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Conclusion

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The goal for this book was to offer readers an overview of the construct of expertise at work: what it is, what it looks like in various organizational and work settings, and how some external factors such as artificial intelligence (AI), changing workforce demographics, and innovation are likely to reshape it. We did not attempt to offer an exhaustive research and practice book about expertise since there are numerous such resources already available. Rather, we sought to provide the reader with a cross-sectional snapshot that offers various views and contexts. We also wanted a culturally rich perspective on the topic. To achieve this, we brought together experts in countries as far away as South Korea and The Netherlands and from an array of academic disciplines. The final

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intention was to situate a discussion of what expertise might mean in the future as organizations integrate innovations such as AI.

As a conclusion, we wish to address some of the implications that scholars and scholar-practitioners alike might wish to consider as they explore and support expertise at work. In order to be able to support the development of expertise in organizations, it is critical that those in Human Resource Development (HRD) and in similar roles, as well as workers themselves, have a grasp of how expertise is defined and understood. The ability to build organizational supports that embrace such understandings is key to measuring and assessing expertise, ensuring opportunities for redevelopment of expertise when necessary, and respecting different expressions of expertise that demonstrate to workers their value and contribution to organizational success. Yet, as Kim makes clear in Chap. 2, defining expertise is not as simple as one might expect. We can say that experts pursue “exceptional performance” and that the developmental processes to expert status are applicable to almost all individuals, but that characterization is limiting unless there is a recognition of both the psychological and sociological perspectives of expertise in the workplace. This is because a traditional concept of expertise alone, described as a set of structured and decontextualized knowledge and skills, while important and helpful in understanding deliberate practice, is limiting because it overlooks subtle and other critical, but less known aspects of expertise found in today’s dynamic organizations. Ideally, this more robust idea of what it means to have expertise is combined with a perspective that sees the role of adaptive expertise and flexible expertise as key for solving unpredictable and atypical problems. This means that organizations must recognize and encourage the continuous transformation of expertise. To do that, adaptive expertise needs to be understood and supported since it is important for performing successfully in novel situations. Today’s organizations operate in increasingly dynamic environments, plus, with changes in workers’ contexts: as they take part in the gig economy, are self-employed, or work as contingents that position them outside of a stable work environment, means individuals are exposed to novel situations more frequently. To be successful workers need to develop a deep conceptual understanding of their occupational domain. Through organizational development opportunities,

professional societies, or self-study and application workers will be better able to navigate these dynamic environments.

With a firm grasp on what it means to have expertise, flexexpertise, or adaptive expertise organizations can only then turn to instruments that may be useful for identifying and measuring expertise in employees. And although, as we see in Chap. 4, researchers and practitioners are beginning to demonstrate that expertise can be measured, elicited, transferred, and redeveloped, a strong, data-driven understanding of expertise remains underdeveloped. This is due in no small part to scholarship that is useful in characterizing expert processes in specific contexts, but offers little in addressing the complexity of expertise in ways that broaden our understanding of expertise in organizational contexts. When organizations seek measures for assessing expertise, they need to look to those derived from various business contexts, workplace leaders, and impression management techniques, as well as those that acknowledge the challenges to existing social power. This is no easy task for those like HRD professionals, and what is clear from the first section of this book is that organizations and scholar-practitioners must call on scholars to expand and challenge existing assumptions of expertise practice, including employees' critical thinking and problem-solving skills. It is also apparent that there is a need for clear delineation between the study of competence, proficiency, and expertise with measures that move beyond examining experts primarily in relation to novices.

The book also offered readers a chance to examine expertise in work and organizational settings. This provided an opportunity to consider the more practical aspect of expertise, which gives scholars and scholar-practitioners a way to situate the understanding gained in the first section of the text. In Chap. 5 readers were presented with the challenges and opportunities associated with military expertise as veterans' transition to non-military work. Although the context is quite specific, it is clear that workers (veterans or otherwise) can find it difficult to translate their expertise for potential employers to see how skills and knowledge found in one field or environment can transfer to another, for instance, the ability to effectively articulate expertise in soft and technical skills. In the case of veterans, doing so is important to their overall understanding of the value they bring to the workplace and a shift in confidence they may

experience as they find new ways to use their skills. Equally important is how employers, too, might need to review how they write job descriptions and market openings. Considering how to more broadly conceptualize the expertise they seek will help get more qualified applicants in their hiring pool.

Another implication for scholars and scholar-practitioners that comes out of a specific look at expertise in context is the need to consider how self-regulation might be key to expertise development at work. As several authors in this book noted, deliberate practice is important, but without self-regulation, that practice might not be achieved. Those who master self-regulatory skills are well positioned to overcome psychological and physical challenges that stand in their way of attaining expertise. Liutkutė, Hettinga, and Elferink-Gemsera argued that self-regulation as a core component for enabling successful deliberate practice is the ultimate determinant for attainment and execution of expert performance. This means that individuals seeking to develop expertise might be wise to take a cue from elite athletes and be proactive and committed learners who use reflection, goal setting, planning, monitoring, and evaluation of their performance on a regular basis.

Readers also had the opportunity to consider the possibility of organizations as assemblages of knowledge—places that see all individuals, novice and expert alike, as having the potential to contribute in meaningful ways to the success of the organization, but as the last section of our book demonstrates, what it means to successfully identify, nurture, and retain expertise will shift significantly in the future. This will be due in no small part to the rise of artificial intelligence (AI) as an organizational tool. The chance to understand the history of AI and how AI and expertise converge is very useful as a way to envision our future work. But, as is pointed out in Chap. 8, we need to be aware that machine learning approaches using deep neural networks cannot explain themselves to humans. This is crucial, particularly when experts need to work with these systems. Moreover, these approaches result in brittle systems that can easily be attacked, or that do not work in unforeseen scenarios. AI capabilities can also have various consequences on workers, ranging from replacement, to augmentation, to maintenance of human expertise. It may well be the case that pattern recognition capabilities of AI systems will exceed human

expertise. Yet, in order to be able to effectively collaborate with human experts, AI will need collaborative skills, such as being able to explain itself to humans. For those looking to harness human expertise and AI, organizations of the future will need to focus on Hybrid AI in which expertise is distributed across experts and AI in various ways. The understanding of new skills (fusion skills) that human experts need to develop in order to deal with AI will also be vital. This is because AI systems will hardly ever be stand-alone in a work process and therefore will need intricate tuning to human demands at various points in time. Such systems will need to be trained, validated, understood, explained, assisted, and overruled if experts want to accept them and be able to effectively work with them. Maarten Schraagen and van Diggelen emphasized an important point: it is a gross oversimplification to consider AI systems and human expertise as two mutually exclusive entities, with one taking over the other without changing anything in the work process. Rather, we need to view AI and humans from a joint cognitive systems perspective, at a systems level, and as dynamically changing over time. Only then will we be able to see the intricacies of the mutual dependencies between humans and AI, and the constantly evolving distribution of skill sets that are required from an organizational perspective.

As the author of Chap. 9 pointed out, the digital revolution and the increasing use of artificial intelligence in the workplace create new demands in labor needs and continual re-education. And when this is combined with changing demographics in the workforce, including more diversity than in previous decades in educational attainment, age, gender, and race, and the increased demand for soft skills, organizations may find that their existing notions of expertise no longer serve them. In fact, Germain suggested a shift in the importance of employee experience. What seems important to tech companies are specific skills and the desire to grow as an employee, not the 10,000 hours of practice rule that typically defines expertise. Second, the author claimed that, in some fields such as technology, education is a more negotiable qualification for some jobs. Indeed, in the tech industry, entrepreneurs are often young and tech-related knowledge has a life of about three to five years, after which it becomes obsolete. Additionally, organizations value employees who are creative, adaptable to swift changes, and who are able to learn quickly.

Third, because consumer products and services tend to increasingly encompass more than one domain, employers seek individuals who are curious about various subjects and who value multidisciplinary knowledge. Germain suggests that Gen Z employees respond well to this requirement as they want to gather a variety of different skill sets rather than embracing one specialization. This multidisciplinary approach contrasts with the traditional domain-specificity and narrow focus of expertise.

To explore the idea of the digital revolution and AI at work, the book concludes with an imagining of work in the not-too-distant future that calls into question developing expertise in light of shifts in technology and innovation. Scholars and scholar-practitioners must consider the possibility and likelihood that, while having the *right* expertise will remain a very powerful advantage, an investment of 10,000 hours of deliberate practice is untenable. They should also ask: are current methods for developing expertise incongruent for establishing and/or maintaining a competitive advantage in an accelerative environment driven by technology and innovation? As Moats contended, tools such as artificial intelligence, exoskeletons, and collaborative robots will continue to evolve, emerge, and transform the workplace—so work-process and the associated human expertise will need to reflect those changes. Likewise, the innovations in technology and processes and the speed at which they emerge and need to be implemented will demand changes in *how* expertise is developed. The ubiquitous nature and the rapid evolution of workplace technology, the ever-present transformation of the workplace, and the unrelenting fast pace of innovation will continue to disrupt the competitive landscape which subsequently challenges organizations' performance.

As demonstrated in this concluding chapter, understanding expertise at work is a complex enterprise, but one that is imperative for those seeking to identify, develop, and maintain expertise, both now and in the future. Although we attempted to present a book that is forward in its thinking on the topic, there is no doubt that there are conditions and events that will continue to shift the course of expertise research and the work of scholar-practitioners. For instance, the rise of the global pandemic, COVID-19, has led to a reimagining of work. With millions of

people changing their work patterns (Davidson, 2020; Richter, 2020) and organizations rethinking their business models, adopting new technology, needing alternative work arrangements, and shifting to online services and new partnerships, the expertise that was necessary for success in 2019 is no longer the same in 2020. Unexpected changes faced by organizations and employees always have the potential to affect expertise and scholars and scholar-practitioners need to be prepared for that change.

References

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