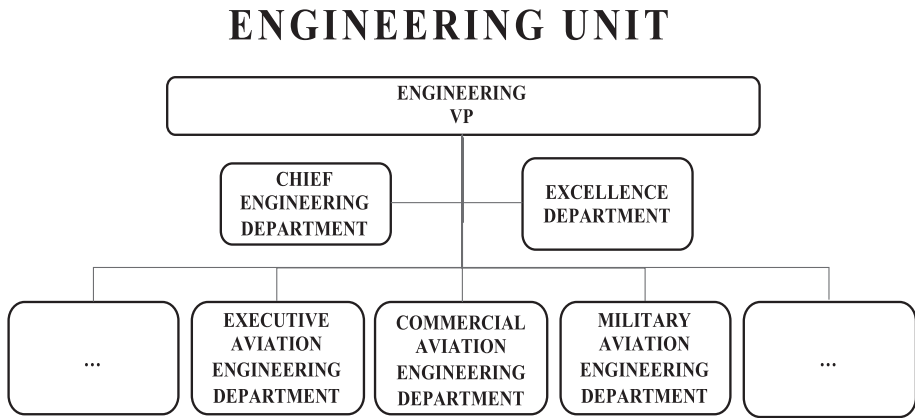


Figure 1. Organization structure: departmentalization

Departmentalization and classifications are the main axes according to which experts are organized at PlaneCo. Some departments are larger with a matrix format running the routine work of developing various aircraft types (e.g., commercial, executive, and military aviation engineering); others are smaller with a more exploratory goal (e.g., R&D) and feature more cross-domain or cross-functional teams (see Figure 1). The chief engineering division and the excellence group have a staff function. The former focuses on developing and disseminating engineering work tools and internally consulting across projects, while the latter has a similar scope but focuses on non-engineering work (e.g., knowledge management).

The most important classification for experts at PlaneCo sorts them into specialties known as ‘technical areas’ or ‘techies’, which are grouped into ‘macro areas’ and ‘fields’ (see Figure 2). The classification echoes categorizations familiar in engineering education and industry with some local idiosyncrasies. It has been in place for decades, and at the time of my study, it was so taken for granted that PlaneCo members struggled to identify its specific origin. This classification also represents the framework upon which product engineers and drafters specialize. While experts join different departments as they move around the organization (multiple projects require different experts in various aircraft development phases), they tend to work within the same macro area throughout their career at PlaneCo.

Both organizational structures are highly formalized and somewhat reified in how experts talk about them (more on this below). Yet, they change at different rates. Departmentalization is in the hands of senior leaders. It is subject to administrative constraints (e.g., minimum/maximum number of employees under a manager) and corporate reshuffles (e.g., changes due to market dynamics), while the technical area’s classification is very stable and moves at a tectonic rate (Carlile, 2015). The classification is managed by the excellence group and experts representing the chief engineering department who staunchly defend its independence from ordinary work dynamics and grounding on professional principles. As a member of the excellence group put it in an interview, ‘Now and then, someone comes asking to create a “techie” for their little group ... but just because someone has a particular function, it does not mean

Specialist Field	Macro Area	Technical Area
Airframe System	Structural Engineering	Structural Analysis
	...	...
Aircraft Systems	Environmental Control Systems	...
	Electrical Systems	...
	...	...
Expanded Product	Maintenance Engineering	...
	...	...
...	...	...
Drafting	Systems Drafting	Environmental Control Systems
	Airframe Drafting	...
	...	...

Figure 2. Organization structure: classification

that it represents a distinctive specialty [in the classification]'. Thus, although tasks for experts change more or less frequently in departments, the classification is seldom updated.

Numerous routines and administrative systems are built upon these organizational structures. For example, the technical area's classification is the basis for the readiness review, a yearly assessment of the proficiency of product engineers and drafters. This classification is also linked to resources: experts in the specialties featured in it are often the ones considered for specialist career paths, honorary roles, and retention programs, with special benefits for experts in specialties considered a priority to the organization. Departmentalization is also a building block for many systems, such as project schedules. Furthermore, it is central to an expert's progress in a management career path, which depends on a distinctive department for a particular specialty and, thus, managerial roles. Finally, how experts are organized affects knowledge management tools and strategies – e.g., communities of practice or mentorship programs – which are often connected to the specialties featured in the technical area's classification and functional departments.

Product engineers and drafters are the most common types of experts in the engineering unit. The former requires professional engineering training (only accredited engineers may carry out tasks such as signing off on technical drawings). Many engineers have or are studying for master's degrees, and a few hold PhDs. Drafters have



traditionally had a technician profile, yet PlaneCo has recently tried attracting engineering graduates for these positions. Hundreds of product engineers and drafters have joined the company after graduating with an engineering master's or technical degree from programmes offered by PlaneCo in partnership with local higher education institutes. Both product engineers and drafters progress via a dual-ladder system into either management or specialist career paths (i.e., technical fellow) (Allen and Katz, 1986; Topousis et al., 2012). Some also become product managers, a hybrid position that involves administrative and technical skills but is not connected to any formal career path (more on this below).

Product engineers and drafters with similar specialties are grouped into departments of various sizes. While this grouping broadly reflects the technical area's classification, similar experts are scattered throughout departments with specific goals and projects. Figure 3 provides a visual illustration with examples of the multi-layered arrangement of departmentalization and classification through which product engineers and drafters are organized. 'A' represents a product engineer specializing in structural analysis within airframe engineering (classification) in the chief engineering department (departmentalization), while 'B' is a drafter specializing in environmental control systems within systems drafting (classification) working on a new commercial aircraft (departmentalization).<sup>[5]</sup>

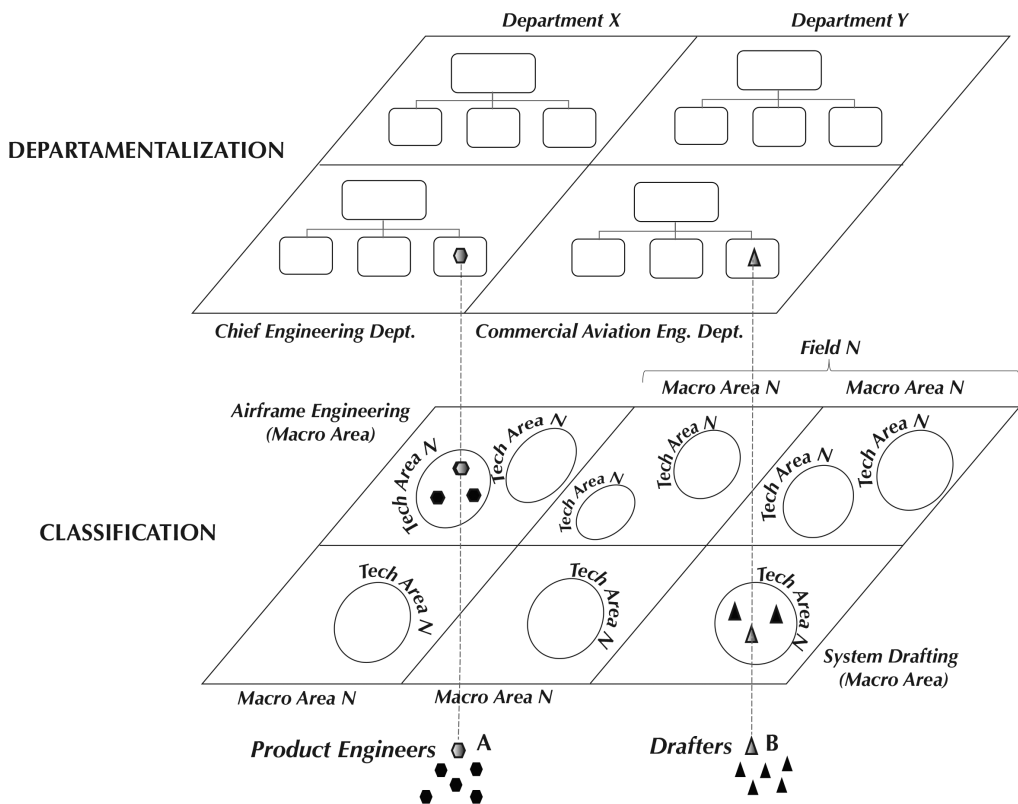


Figure 3. Organizational structures in the engineering unit

## Data Collection

This paper draws on data from 96 semi-structured interviews with experts from multiple specialties, departments, and seniority levels (including experts in managerial or technical fellow roles). Specifically, 58 of these interviews were with product engineers, drafters, and product managers in the engineering unit; the other interviews featured, for example, human resource analysts, knowledge management officers, project/program managers, manufacturing specialists, and supply chain professionals – some of whom worked in other units (e.g., manufacturing unit). Interviews averaged 60 minutes and included questions about experts' careers, the characteristics of their specialties, and their relation to organizational structures at PlaneCo. I also conducted 15 months of non-participant observation at PlaneCo – during which I visited the company almost daily and interacted extensively with employees and managers – and two subsequent one-week visits to gather feedback on emerging insights (including some related to this paper). I also collected publications from and about the organization, including public slide decks, annual reports, internal magazine issues, and books about PlaneCo.

As typical in qualitative field studies, while this paper draws mainly on the data from interviews with engineers, drafters, and product managers, all the data collected informed the analysis by giving me a contextual understanding of the setting. Of particular importance here are the documents and conversations featuring information about the characteristics of organizational structures, such as the rationale for departmental re-organizations or (the lack of) updates in the technical area's classification. Moreover, observations informed this paper in two ways. First, while formal structures abound in organizations, some can be 'mock' or 'dead letter' formalizations. By observing whether and how organizational structures were present in experts' daily work (e.g., the extent to which specialties specified in departments and classifications pervaded conversations), I could direct my analysis to formal organizational structures that were particularly salient. Second, observations gave me access to naturally occurring instances in which experts talked to peers (with appreciation or frustration) about organizational structures. This allowed me to understand their meaning for different experts (e.g., whether and how some experts experienced being devalued in or absent from classifications) and alerted me to the various consequences of organizational structures.

## Data Analysis

Data analysis followed a primarily inductive approach. While I report the process linearly here, it was a largely iterative one in which I strived to get more specific about the mechanism underpinning particular processes while abstracting from the discoveries to establish tighter connections to the scholarly literature. Initially, I read the interview transcripts, field notes, and documents and wrote summaries about the many organizational structures at PlaneCo. In addition to departmentalization and classification, this included human resource systems (e.g., career paths), knowledge management systems (e.g., communities of practice), and general project management systems (e.g., project schedules). As I tried to make sense of and trace connections among these structures, I realized that departmentalization and classification

were the central axes for organizing experts and represented the foundation for many other systems.

While I interviewed individual experts, the unit of analysis for this paper is the specialties in the engineering unit. Thus, I organized the data to compare and contrast the impact of organizational structures across groups of experts associated with different specialties (including those absent or only partially featured in these organizational structures). This was possible because I had data about experts from multiple specialties (e.g., structural engineering) working in different departments (e.g., commercial aviation engineering and executive aviation engineering).

Reading the data, I noticed that most experts talked about organizational structures matter-of-factly, referring to each other – and themselves – according to the labels of classifications and departments. This led me to compare how specialties were described in interviews to information about organizational structures and the above systems. I discovered that experts discussed their specialties in interviews in ways that echoed how they were defined in the technical area's classification and/or departments (e.g., 'I entered [PlaneCo] as a structural engineer and have been in commercial aviation for almost a decade'). Organizational structures thus seemed to set the parameters for how experts' specialized knowledge was understood at PlaneCo. Closely reading interview transcripts about the most recently created specialties (e.g., sustainability) indicated that they had emerged following changes in organizational structures (e.g., creation of a new group in a department), suggesting that organizational structures catalysed expertise. I conceptualized these findings as evidence of the *generating* effect of organizational structures.

Then, as I compared and contrasted distinctive specialties, I noticed that experts in some areas lamented organizational structures. Some of these laments referenced the criteria underpinning how specialties were organized in PlaneCo, thus drawing my attention to them. In parallel, I noted that experts talked in interviews about differences among specialties and coded how experts praised some as more important than others ('[My specialty] works on the plane from its very beginning... we are at the source of the product development') and commented about special treatment received by some experts ('It looks like my colleagues in [another specialty] advance quicker in their career'). These codes suggested a status hierarchy in which specialties related to a holistic form of expertise had a peripheral status. Connecting this discovery to the insight into the criteria underpinning organizational structures revealed that organizational structures cemented a ranking among specialties. I conceptualized these findings as indicative of the *grading* effect of organizational structures.

Comparing and contrasting how specialties featured in organizational structures also revealed that some specialties were absent from them (or at least from some organizational structures). During fieldwork, I had already detected comments about the shortcomings of the existing organizational structures. For example, human resource analysts reflected that the absence of a career path for product managers risked leaving such a critical skill 'in the shadows'. Reading and coding the interview data regarding specialties absent from organizational structures showed that absence from the technical area's classification was particularly felt among these experts. Specifically, there were codes related to being 'the odd one out', lacking recognition, and worries about one's future in a particular specialty. All

these pointed out struggles around a general experience of feeling invisible, which led me to conceptualize it as the *ghosting* effect of organizational structures.

Throughout the discovery process described above, I read the literature on experts, knowledge in organizations, organizational design, and classifications. This helped me identify the role of organizational structures in the above discoveries and sort out whether and how they were theoretically novel. Specifically, I noted that focusing on the active role of organizational structures impacting expertise was particularly significant. My analysis suggested, however, that departmentalization and classification in a bureaucratic organization – depending on how they are designed and intersect with each other – can generate and reveal as much as devalue and conceal expertise. Reading the literature also helped me abstract some patterns common to a few specialties at a higher level. Namely, it made me realize that undervalued specialties were generally related to what is known in the literature as holistic expertise and that the invisible specialties largely corresponded to forms of process expertise.

## FINDINGS

PlaneCo has structures to organize experts across specialties in its many aircraft development projects. These structures make the many specialties in the engineering unit explicit and are used to design strategies, allocate resources, and manage experts. Tellingly, a detailed organizational chart or a complete list of technical areas was considered highly sensitive information. ‘If you know how to read it, the way we are structured tells you how we make planes here’, a manager reflected in an interview; a senior engineer frankly yet secretively shared during a conversation, ‘Of course, [that expertise] is important. No wonder we have a department for it’.

Organizational structures also have a more profound impact on how expertise is understood at PlaneCo. How departments and classifications group and label specialties provides the framework through which experts talk about and understand their knowledge. To illustrate, labels from departments and classifications populate daily work life at PlaneCo. They appear on signs hanging over cubicles and office doors, stating (and delimiting) the knowledge of a given group. They appear in project schedules, slide presentations, and various other documents (e.g., design review materials), making explicit the specialties – and thus experts – involved in different aspects of aircraft development. Furthermore, these labels make up the everyday vocabulary through which experts describe their knowledge – they are the symbolic landmarks through which people navigate the maze of specialties at PlaneCo.

As organizational structures make specialties explicit, they shape expertise in three crucial ways: *generating*, *grading*, and *ghosting*. First, organizational structures generate domain and contextual expertise (*generating*). The former refers to specialized knowledge in a distinctive domain (e.g., in academia, this corresponds to a discipline or subdiscipline), while the latter relates to knowledge about the work context, such as the routines, technologies, or strategies of a particular work setting. Second, organizational structures rank certain specialties over others, thus producing and reinforcing status hierarchies among forms of expertise (*grading*). Specifically, they devalue holistic expertise – i.e., knowledge of a particular object of inquiry as a whole (Bechky, 2020).

At PlaneCo, this expertise is related to a holistic view of an aircraft's entire lifecycle, including its in-service operation. Third, some forms of expertise become invisible when they fall in between organizational structures (*ghosting*). Typically, this happens in the case of groups with process expertise – i.e., knowledge related to supporting and facilitating work within and across specialist domains (Barley et al., 2020). The following sections present these findings in detail.

### **Generating Expertise: Organizational Structures Define and Catalyse Expertise**

Organizational structures are engines of expertise. The departments and classifications at PlaneCo define the domains in which experts specialize, e.g., structural engineering, flight engineering, etc. They are linked to hiring, performance assessment, and promotions, thus scaffolding career trajectories. Experts are hired into particular job roles in a department, and their progression is expected to fit within areas related to a specific specialty. Pondering it, a senior drafter shared in a conversation at lunch, 'In a way, you end up in the hands of the company ... you specialize so much that there is nothing else besides planes ... and since this is such a niche industry, you may become trapped here'. New specialties are rare, and when they emerge, they usually do so in a top-down manner. For example, a functional manager explained the origins of digital aeronautics as a new technical area and group in his department accordingly during an interview:

Pilots started to ask for digital tools to calculate performance and flight parameters ... as it is easier to do it on a tablet ... so we looked among our engineers for folks who were digitally savvy and put them together in a group [in this department] ... Today, this is all these folks do.

Organizational structures also play a silent yet significant role in generating contextual expertise related to the unique challenges of different aircraft types (e.g., small business jets vs. large commercial planes) and product development phases (e.g., pre-certification and in-service aircraft). The most significant difference in contextual expertise is between the work to develop and certify new planes as opposed to the operational challenges of certified and in-service aircraft. Reflecting on this, a product manager shared in an interview:

The product development goes on after the certification ... yet once the plane is with the operator, there are all sorts of new demands ... for example, imagine if a [commercial aircraft] is supposed to fly but there is a battery issue ... everyone here is competent to deal with issues like this ... but it is different when you have the airline representative on the phone desperate to solve it quickly.

The generative power of organizational structures is visible in how they direct experts to develop knowledge specific to PlaneCo. While the expertise required in aircraft product development is equivalent across the industry, some of the ways in which departments and classifications group and label experts are slightly idiosyncratic to the

organization. This means that what may be a general skill elsewhere can be a distinctive specialty at PlaneCo. This is the case of systems engineering, ‘which [PlaneCo] decided to structure in a unique way ... different from [competitors] who have organized it in a more synergic manner’, as a senior engineer explained. Conversely, some specialties that are distinctive in the industry are defined as general skills at PlaneCo and thus do not warrant a specific place and label in departments and classifications. For example, an engineer who had worked in other organizations in the industry reflected, ‘What would really give us a better ability to work with prototypes would be if we had a separate department [at PlaneCo] as is the case with [another aeronautical organization]’.

Changes in organizational structures – especially in departmentalization – trigger new expertise, further evidencing their generative power. Consider the case of sustainability, a relatively new specialty for product engineers at the time of fieldwork. Following growing attention in the industry, the engineering unit’s vice-president approached a senior product engineer and tasked him with creating a small team to explore ideas on sustainability in product development. Reflecting on it after a few years in this position, the senior product engineer recalled in an interview:

Initially, it was just me ... For the first months, I was just reading. I contacted [an academic in a local university] who gave me some good suggestions on how to sell such ideas – to first focus on low-hanging fruits, stuff that would bring cost-saving or similar advantages. Then [other engineers] joined ... and now we have more substantial ideas on how to enhance the sustainability of our aircraft in light of what we expect will be future demands from clients and [regulatory agencies].

The other members of the small sustainability team shared a similar account. They had all been engineers at PlaneCo, yet their previous specialties and experiences varied widely. While they were enthusiastic about the importance of such work, they reflected that it represented a new specialty for them and for the company. Yet, brought together and labelled as such, they became sustainability specialists – even before feeling like ‘proper experts’ in that domain.

Similarly, the contextual expertise involved in designing and maintaining business jets for wealthy and demanding clients seemed to follow the creation of a new division for executive aviation. PlaneCo experts were surprised by private customers’ demands and expectations compared to the commercial airlines they were accustomed to. A senior expert reported the following episode:

Folks in [executive aviation] were puzzled by the demands from clients ... they were complaining that one client did not want to fly because the coffee machine had an issue, a red light was on ... and they were like, ‘What is the big deal? This has nothing to do with airworthiness [a plane’s suitability for a safe flight]’. They did not get that executive aviation is an entirely different beast ... these are not commercial airlines; these are millionaires who have all types of whims and would rather leave their plane on the ground and charter another one so they can have their coffee in flight.



As the episode above suggests, creating a new division for executive jets seemed to antecede the development of contextual expertise on the particularities of such a market and the specificities of its customers. The other experts in the above conversation also conveyed stories of how colleagues in executive aviation had been reaching out to anyone in the company with experience in luxury markets to garner insights.

### **Grading Expertise: Organizational Structures Cement Status Hierarchies**

As organizational structures group and label experts, they also grade different forms of expertise. This point was explained by a senior expert referencing a musical analogy: ‘You have many instruments in an orchestra, like violins and flutes, which are like different specialties ... and there is also someone with a triangle, which is important and part of the music, but usually, that person is in the back’. As this analogy suggests, differences in status among specialties are made explicit through the organization of the ‘orchestra’.

Departmentalization and classifications have both a direct and indirect impact on grading expertise. By making explicit the different specialties that populate the engineering unit, organizational structures also make it possible to draw distinctions in terms of importance. In fact, some specialist domains at PlaneCo are identified as ‘strategic’ and enjoy unique benefits, such as special hiring and retention policies. As explained by a manager in the chief engineering department in an interview:

Even without work, we keep these people due to their expertise ... they have knowledge that is strategic for the company ... they are the ones who do [some very specialized analyses related to aerodynamic tests] but only work in a particular phase of the product development.

Organizational structures also indirectly grade expertise depending on the criteria upon which they are established. Specifically, organizational structures at PlaneCo ranked specialized engineering expertise over holistic expertise. Departments and classifications are designed to correspond to an aircraft’s architecture, making expertise related to aircraft parts and functionalities directly visible. While this helps maintain clear jurisdictions around the product (as is typical in manufacturing organizations), it has the unintended effect of making experts from domains with a more holistic approach appear secondary.

The lower ranking of holistic expertise was common among both new and traditional specialties at PlaneCo. It was salient among experts in ‘customer excellence’, a specialty that had been recently created at the time of fieldwork. Customer excellence had a holistic approach, bringing together experts with direct experience in operations and client support and engineering methodologies to improve usability. Or, as an expert in customer excellence explained, ‘folks who also have practical knowledge ... and understand how to optimize the product taking the perspective of clients using it’. Experts in this specialty seemed aware of their ‘awkward’ fit in a world of specialties organized by



aircraft parts and functions. Reflecting on their challenges, a customer excellence expert shared in an interview:

[Sales engineers] can say something like, ‘Given the market, this new plane needs to reach 600 nautical miles’. Dozens of people here can do this with closed eyes and a hand tied behind their back. But if I write that ‘the availability of the plane needs to be 99.9 per cent’, these folks struggle to translate it into requirements for the product ... so they had to create ‘special’ requirements for us, which have a more interdisciplinary profile.

As the expert explained, the very work tools in the engineering unit, such as the product requirements, follow the way in which specialties are organized around aircraft parts and functions. Thus, requirements from the customer excellence group, which are less straightforward and cut across aircraft functions (and thus specialties), did not fit this logic and required a workaround in the product requirements management system.

The case of maintenance engineering is illustrative of a traditional specialty with a holistic form of expertise. Maintenance experts produce the ‘documentation like flight manuals or maintenance manuals ... without which a plane simply cannot get out of our hangars’, a veteran employee emphasized in an effort to highlight their relevance. Maintenance experts rely on clients’ knowledge and work experience in maintaining aircraft in service – not just abstract technical knowledge – to accomplish their work. As a functional manager in this specialty reflected in an interview:

The new ideas here emerge in collaboration with [airline] operators; they are the ones carrying out maintenance in multiple planes throughout their lifecycle ... so they have insights that spark changes in our procedures ... [yet] when an operator comes with an idea, our colleagues [in other specialties of PlaneCo’s product development] think that it is because we did something wrong ... the mindset, even in the way the ‘technologies’ are set up, is that we need to get the aircraft ready. Then, when it flies out, mission accomplished. But this is not really what happens in practice.

According to the manager, the ‘technologies’ (i.e., specialties) at PlaneCo are set up in a way that reinforces a specific view of expertise in product development, one that places the holism typical of maintenance engineering lower on the status hierarchy at PlaneCo. As explained by a senior maintenance expert, their struggle to ‘fit in’ was noticeable in the fact that, despite the importance of interacting with operators for their work, they do not ‘have a system to capture suggestions ... and we are now trying to lobby to set up one with the help of the chief engineering department’.

Experts with contextual expertise in in-service phases of product development reported a similar experience. Departmentalization in the engineering unit often groups experts around pre-certification or in-service aircraft. The experts affiliated with the latter departments occasionally lamented how organizational structures were set up in ways that devalued their holistic expertise over an aircraft’s entire lifecycle, for example, reserving the label ‘new’ for departments involved in the pre-certification phases of product

development. A senior product manager protested this distinction and admonished me accordingly in an interview after I referred to it:

The product engineers working in certified planes are *also* product development engineers ... developing *new* technological solutions ... it is unfortunate that some [product] engineers can spend their whole career in departments where they are working in aircraft before certification, without ever learning how the systems they create work in the everyday operations [of airlines] ... there is no attention for that, no incentive, nothing that could make them more well-balanced.

The interviewee went on to emphasize that the expertise of product engineers working in departments related to in-service planes seemed overlooked by PlaneCo, and furthermore, organization by pre-certified versus in-service aircraft reinforced this status hierarchy. Other experts whose work related to in-service planes shared similar grievances on the lower status of their expertise. For example, a senior expert candidly said, ‘We have people still working on [PlaneCo’s first plane], which is still flying ... but it is not very glamorous to be an expert in that group’.

### **Ghosting Expertise: Organizational Structures’ Misalignments Make Expertise Invisible**

Some expertise was not simply devalued in organizational structures but became invisible altogether by falling in between them. Organizational structures are designed based on different criteria and purposes. Thus, some expert groups may be part of one structure and absent from the other. Experts experienced this misalignment across organizational structures as a sort of dissonance that I call ‘ghosting’ to highlight their experienced sense of estrangement. Ghosting was common among specialties related to process expertise at PlaneCo, which were grouped and labelled in departments but did not feature in the technical area classification.

Ghosting was particularly salient among experts who had a support role in aircraft development. Most of these experts worked in the excellence group, which included specialists in project management, process improvement, and knowledge management. Their process expertise focused on curating and representing information to facilitate the work of other experts (Treem and Barley, 2016). For example, they synthesized and shared information about project management work such as planning or risk management (project management), gathered and processed information for change projects (process improvement), and supported and monitored the creation and use of knowledge management systems such as communities of practice and lessons learned databases (knowledge management).

In addition to being objectively absent from the technical area’s classification, expertise is further ghosted due to PlaneCo’s emphasis on technical knowledge. This is evident in department labels and classifications that inform how individuals talk about and understand expertise at PlaneCo. Specialist domains are known as ‘technical areas’ or ‘technologies’. Rather than ‘proficiency’, experts are periodically assessed in terms of ‘readiness’ (a term borrowed from ‘technology readiness level’, a standard method in the aerospace/

aeronautical industry to estimate the maturity of a technology). Some departments and job roles have ‘engineering’ in their label to emphasize their technical and specialized nature, regardless of whether they involve engineering tasks per se.

All this works to create an equivalence between expertise and engineering technical knowledge – and ghost process expertise. This vocabulary was generally also applied to experts outside PlaneCo, such as suppliers or external contractors, and was used by those excluded by it, further highlighting their invisibility. The following dialogue between project managers illustrates this point:

Junior Project Manager: I talked with [the chief product manager from a commercial aircraft project]. Risk management there is just chaos. But they are so resistant towards anything we have to say!

Senior Project Manager: I know. It is frustrating sometimes ... But you guys need to understand that we are not a ‘technical area’. We are not like those guys ... dealing with a particular [aircraft] system or whatnot.

After this interaction, I asked the senior project manager why he had used ‘technical area’ instead of a more general term, such as ‘specialty’. He looked at me, puzzled, and replied, ‘This is what counts here’. Ironically, the experts in the excellence group were responsible for knowledge management systems at PlaneCo. Yet, their expertise was not formally recognized in such systems. As a process improvement expert commented, ‘We are the ones responsible for the readiness [review] which maps the [engineering unit] workforce according to their proficiency in the “techies” ... yet we are not mapped in it. Nobody here [gesticulates to indicate colleagues around] is there!’ Nevertheless, these experts seemed at peace with this arrangement, with some even occasionally joking about being ‘the “miscellaneous” box’ in the engineering unit’s organizational chart.

Specialties related to coordination in product development also fell in between organizational structures. The most apparent case was the product managers who were highly regarded in the engineering unit. Product management is a ‘hybrid’ specialty for experts holding work experience as product engineers or drafters but currently performing an integrative function in product development. While their work includes administrative tasks such as project planning and progress monitoring, they bring a technical judgement to this work, thus differing from project managers’ purely administrative mandate. The role emerged some decades ago as an informal one. When most engineering departments adopted a matrix structure, it became formalized as a separate group or mini department in all aircraft development projects.

Product managers are essential in coordinating the work of multiple expert groups yet remain absent from the technical area’s classification. This limits their access to resources such as honorific roles or career paths. While some experts seem resigned to ghosting (see example above), product managers were more vocal about their frustrations, possibly because, as former product engineers or drafters, they were aware of potential benefits enjoyed by other experts. A product manager who had recently moved into the position declared in a conversation:

I recently had my performance review ... there was simply no box to tick ... I am no longer a product development engineer [specialized] in weight ... but I also do not fit the project management position.

Most product managers lamented this situation but did not envision returning to their original specialties; they enjoyed facilitating work across specialist domains. A chief product manager stated, 'I could never go back to calculating flaps [an aircraft wing part] ... once you see the complexity involved in making an aircraft, you just want to know more about how it all works together'.

## DISCUSSION

Previous research assumed that experts' specialties are passively accommodated or mirrored in organizations (e.g., Bechky and Chung, 2018; Gherardi and Nicolini, 2002) and focused on the (limits of) organizational structures codifying the content of experts' knowledge (e.g., Brown and Duguid, 1991; Robertson and Swan, 2003; Tsoukas and Vladimirou, 2001). Conversely, focusing on organizational structures charting the areas of experts' knowledge (i.e., specialties), this paper found that organizing experts shapes expertise – generating, grading, and ghosting it. Extant research has chronicled the role of occupational groups, workplace relations, clients, audiences, and state bodies in expertise dynamics (Abbott, 1988; Eyal, 2013; Huising, 2015; Reed and Reed, 2022). This paper contributes to such debate by building theory on the active role of organizational structures in (1) expertise development and (2) status dynamics and access to resources among experts. It also contributes to organization and management scholarship more broadly by drawing attention to the (3) sources of misalignments across organizational structures with implications for managing knowledge and human capital.

### Expertise Development

'Organizations are gradually becoming the sites of more and more development of expertise' (Abbott, 1991, p. 33), and this paper indicates that charting specialties is an essential mechanism in such a process. This contrasts with previous research, which often eschews organizational structures as a hindrance and extolls informal organization – e.g., communities of practices (Brown and Duguid, 1991; Nicolini et al., 2022; Wenger and Snyder, 2000) – for expertise development. Furthermore, the organizational structures seem to catalyse the formation of new specialties, while previous research has discussed how they trail such processes (e.g., Anand et al., 2007). The generative role of organizational structures for expertise may have been overlooked in earlier literature due to a focus on structures that codify – rather than chart – expertise or a preference for studying empirical settings in which experts have a limited number of specialties or are organized based on craft or collegial principles.

Social scientists have long documented the generative power of administrative tools in 'constructing and shaping differences' (Bowker and Star, 2000, p. 230). For example, census categories transformed heterogeneous social groups into 'Hispanics' in the US

(Mora, 2014) and everyday administrative forms ‘fashion[] form-fillers’... thinking about themselves’ (Yanow et al., 2016, p. 217). Similarly, examining experts across multiple specialties and organizational structures at PlaneCo demonstrates how ‘formality sometimes reflects and sometimes creates reality’ (Scott, 2002, p. 637). Or, more specifically, that expertise – and experts’ conceptions of it (Anteby and Holm, 2021; Sandberg, 2000) – can emerge from and through organizational structures.

To be sure, some experts have traditionally been understood to primarily develop expertise in the workplace. For example, management consulting firms often recruit ‘people with a potential to develop consulting expertise by applying the company’s structural knowledge, that is, its methods, cases and globally organized experience’ (Werr and Stjernberg, 2003, p. 901). However, even for experts who undergo lengthy professional training, organizational structures still provide varying latitude and incentives for expertise development. Such is the case in academia, for example, when researchers pivot their work into (sub)specialties following the creation of research centres in universities related to (new) topics (Biancani et al., 2014; Stevens et al., 2018).

### Experts, Status, and Resources

Scholars have lamented that ‘research that views the division of labour as problematic is scant, leading to overlooking essential aspects of organizational inequalities and politics’ (Alvarez and Svejnova, 2022, p. 6). Thus, this paper contributes to scholarship by showing how charting experts’ specialties influences which and whose expertise counts. That is, how organizational structures are set up can ‘valorize[] some kinds of knowledge skills and render[] other kinds invisible’ (Bowker and Star, 2000, p. 6). Previous scholarship has documented the privilege of some forms of expertise in the workplace – from hospitals (Oborn and Dawson, 2010) to crime labs (Bechky, 2020) to universities (Pereira, 2012) – and indicated that organizational structures are connected to resource distribution (Anand et al., 2007). Yet, this paper connects and extends these insights by showing how criteria and labels of organizational structures underpin how expertise is valued and how experts access resources.

The criteria underpinning organizational structures buttress rankings of specialties. Abbott (1991) has long conjectured that ‘firms encode a particular version of expert services’ (p. 23), and the findings in this paper demonstrate how organizational structures create a version of expertise that sustains status hierarchies across specialties. Specifically, PlaneCo’s departmentalization and classification encoded a higher recognition for specialized technical expertise at the expense of more holistic and process forms of expertise. While such a status hierarchy is not uncommon (Barley et al., 2020; Bechky, 2020), these forms of expertise are increasingly relevant in the current economy. A holistic view of a product’s entire lifecycle is vital for sustainability (Howard-Grenville, 2006) and the business strategy of aeronautical firms (e.g., low maintenance costs are central to the competitiveness of commercial planes). Moreover, process expertise is central to developing more collaborative work relations and integrated outputs (Adler et al., 2008; Gardner, 2016). This is similar to how ‘soft’ skills are often undervalued and less visible in technical environments (Cardador, 2017) despite growing debate highlighting their importance for the contemporary workplace (e.g., Bughin, 2018).

Labels related to organizational structures suffused interactions at PlaneCo in ways that reinforced differences in status and resources. Previous studies also found that experts routinely use language that naturalizes their marginalization and occludes their expertise. For example, psychoanalysts use vocabulary from medical classifications even though it ‘systematically replac[es] the categories of psychoanalysis with the language of the pharmacological and of the biochemistry of the brain’ (Bowker and Star, 2000, p. 47). Yet, existent labels can also be repurposed for resistance and change (Ewick and Silbey, 2003), and experts can strategically draw on a broader range of rhetorics to ‘justify their work and explain to themselves and their public why what they do is admirable and/or necessary’ (Fine, 1996, p. 90). For example, research on how technicians talk about their work shows a strategic use of the labels ‘professional’ and ‘professionalism’ to claim respect for their expertise (Barley et al., 2016).

Differences in how expertise is valued and how experts access resources, in turn, have implications for organizational knowledge. Lower-graded or ghosted experts who do not (neatly) fit the criteria and labels of organizational structures at PlaneCo had uneven opportunities (e.g., less access to specialist career paths). Besides frustration at the individual level, such disparity can lead to knowledge loss at the organizational level as experts leave the organization or shift to specialties with more prestige and resources. While grading and ghosting may reflect strategic choices to reward and preserve firm-specific skills – underscoring the relevance of organizational design for managing knowledge (Foss et al., 2010) – lobbying by experts and changes in the organizational environment also seem to influence experts’ status and resources.

The intersection of organizational structures, status, and resources also impacts experts’ careers and mobility. Specialties attractive to experts at the organizational level might be idiosyncratic and less fungible across workplaces. That is, organizational structures can make expertise rather sticky if experts specialize in idiosyncratic ways. Organizational structures can thereby be a double-edged sword, connecting experts to status and resources within organizations while limiting access to external labour markets. Thus, how experts progress in their careers and move in and around organizations may vary not just by levels of specialization (Ferguson and Hasan, 2013) but also across specialties and how they are organized.

### **Misalignments across Organizational Structures and the Management of Knowledge**

Revealing the active role of organizational structures for expertise also alerts us to the complexity of these very structures. Specifically, while research has shown that organizational structures are constantly evolving and knotted to components across organizational and social levels (Cohen, 2013, 2016), this paper draws attention to the varying degrees of alignment and change of organizational structures. Researchers have increasingly explored connections among structural elements – e.g., job structures (Hasan et al., 2015) and rule networks (Zhu and Schulz, 2019) – and recognized contrasting elements in organizational forms – e.g., professional organizations with dual authority structures (Valentine, 2018) or project teams with flexible structures nested in an overarching bureaucratic structure (Malhotra and Morris, 2009). Yet,



there has been less focus on different types of organizational structures and their potential misalignments.

The paper also indicates that variation in the criteria upon which organizational structures are designed may explain distinctive rates of change that exacerbate misalignments. While changes in technology, regulation, and market trends catalysed new specialties at PlaneCo, they did not ripple across all organizational structures evenly. Specifically, the classification linked to professional ideals was much slower to change (compared to departmentalization based on more operative concerns) and incorporate some (new) forms of expertise. As skill matrixes, knowledge maps, expertise taxonomies, and similar systems become more numerous and intricate (e.g., Ihrig and MacMillan, 2015), examining their (mis)alignment is essential when managing knowledge and human capital development. This is particularly important considering that lower-graded or ghosted experts may not just experience an emotional toll (Karunakaran, 2022) but also more turnover and fewer opportunities to share knowledge in the workplace.

## BOUNDARY CONDITIONS AND CONCLUDING REMARKS

The organization of experts is of salient concern and a considerably formalized process in aeronautical organizations. I expect the dynamics examined to be equally pronounced in large, highly differentiated organizations or settings where firm-specific skills are particularly relevant. However, the generalizability of findings is less evident in contexts where career progress is loosely tied to specialties – e.g., consulting services or project-based firms (Morris et al., 2012) – or experts face barriers to learning and specializing (Bharatan et al., 2022). Interestingly, some of the ample research on social-cognitive categories (Vergne and Wry, 2014) suggests that they can be comparably consequential and stable for experts: typecasting in the film and entertainment industry impacts career opportunities (Zuckerman et al., 2003),<sup>[6]</sup> and genre classifications for musicians are cemented by new digital tools (Airolidi, 2021). Thus, examining the interplay of categories, organizational structures, and expertise is relevant for future studies.

The specialties and organizational structures at PlaneCo were considerably stable. Thus, it would also be interesting to examine how generating, grading, and ghosting plays out in more dynamic settings, such as holacratic organizations in which individual experts are continually (re)matched to (new) roles (Lee and Edmondson, 2017). Similarly, as new technologies reconfigure experts' work and skills (Pakarinen and Huising, 2023), examining how specialties and structures evolve in the context of change is necessary. While field-level research shows that experts strategically combine distinctive bodies of knowledge into new specialties (Ban et al., 2016; Seabrooke, 2014), we know less about how they may inscribe them into organizational structures. Thus, scholars would do well to investigate the rate of change in specialties and expert knowledge across organizational and occupational levels.

This paper provides a research snapshot of specialties and structures at a particular time. Hence, it cannot fully untangle when and how organizational structures antecede new specialties. Historical studies indicate that experts' specialties and classifications co-evolve (see, e.g., on medicine Weisz, 1997) and organizational structures can catalyse significant social differentiation (see Scheer and Stergar, 2018 for an analysis of the effects of



classifications on the dissolution of the Habsburg Empire). Research in industries facing decline shows that structures for organizing experts can survive longer than the individuals staffing them (see, e.g., on journalistic beats Van Leuven et al., 2021). Future research adopting a longitudinal design can tease out the origins and stability of organizational structures vis-à-vis specialties. Scholarship on the design and survival of jobs may offer concepts and methods for these future inquiries (Cohen, 2013; Hasan et al., 2015).

While experts are typically associated with specialties at the occupational level and careers spanning organizational/national boundaries (Harrington and Seabrooke, 2020; O'Mahony and Bechky, 2006), recognizing the ways specialties are organized in the workplace challenges some of these assumptions and raises questions on the mobility of experts that fall beyond the scope of this paper due to its focus on a single organization. Understanding whether and how organizational structures channel experts into specialties transferable across organizations will require research on the interplay of internal and external labour markets (Dokko and Jiang, 2017; Wright et al., 2018). For example, scholars may investigate the influence of charting specialties in ways that correspond more or less with educational, occupational, or industry classifications on experts' specialization, mobility, and career trajectories. Remarkably, research suggests that focusing on words associated with specialties (e.g., job titles instead of occupational classifications) can better explain the matching between workers and jobs in the labour market (Marinescu and Wolthoff, 2020).

Bureaucratic organizations, far from antithetical to expert knowledge (Blackler et al., 1993), have long evolved alongside (Donaldson, 2001; Monteiro and Adler, 2022). As swathes of experts entered the workplace, new organizational structures (e.g., classification) have been overlaid onto traditional ones (e.g., departmentalization) to chart specialties. While this combination of organizational structures may generate expertise, it may also reinforce privileges and invisibilities, thus blocking some experts from material gains and curtailing knowledge flows. Designing organizational structures to support the work of experts while remaining aware of their (unintended) effects and limits represents a crucial challenge for management in our time.

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## NOTES

- [1] I am thankful to Silviya Svejenova for alerting me to this paper.
- [2] I use the notion of 'charting' as these organizational structures aim to map experts' specialties, similar to how organizational charts record and represent the building blocks of an organization (Vikkelso, 2016).

- [3] See, for example, [experts.cbs.dk](https://experts.cbs.dk).
- [4] Ironically, the original goal of the broader research project was to investigate integration across specialties. Only once in the field did I realize the challenges involved in organizing (and not just bringing together) experts, and I decided to expand the scope of the research.
- [5] I am thankful to reviewer 2 for outlining the value of a synthetic visualization of the connections among multiple formal organizational structures and to Pauli Pakarinen for designing this visualization.
- [6] I am thankful to reviewer 3 at AOM 2021 for this suggestion.

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