

Johannes Glückler · Christopher Winch
Anna Mateja Punstein
Editors

Klaus Tschira Symposia

Knowledge and Space 18

Professions and Proficiency

OPEN ACCESS

 Springer

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Gemeinnützige GmbH



Knowledge and Space

Volume 18

Series Editor

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Knowledge and Space

This series explores the relationship between geography and the creation, use, and reproduction of knowledge. The volumes cover a broad range of topics, including: clashes of knowledge; milieus of creativity; geographies of science; cultural memories; knowledge and the economy; learning organizations; knowledge and power; ethnic and cultural dimensions of knowledge; knowledge and action; mobilities of knowledge; knowledge and institutions, geographies of the university; geographies of schooling; knowledge for governance; space, place and educational settings; and knowledge and civil society. These topics are analyzed and discussed by scholars from a range of disciplines, schools of thought, and academic cultures.

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ISSN 1877-9220

ISSN 2543-0580 (electronic)

Knowledge and Space

ISBN 978-3-031-24909-9

ISBN 978-3-031-24910-5 (eBook)

<https://doi.org/10.1007/978-3-031-24910-5>

This work was supported by Klaus Tschira Stiftung gGmbH

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This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Acknowledgements

The editors thank the Klaus Tschira Foundation for funding the symposia and the Springer book series on Knowledge and Space. The team of the Klaus Tschira Foundation and the Studio Villa Bosch have been contributing greatly to the success of the symposia for more than a decade. Together with all the authors in this volume, we are grateful to Katrin Janzen, Leslie Ludwig, Marius Zipf, Klara Jungkunz, and Linda Sendlinger for their superb assistance to the editors as well as to the technical editing team for their tireless dedication. Volker Schniepp at the Department of Geography at Heidelberg University has generously helped us to get figures and maps into shape for publication. We also thank all student assistants and colleagues from the Department of Geography who have helped accomplish the symposium as well as this 18th volume in this book series. We are particularly grateful to Lena Buchner, Tobias Friedlaender, Alaina Marangos, Johannes Nützel, Sandy Placzek, and Helen Sandbrink.

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Chapter 1

Professions, Proficiency, and Place: An Introduction



Johannes Glückler, Anna Mateja Punstein, and Christopher Winch

The 18th volume of the interdisciplinary series on Knowledge and Space looks at how people learn, create and transfer knowledge within and across social groups, such as professions, scholarly disciplines or communities. On the one hand, creating knowledge across social groups is important for innovation, especially for creating more radical and unconventional novelty (Nootboom, van Haverbeke, Duysters, Gilsing, & van den Oord, 2007; Norman & Verganti, 2014; Uzzi, Mukherjee, Stringer, & Jones, 2013). On the other hand, social circles often frame what and how its members think and learn, and so erect structural boundaries to innovation (Abbott, 1988; Fleck, 1935).

Professions are particularly important for the framing of domain-specific knowledge: “The professions dominate our world. They heal our bodies, measure our profits, save our souls” (Abbott, 1988, p. 1). Scholarly research on professions started at least as early as in the 1950s, when Parsons (1951) proposed the term to distinguish professionals from bureaucrats (Siebert & Windrum, 2023). Whereas earlier studies looked at how professions institutionalize distinctively within different national contexts (e.g., Abbott, 1988; Freidson, 1994; Larson, 1977; Macdonald, 1995), more recent research has explored the concept of professionalism within organizational fields, how professionalism varies across space and time, and how professions play a role in institutional and organizational change as well as the partitioning of organizational fields (e.g., Aldridge & Evetts, 2003; Evetts, 2003;

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J. Glückler et al. (eds.), *Professions and Proficiency*, Knowledge and Space 18,
https://doi.org/10.1007/978-3-031-24910-5_1

Faulconbridge, 2008; Faulconbridge & Muzio, 2021; Macdonald, 1995; Muzio, Brock, & Suddaby, 2013; Noordegraaf 2011).

In this book, we aim to take a broader perspective and inquire into the intersection of professions, knowledge and space. Chapters in this volume will address key questions regarding how social groups create, use and spread knowledge, and how these processes relate to geographical space and place, including such questions as: How do professions frame, build and train proficiency? How do members of a profession govern professional competence, knowledge and skill? What are the geographical conditions and social contexts in which these processes are helped or hindered? To answer these questions, scholars from philosophy, sociology, political science, geography, psychology, and history contribute conceptual and empirical work from multiple disciplinary perspectives, including case studies on translators in Israel, engineers in Canada, architects in the UK, or psychologists in Argentina.

Previous volumes in this series have highlighted that social contexts in geographical places shape the meanings, interactions and structures of professions and organizations (Coraiola, Suddaby, & Foster, 2018; Glückler, Suddaby, & Lenz, 2018; Meusburger, 2009). Others have pointed to the important role of institutions, that is, the relatively stable patterns of interaction based on mutually shared normative expectations, in the rise of new and the demise of incumbent professions and practices, such as the Journeyman tradition in Germany (Glückler & Lenz, 2018). What do we know about the role of social processes in professions and knowledge creation? In the following section, we adopt a perspective of the social process of learning as a framing of the relation between profession and proficiency, and to which the individual chapters in this volume contribute differently.

Professions: Social Groups Organized Around Knowledge

In everyday life as well as in academia, the term “profession” is used to denote a type of work or occupation that requires particular expertise and knowledge, which professionals attain by means of special education, training and practice. Professions are associated with occupations that develop more complex or advanced forms of knowledge bases, non-routine practices and conceptual or “white-collar” work (Adams, 2020; McDonald, 2000), such as teachers, accountants, architects, medical doctors, engineers or lawyers (Kuus, 2021). Professions frame the creation, valuation, and reproduction of knowledge. On the one hand, members of a profession together decide what kinds of knowledge are legitimate, valid and useful (Fleck, 1935, 1979). They make knowledge accessible, reproducible, and they share and educate that knowledge across society and space. On the other hand, professions control access to and so exclude non-members from their professional knowledge (Abbott, 1988). The literature suggests several characteristics that encourage a perspective of the social process of learning and interaction: First, members of a profession collectively standardize and regulate knowledge exchange and services (Freidson, 1994; Siebert & Windrum, 2023); second, professions are built on a commonly approved knowledge base (Crompton, 1990); third, professionals are reinforced through training and

education of a defined set of skills and competences (Winch, 2023); fourth, members of a profession share a common thought style and language (Fleck, 1935, 1979; Punstein & Glückler, 2020); fifth, professions are linked to social status, power and elite structure (Adams, 2020; Eyal & Pok, 2015; Fleck, 1935, 1979). Yet how exactly do professions produce knowledge and proficiency?

Proficiency: The Social Process of Gaining Knowledge

Creating knowledge and gaining proficiency depends on social mechanisms and on the spatial context in which professions are embedded. A generic understanding of proficiency is the “ability to do something well because of training and practice” (Oxford Dictionary, 2022), a notion commonly applied in the context of language education. Knowledge, a term most diversely conceived throughout the volumes of this book series, broadly refers to the human understanding of concrete and abstract phenomena (Glückler, Herrigel, & Handke, 2020). And because it is neither given to anyone in its totality (von Hayek, 1945), nor independent from the specific context of meaning, the creation and use of knowledge is subject to the social process: “Knowledge in general, and scientific knowledge in particular, is not only a potential means of access to the secret of the world but also the coming into being of the world” (Stehr, 2010, p. 26). Facts are always recognized and understood within a social, psychological, local and situational context (Fleck, 1935). A key question, then, is how professions master the trade-off between the enduring need for new and unconventional (Mukherjee, Uzzi, Jones, & Stringer, 2017) knowledge, and the need for conventionalization and transfer of existing knowledge.

Extant research has comprehensively appraised the collective nature and social process of knowledge creation. Several concepts and approaches, including *epistemic cultures* (Knorr-Cetina, 1981, 1999), *communities of practice* (Lave & Wenger, 1991; Wenger, 1998), or *epistemic communities* (Cohendet, Grandadam, Simon, & Capdevila, 2014; Haas, 1992) highlight knowledge production as a collective process enacted by social groups (Table 1.1). Yet, whereas adherents to community perspectives of learning have contributed greatly to unpacking the forms, mechanisms and instruments of within-group processes of knowledge creation, important questions remain: If members of a profession constitute the quality and level of expertise or skill necessary to be considered proficient, how can individuals be proficient in more than one field (Banfield, 2023)? And how can professional knowledge be mobilized across the boundaries of a profession (Punstein & Glückler, 2020)?

Perhaps the relatively neglected, yet most subtle approach to studying knowledge creation within and across social groups is Ludwik Fleck’s theory of *thought collectives* (Fleck, 1935, 1979). Apart from developing a coherent conceptual language to decipher processes of education, training and learning within a thought collective, Fleck pays dedicated attention to the challenges that collectives face vis-à-vis their external environment and through the course of time (see Table 1.1). Empirical research on inter-professional learning suggests that cross-fertilization and co-creation of new knowledge across professional boundaries often fails due to

Table 1.1 Four approaches to the social production of knowledge

	Epistemic cultures	Community of practice	Epistemic community	Thought collective
Social structure	Science-specific, individual vs. collaborative	Core–periphery structure; multiple membership	Agenda-specific structure around members with legitimacy	Universal structure of esoteric (experts) and exoteric circles (lay); dogmatic vs. democratic structure
Learning at individual level	Adapt to a culture by working in a scientific field	Identify with a community’s competence regime	Commit to an agenda; manifesto and codebook	Education; stylish thinking; thought charms; thought solidarity
Learning at collective level	Paradigm shifts in science	Negotiation of new elements brought in by (new) members	Radical shifts in the community lead to changes in the codebook	Endogenous learning by exoteric or esoteric pushes; exogenous learning through new members
Inter-group transfer and learning	<i>n.a.</i>	Adjust language; boundary objects (blueprints) or brokers (managers)	Rewrite the codebook to convince people to join an agenda	Master ‘hallucination’; translate thoughts into ‘less deep’ language; collective mood

Note. Adapted from Punstein and Glückler (2020, p. 547). Copyright 2019 by Oxford University Press. Adapted with permission

the social construction of (in)commensurability (Punstein & Glückler, 2020). When professions institutionalize their own specific thought styles (Fleck, 1935, 1979), the thinking of one professional may easily clash with that of another profession. The “hallucination” that may (or may not) occur can hinder joint knowledge creation, as an in-depth study of learning and co-creation across the professions of industrial engineering and industrial design has demonstrated (Punstein & Glückler, 2020). Yet, as Abbot argues, “interprofessional relations are potentially the central feature of professional development” (Abbott, 1988, p. 18). Hence, learning processes and the governance of intangibles and knowledge within groups are important to understand what happens if knowledge is transferred from one social context to another (Banfield, 2023).

Space: The Context of Professional Learning

One way to stimulate change within a profession, is to facilitate exposure, contact and interaction with members of another profession by means of encounter and colocation in a geographical place. The places, where members of different professions meet, create opportunities for local variation in thought styles and potential cross-fertilization (Punstein & Glückler, 2020). Geographers have emphasized the place-specificity of professional knowledge (Agnew, 2007; Gertler, 1995;

Meusburger, 2009; Storper & Venables, 2004). Space, place and spatial networks shape the traveling of ideas, professions and expertise (Kuus, 2021). Spatial context matters at different scales. Obviously, professions are regulated at the national level, causing problems of recognition or accreditation in other jurisdictions. A lawyer or medical doctor trained in one country usually has to acquire additional certification to be allowed for professional practice in another. Variation and friction, however, also occur at subnational, regional levels (Kuus, 2021; Sassen, 2018). Hence, forms of collective knowledge production are influenced by and embedded in various levels of space, such as local and national environments, institutional and socio-economic contexts, and socio-spatial relationships. The book collects a set of original contributions that shed light from distinct disciplinary perspectives on the interdependencies between professions, proficiency, and the geographical contexts and diversity in which these relations unfold.

Structure of the Book

The chapters in this book offer original conceptual and empirical views on how social collectives learn within professions (Part I), how intangible qualities of professions transform (Part II), and finally, how professional life unfolds in space and across different scales and geographical contexts (Part III).

Learning Within Professions

In Part I, researchers analyze the social processes within professions and explore how professionals gain proficiency. In Chapter 2, *Christopher Winch* looks at the standardization of professional competence and asks if professional qualifications are (still) the guarantee of professional ability of its holder. He argues that designers of professional curricula need to focus on more than just “the skills” of the future professionals to construct and maintain professional qualifications sustainably. He draws on the example of professionals in low-energy construction to show that besides skills, systematic (theoretical) and non-systematic (conditional) knowledge, as well as know-how and personal characteristics, such as individual and social attitude and capacity are important attributes of proficiency (Winch, 2023).

In Chapter 3, *Janet Banfield* reconceptualizes the notion of proficiency and challenges the idea of disciplinary professionalization at the intersection of three different scientific disciplines—geography, psychology, and the arts (Banfield, 2023). She demonstrates inventively that professional proficiency is connected to disciplinary legitimacy. Interdisciplinary expertise seems to be sanctioned, undesirable and “inproficient” in academic careers by the members of each discipline (Banfield, 2023). She provides a new understanding of interdisciplinary expertise

and how disciplinary spaces can restrict the acceptance of new knowledge. By doing so, this chapter emphasizes the need for interdisciplinary work on how practitioners can overcome disciplinary boundaries to enable knowledge generation across professions.

Chapter 4 combines the perspectives of expertise, knowledge and strategies and goes one step further into knowledge creation. *Patricia Alexander* intersects the perspective of domain-specific knowledge with individuals' strategic abilities and interest in order to investigate how expertise develops over time. Introducing the Model of Domain Learning (MDL) she takes a psychological and educational view and contributes to a deeper conceptual understanding of expertise (Alexander, 2023). Her three-stages model—acclimation, competence, and proficiency—helps to understand which strategies individuals use to become a proficient expert within a professional domain. She proposes that societal changes may influence the nature of expertise in the future: The development of AI and the technology-rich world change the conditions for professional proficiency and learning.

In Chapter 5, *Rakefet Sela-Sheffy* looks at the profession of translators and argues that professional identity makes a translator proficient in his or her field of expertise (Sela-Sheffy, 2023). Building on a qualitative case study in Israel, she critically reflects the concept of professions and the role of professionalization as status mechanism. She argues that competencies within professions are socially learned and controlled and embodied in the professionals' dispositions and self-perception, instead of being regulated by organizations or institutional agencies. Professional translators deliberately reject the formalization of their work but are not seen as unqualified workers in this very case. The chapter introduces the idea of counter-professionalization and provides a new understanding of the status structure of this occupation.

Governing Professions

Part II includes several chapters that examine the dynamics that transform the intangible qualities of a profession, including data, intellectual property, and professional legitimacy. Chapters 6 and 7 investigate two professions—British architects and US scientists—and show how internal and external professional dynamics (Siebert & Windrum, 2023, Chap. 6) and societal changes (Haas, 2023, Chap. 7) influence the legitimacy and power of professions.

In Chapter 6, *Michael Siebert* and *Paul Windrum* illustrate how the control, the roles and the knowledge of the architectural profession have changed over the post-war period in the UK. Architects used to be one of the most important actors within the private residential sector (Siebert & Windrum, 2023), and their profession was the main catalyzer to organize and integrate the entire work flow, including managing the contractors and legal agencies. Yet, as the authors argue, architectures have gradually lost their powerful position within the housing industry due to endogenous and exogenous factors, and professional practice and knowledge has transformed accordingly.

In Chapter 7, *Peter M. Haas* takes a political science perspective and elaborates on the social foundations of the legitimacy (and authority) of science. In particular, he focuses on the challenges that scientific evidence and its use in politics have had to face in the course of contemporary climate denialism. Analyzing ten criteria of legitimacy Peter Haas shows that three criteria have been the driver of the delegitimization process of scientists in the context of political governance: consensus within the scientific groups, accuracy of their predictions and impartiality. To restore their legitimacy *Haas* discusses further social legitimacy criteria.

Chapter 8 puts the governance of intangibles, data, and intellectual property under the microscope. *Ahmed Bounfour* connects to research on intangibles, such as intellectual property rights, and focusses on the role that intangibles and the acceleration of time and space play for innovation and future forms of knowledge production (Bounfour, 2023). New forms of value creation and business models, such as platforms, show new ways how value is produced and governed. For these reasons, and in contrast to traditional production systems (e.g., Lean), he introduces the concept of the *acceluction regime* to explore the accelerated production of (digital) links in contemporary economies. His concept offers a new analytical perspective to evaluate the role of intangibles for innovation, but also points to political and social issues which may influence economic performances, new dynamics of economic powers, competition, and property rights.

The Spatial Dimension to Shaping Professions

Although the importance of space has become visible explicitly and implicitly in all previous chapters, Part III of this book includes four original chapters that explicitly address the question how professional work unfolds in places and across space. More specifically, the contributions analyze three professions—psychology, engineering, and academia—at several different spatial scales and social dimensions.

In Chapter 9, *Hugo Klappenbach* analyzes the development of the profession of psychology in Argentina since the end of the nineteenth century (Klappenbach, 2023). He shows the evolution and progressive steps of standardization of psychology as a profession within the national context of Argentina: starting with assistance for other professions (such as medicine), followed by the establishment of an undergraduate program in psychotechnics, and finally by a university degree in psychology. His historical reconstruction demonstrates how institutional and political factors shaped the establishment of the profession in Argentina. Overall, his study illustrates how the evolution of professions, and their geographical origin have built the roots for place-specific practices and knowledge.

Wolfgang König, the author of Chapter 10, undertakes a deep historical analysis of a well-known industrial leadership personality (König, 2023). He examines the case of William Siemens (1823–1883), engineer and founder of Siemens corporation, who had been educated in Germany and then moved to England. This comparative case study design facilitates researching the physical, cultural, and technological spaces of professional action in two nations. He argues that the places of England

and Germany had shaped the technological evolution as well as the performance and transformation of the engineering profession differently in each country.

Chapter 11 portrays the engineering profession in Canada and illustrates that the national and work-place context has forced change in the practice of engineers and professional knowledge. New organizational requirements, such as increasing efficiency, have affected the proficiency of engineers nowadays. In her qualitative case study *Tracey Adams* shows that “training-on-the-job” which has been a primary and well-established part of the engineering education has been experiencing a loss of legitimacy during the last years. She argues that the change at the workplace has encouraged new engineers to pursue “information gathering, rather than building deep knowledge”. She argues that engineers are likely to face long-term implications for their fiduciary responsibilities (Adams, 2023).

In the final Chapter 12, *Ariane Berthoin Antal* and *Julian Hamann* focus on German academia and claim that the mantra of efficiency risks to offset inter-disciplinary and creative knowledge acquisition. The proficiency of academics is linked to their dedication to becoming a specialist in their area of expertise (Berthoin Antal & Hamann, 2023). The authors argue that “streamlined professionalization” in academia hinders “playful deviations”—*Spielwiesen*—from the primary disciplinary path into different social and intellectual spaces. The chapter proposes the concept of *Spielwiesen* as spaces, where academics can engage with new fields of knowledge. National education systems, disciplinary contexts and career stages provide different opportunities to enable spaces of off-disciplinary learning.

Conclusion

In this book, scholars analyze how the creation, use and sharing of knowledge is bound to collective agency. Professions and proficiency co-evolve. Professions build knowledge, while, at the same time, knowledge institutionalizes the profession. The validity of knowledge depends to some extent on the legitimacy of professional members and leaders as well as on the spatial context. Cultural and institutional spaces help to stabilize but also change the proficiency of a profession. Places and spaces that stimulate inter-disciplinary learning will become more and more important in the digital age. In order to educate future generations, it is necessary to open a professional and expert-centric view and to understand the new kinds of mechanisms and practices that proficient persons need to know in their field of work and expertise.

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Part I
The Creation of Proficiency

Chapter 2

Qualifications as Guarantees of Proficiency: Do We Understand Their Role?



Christopher Winch

In this chapter I raise the question of what it means to award a qualification guaranteeing that an individual is able to practise an occupation. The ability to practise an occupation to a required standard is what is meant by *proficiency* in this chapter. Proficiency, as I shall use the term in this chapter, refers to the overall ability to practise an occupation, including knowledge, know-how of various kinds, attitudes, dispositions and virtues. Although in the modern occupational context it is not, of itself a situational attribute (compare the practice of traditional crafts e.g., Sturt, 1923/1976), it presupposes the ability to make situationally relevant judgements taking into account particularities of place, colleagues and clients and, by implication a degree of tacit ability (Gascoigne & Thornton, 2013; Hutchinson & Read, 2011). It thus encompasses a wide range of conceptions of competence ranging from the narrow English task-based conception to the expansive German concept of occupational competence (*berufliche Handlungskompetenz*) (Brockmann, Clarke, & Winch, 2009). The question is by no means as simple as it seems at first sight. In particular, ability to practise an occupation will need some explanation. I hope to be able to provide at least a provisional answer to the question of what it means to say that it is possible to guarantee an individual's ability to practise an occupation. The answer sheds some light on our current practices. The issues that I raise have a particular relevance to the "Anglosphere" of the UK, US, Canada, Australia and New Zealand and to a considerably lesser extent to those societies in which the attitude of *Beruflichkeit* is well embedded. Nevertheless, some of the points that I make apply to these as well. The role of this chapter in the volume overall is to provide an overview of the most important issues concerning the ways in which societies satisfy themselves that occupations are practised to the standard desired. Many of the chapters are concerned with the practise of different occupations, together with the challenges that they face. The issue of the nature of expertise at the meso of level of

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occupational practice is also tackled. This chapter by contrast takes a more general look at *why* societies recognise practitioners and to some extent *how* they do so.

The question raises two further issues: What do we mean by *professional* and *competence*? ‘Competence’, which, as already remarked, is a term which in English is closely related to proficiency, is a term which contains pitfalls for the translator. It can mean: skill performed to a certain level, as in England (Winch, 2011; Brockmann, Clarke, & Winch, 2011, esp. Chap. 10); the practice of a *métier* in which practice is informed by theory and reflection, as in France (Brockmann et al., 2008, p. 232), or it can mean an allround occupational capacity, as in Germany (Hanf, 2011). In whatever way the term is interpreted, it implies meeting a certain standard of professional performance. ‘Professional’ raises similar issues. It implies first, that the competence in question is related to an occupational context. In the different European national conceptions of occupation, this will have different implications, relating to how well-defined, how durable or how broad in terms of scope for agency the occupation is conceived (Greinert, 2007; Hanf, 2011). The term ‘professional’ is not just to be considered for the traditional professions such as the law or medicine, but for any reasonably well defined occupation.¹ The adjective ‘professional’ refers to the disposition to act conscientiously and efficiently in one’s work. For the purposes of this article, we will adopt the “expansive” conception of *professional competence*, meaning conscientious and efficient agency in a well-defined occupation but recognise that the term also has applications in less expansive conceptions. Such a definition joins attitudinal with epistemic characteristics. We are thus considering occupations in the broad and well-defined sense to be found in Germany with broadly based considerations of professional autonomy in the workplace with scope for both problem-solving and project management. However, although these characteristics are often not so strongly defined in other countries, a lot of the points made about occupations in this expansive sense will apply to them as well.

What is meant by a social guarantee? A guarantee is a promise made that something will occur or that a product or service will work as advertised. A social guarantee is one made by an individual or an organisation, not just to the purchaser or user but to the society as whole. This is particularly important for professional competence, since the practise of occupations (whether broadly or narrowly conceived), has consequences that affect the whole of society. However, a guarantee is not a promise that something will certainly happen (e.g., that the product sold will never break down within a certain period), but that the guarantor is confident that it will not happen given the trouble that he has taken to ensure that it won’t. False positives, that is, claims that something will happen which are not true, for example that the product will not fail, must be as far as possible eliminated. But they can never be completely eliminated. The guarantee must also be *valid*, meaning that it has to

¹Even in England for example, it makes perfect sense to talk of a professional bus driver or of a sales assistant acting professionally. In other words, the adjective or adverb has a wider application to occupations not strictly defined as professions.

guarantee what it says that it will guarantee. This is a point which we will return to as it affects how we understand the assessment of professional competence.

Competence in a professional context implies action. But what does this mean? In a very “thin” conception of competence it implies a set of task-related behaviours, such as those expected of the dual fuel smart meter installer in England.² When however competence is considered more broadly, many other aspects of agency will come into play, including an increasing degree of task discretion, opportunity and ability to control one’s work process, including the cycle from planning to evaluation, problem solving and project management and last but not least the ability to apply theoretical considerations to occupational practice. Increasing task discretion and complexity in turn imply the more complex involvement of the character and attitudes of the practitioner. Given this, the processes of assessing competence in a broad sense will also need to be relatively complex. Given also that occupations are related to each other and sometimes occupational activities overlap, a certain degree of redundancy may have to be built into the occupational profile. A certain degree of occupational redundancy may also be due to the “future proofing” of the occupation, by giving the candidate abilities to keep up with potential technical, social and economic developments within and relevant to the occupation.

These considerations intersect with a number of debates about occupations and proficiency and I will just mention a few which are most significant. The first is that of providing an adequate conceptualisation of professional know-how. This consideration in turn depends on a better understanding of the nature of know-how and its relationship with propositional and acquaintance knowledge (Carr, 1979, 1981; Kotzee, 2016; Rumfitt, 2003; Ryle, 1949, 1979; Stanley & Williamson, 2001, 2017). The general approach adopted here can be called “non-intellectualist” (Winch, 2018) as it seeks to avoid reductivism; on the one hand of practical to propositional knowledge as advocated by Stanley and Williamson and on the other of propositional to practical knowledge (as can be seen in some interpretations of the work of Gilbert Ryle).

The second concerns the somewhat neglected but important topic of the need to provide an adequate conceptual framework for analysing and constructing professional curricula. Inadequate conceptualisations and categorisations of the range of possible attributes necessary for professional proficiency can hamstring attempts to construct appropriate curricula and can also compromise attempts to provide meaningful comparisons between curricula for cognate professions in different jurisdictions (Allais & Shalem, 2018; Arnold, Wilson, Bridge, & Lennon, 2020; Dębowski & Stęchły, 2015; Pilz & Li, 2020; Young & Muller, 2014). Table 2.1 was the result of an attempt to do this in relation to the construction industry, but the approach has a much wider application (Winch, 2015). Table 2.1 below illustrates application to the construction industry.

The third, overlapping somewhat with the second, concerns the possibilities for making international comparisons between qualifications in different jurisdictions

²See Search (2022).

Table 2.1 A transparency tool for the comparison and construction of occupational qualifications exemplified by Low Energy Construction Occupations or Near Zero Energy Construction (NZEB)

Aims of qualification				
Vocational		Civic	Liberal	
Yes		Includes critical appreciation of construction industry and NZEB barriers	Yes, allows scope for continuing personal development	
Attributes				
Knowledge		Know-how	Personal characteristics (sometimes known as competence or attitude)	
		<i>Each characteristic presupposes possession of one above (apart from skill)</i>	These include the individual and the social and can be thought of as having relevance to personal agency outside as well as within the workplace.	
Systematic	Non-systematic	Mastery of technique	Individual	Social
Building physics	Site characteristics, equipment characteristics	<i>Skill: specific abilities connected with installation and evaluation of NZEB technologies, including development of appropriate tacit knowledge.</i>	Curiosity Independence Self-evaluation e.g. Possessing a sense of initiative, tackling problems arising by oneself, without requesting to do so. Possessing a critical and analytical frame of mind.	Co-operation, ability to see different points of view e.g. Exchanging information with colleagues and clients in friendly and constructive manner. Having courage to accept colleagues' remarks relating to work and security and taking responsibility for pointing out dangerous situations. Assisting colleagues so that team can work ergonomically.
Climate literacy	manufacturers' instructions			

(continued)

Table 2.1 (continued)

Aims of qualification						
<i>Technical theory, including some physics and engineering, knowledge of climate change theory. e.g.: Principles of 'quality' building: Airtightness and insulation Thermal bridging, Moisture and ventilation, Significance of window quality and positioning.</i>	<i>Contingent facts (e.g. local conditions) To be acquainted with site layout, areas of potential danger, drainage channels.</i>	<i>Transversal abilities</i> Co-ordination Communication Evaluation Negotiation e.g. Designing repair to moisture damaged structures. Supervising wet room installations. Controlling circulation onto and on site. Reacting to diverse situations Analysing state of site, diagnosing problems and solutions	<i>Work-place</i> Yes	<i>Other locations</i> Yes, including simulations and classroom	<i>Work-place</i> Yes	<i>Other locations</i> Yes, including simulations and classroom <i>At least one of these locations will be involved in know-how above a threshold level</i>
<i>Normative theory</i> <i>Health and safety legislation. EPBD.</i> Legislation governing NZEB and barriers to making it effective	<i>Local procedures</i> e.g. Site procedures for disposal of waste.	<i>Process management ability</i> Understanding of NZEB building process				
<i>Social science theory</i> Understanding NZEB role in contemporary debates and constraints on its introduction.	<i>Materials</i> Insulation	<i>Occupational capacity</i> Displaying conduct, way of thinking and behaviour necessary to practise occupation.				

Note. Reprinted from "Inclusive vocational education and training for low energy construction: Final report" by L. Clarke, C. Gleeson, M. Sahin-Dikmen, C. Winch, & F. Duran-Palma, 2019, FIEC & EFBWW, p. 12. Copyright 2019 by FIEC & EFBWW. Reprinted with permission

and the conceptual and practical problems that can arise as a result (Brockmann, Clarke, & Winch, 2010, 2011; European Commission, 2017; Raffe, 2011). The issue has become particularly important with the attempt within the European Union to provide transparency instruments based on a learning outcomes methodology across Europe in order to compare similar qualifications in different jurisdictions (Méhaut & Winch, 2009, 2012; Winch, 2021). These ongoing and largely unresolved debates have and will continue to have a huge impact on our understanding of professional proficiency. In the following section we will look in more detail at a question closely related to the second of these issues by considering the elements of professional agency.

Elements of Professional Agency

To get clearer about the various aspects of professional agency we need to look at some of the basic concepts related to knowing how to do something (*to know how* in English, *können* in German, *savoir faire* in French). Despite the somewhat impoverished conceptual structure and terminology that is used in the Anglophone context, this is not all that simple.

Skill

The best place to start is with the concept of *skill*. Although used in a very broad sense in the Anglophone context, it has a core use that is easy to agree on. This concerns the practise of manual techniques in order to achieve a certain end, such as sawing wood, forming a pot out of clay or constructing a wooden wheel. Neither is it very controversial to incorporate a mental element into the concept of skill. Mental computation is a good example and can often be found as an aspect of other skills such as those involved in carpentry. The term ‘skill’ can also be employed without too much strain in relation to more complex activities such as building a desk or driving a locomotive. But already at this point, we need to be aware, not only that more than one technique may be employed, but that there may be considerable elements of personal discretion incorporated into the activity, such as the ability to plan, to adjust, to evaluate, to make decisions for example. Already we are beginning to move away from the straightforward idea of skill as the ability to practise a technique (Sennett, 2008).

It is also important to be wary of identifying a skill with technique, even if it involves the practice of a technique. Practising a technique only in circumstances which are not professionally relevant is not counted as a skill for the purposes of assigning a skill to someone in a professional context. If agents cannot deal with exigencies of time management, difficult working environment, clients and colleagues or financial parameters, then they cannot operate professionally, however

good their technique may be in ideal circumstances such as a simulated environment. Skill thus already implies character attributes such as persistence, diligence, consideration for well-being of oneself and others, as well as the practise of the technique in appropriate circumstances (Kerschensteiner, 1925/1968). An important lesson to be drawn is that even if one were to draw up a tabular map of the attributes needed for professional competence (see Table 2.1), making distinctions on paper does not mean that the attributes are, in reality, completely distinct from each other.

Transversal Abilities

The use of the term ‘skill’ becomes problematic when it is applied to aspects of agency that can be realised in different ways, in which the focus tends to be not so much on the specific skill but the ends to which it is employed and where judgement, decision and reflection become important to success (Ryle, 1979). To take an example, an electrician planning the wiring of a house may do this in different ways: formal or informal, systematic or non-systematic, structured or non-structured. The important point is not that s/he is able to exercise certain planning skills, but that s/he is able to successfully carry through an intention to wire the house successfully (Hasselberger, 2014). The successful autonomous electrician will in the normal course of events be expected to judge what is appropriate or what is not feasible, to take account of possible obstacles and unexpected problems and to be sufficiently flexible to adapt where necessary, bearing in mind the overall objective. Specific techniques may or may not be helpful. If necessary, we would expect a rational account of the process explaining choices, decisions, adjustments and so forth, even if these were all carried out informally *in situ*. This point becomes important when we consider assessment.

A somewhat different example concerns the social abilities needed for successful professional practice. These do not primarily concern the practice of social techniques to do with politeness, etiquette and recognition of social distinction, but rather the respect due to the well-being of colleagues, clients and others affected by one’s activities. In this sense, the term ‘social skills’ is not only misleading but potentially pernicious as it appears to imply that our social interactions, both in and out of professional contexts, are manipulative, treating individuals as means to an end rather than being worthy of respect in their own right.

In many occupations, the ability to communicate is vital to success. This ability cannot be reduced to the practise of communication skills designed to achieve a professional objective. These can be practised without the professional objective being achieved, because their practise does not necessarily take into account the needs and well-being of the client or colleagues being communicated with. A successful communicator, as opposed to someone who uses communication skills to elicit a desired response in an audience, is someone who has something to say which s/he wishes the audience to understand and, if necessary, to act on, taking into account the needs and well-being of that audience (O’Neill, 2018). Social skills

may play a role in the exercise of such an ability but they can never be a substitute for the ability to communicate. To think so is to misunderstand communication, whether in a professional or nonprofessional context.

If these abilities are not properly called ‘skills’ then what are they? In English there is no ready to hand term for them, which may be one reason why they are not given the attention they deserve in Anglophone professional learning contexts. In German they are known as *Fähigkeiten* and can be contrasted with *Fertigkeiten* (skills). To exercise a *Fähigkeit*, one needs to employ certain *Fertigkeiten*, but the *Fähigkeit* is by no means to be identified with these. The various *Fähigkeiten* specified in an occupational profile for a recognised profession or *Beruf* form the building blocks for: professional autonomy and decision-making, for problem solving abilities and for project management, both individually and in conjunction with colleagues (Hanf, 2011). One term that could be used is *transversal abilities*.³ The key to professional action is not just the performance of discrete tasks but the carrying out of complexes of interrelated tasks in a flexible way with an end in mind. This contrast can best be explained with some examples: planting turnips contrasted with managing a year’s crops; laying a line of bricks contrasted with planning and building a two-storey structure; marking homework contrasted with planning a year’s assessment schedule. We can call these extended activities ‘project management’, about which more below.

Extended Autonomous Action

One important feature of transversal abilities is that they are often employed in solving problems or finding suitable ways of overcoming actual and potential obstacles to the carrying out of tasks or projects. Another of their important characteristic features is that they are usually employed together, both aggregatively (in overlapping sequences) and recursively (the conclusion of one cycle of activity initiating the next).

The ability to solve problems, either individually or collectively, is a necessary feature of autonomous professional action. In contrast to the practise of technique, or way of doing something, problem-solving typically involves finding an appropriate or effective way of doing something. It thus cannot be a skill, although certain problem solving skills may or may not be deployed in problem-solving activities. Problem-solving typically involves reflection, supposition, hypothesis formation and testing and discussion of alternatives, none of which reduce readily to skills, but involve more complex abilities such as: reviewing, imagining, communicating, coordinating, planning and evaluating.⁴ Problem-solving is a pervasive aspect of

³ Rather than *transversal skills* which tends to be used within the EU context to refer either to cross-contextual or to transferable skills.

⁴ It’s probably a mistake to think that these abilities are generic. They are situated within distinct patterns of activity and fields of knowledge.

any complex professional activity involving autonomous action and pervades project management as well.

Project management involves the autonomous carrying out of extended sequences of tasks, usually with a defined outcome, whether it be a physical construction, an intellectual one or a service of some kind. It is typically cyclical, involving a movement from planning, through execution to evaluation, usually preparing the ground for the next cycle. As noted, since problems invariably occur along the route to successful project completion, problem-solving tends to be an integral feature of project management. Although a project management cycle can be analysed into distinct phases, it is probably an error to think that these phases are completely distinct from each other, rather that they have considerable interconnections and are intermingled in various ways. Thus the cycle of building a two storey structure might involve: planning, control and evaluation. It would also involve at most, if not all, stages a considerable degree of communication and coordination.⁵ We might even be prepared to withhold the judgement that planning had taken place until the execution of the project was largely successfully completed, since the latter would constitute a significant part of the evidence that planning had in fact taken place (see Hasselberger, 2014). It is noteworthy that vocational education and training (VET) systems, like those of Poland, France or Germany, which emphasise autonomous workplace action, place great emphasis, not only on the development of transversal abilities, but also on the integration of these into problem-solving and project management.

Knowledge: Systematic and Non-systematic

So far, the discussion has emphasised agency and ability. But in professional contexts (or indeed in any others) such attributes are rarely exercised without the employment of knowledge. Intentional action tends to be informed by beliefs about ends and means and tends to be successful to the extent that these beliefs about ends and means are both true and have some underlying explanatory basis. In other words, action is informed by beliefs and is successful to the extent that those beliefs are in fact items of knowledge, usually situated in a broader knowledge background informing agents' decision-making and action. An important feature of occupational knowledge is that it is often systematically organised and based on systematic or scientific enquiry (Hordern, 2017). Depending on one's level of autonomy, the degree of engagement with that systematic knowledge will vary. At the simplest level the knowledge required simply involves the application of protocols (derived by other specialists) from a combination of a goal and the use of relevant parts of the

⁵For an example from the occupational profile for the French maçon, see: "Training objective: To train qualified masonry professionals who must be able to carry out a work or part of a work on two levels which may include masonry, reinforced concrete elements, installation of components, plastering, pipes and ducts..." This is an official description of the aims of the CAP Maçon (CFBTQ Lemans, 2012).

underpinning theory. Technical workers typically have sufficient command of theoretical knowledge to be able to solve the kinds of problems typical of their work and to engage in project cycles. Technologists and researchers on the other hand typically have a more active engagement with theory, including making significant contributions to it (Winch, 2018).

Possessing occupationally relevant systematic knowledge (*Wissen* in German) provides a necessary resource, both for solving problems and managing projects. One's beliefs about how a problem should be solved are unlikely to be successful unless they are also knowledge and one is unlikely to access that knowledge unless one has a grasp of the relevant field and can select from it propositions that are relevant to one's circumstances. Much the same considerations apply to project management; for example, the ability to plan and to deal with problems and contingencies will require access to the relevant systematic as well as local knowledge. It is reasonable to conclude then that the possession of knowledge is a prerequisite of autonomous professional agency in which problem solving and project management are essential components. We should not thus think of knowledge as an entirely discrete component of a professional's agency, but as an integral part of his or her professional proficiency considered as a whole (of which more below).

Attitude: Personal and Social

Professional work is unlikely to be carried out successfully without a commitment to do so with commitment and conscientiousness (Carr, 1999). These could be seen as aspects of the other aspects of agency already mentioned. Thus, skills need to be exercised with care, planning is unlikely to be successful unless it is focused and flexible, taking into account the needs of colleagues and clients, and project management will not succeed if the commitment to achieve the end within constraints imposed within and beyond the occupation are not respected. These considerations suggest that having an appropriate attitude is indispensable to successful professional agency and is only to be separated for analytical purposes from other aspects of ability and knowledge.

Occupational Capacity

In those occupations (including the established professions) whose practitioners act autonomously, manage projects (with the cooperation of colleagues) on the basis of systematic knowledge relevant to the practice of the occupation, it is possible to speak of an overarching aim of any programme of professional formation as the development of occupational capacity or what is called in Germany *berufliche*

Handlungskompetenz.⁶ It presupposes the integration of all the attributes mentioned above and has five dimensions: competence in dealing with work-related objects, competence in dealing with oneself, competence in dealing with others, competence in procedures and competence in learning (Brockmann et al., 2011, p. 177; Hanf, 2011, p. 57). It can also be taken to include knowledge of how one's chosen occupation is developing and the impact of occupational practice, both on other occupations and on the wider society (see also Kerschensteiner, 1925/1968, for a defence of this approach) and is increasingly taken to include a reflective and self-reflective element.

Although in its full development occupational capacity belongs to Germanic conceptions of vocational education, the concept has a wider relevance. First, because elements of occupational capacity can be found in the occupational conceptions of other countries, including those with somewhat narrower conceptions of occupations and second, because the concept points to ways in which more expansive ideas of what an occupation is can be developed. Table 2.1, which shows the relationships between the occupational concepts outlined above, can be used to compare qualifications and also as a template for curriculum design, where choices about whether to incorporate certain attributes into an occupational profile can be made explicit with possibly the need to include or omit a certain category requiring justification. Thus, one could by populating all or nearly all of the cells in the table arrive at a rich concept of occupational proficiency very similar to the German *berufliche Handlungskompetenz* or one could, but restricting population to a few cells (e.g., skill, non-systematic knowledge) arrive at a concept of competence nearer to that of the former English National Vocational Qualification (NVQ) (see Jessup, 1991).

Assessing Professional Agency

A qualification is a form of social guarantee that the holder can indeed carry out a range of occupational activities to at least a minimum standard. This definition immediately poses the question of how such a guarantee can be secured. The short answer is that assessment of the candidate must be the means. But this claim, although correct, itself raises a number of difficult questions. First, a guarantee, as we saw, cannot provide certainty. But how is it possible to provide a guarantee and, at the same time, allow for the possibility of mistakes in awarding qualifications? Here we need to ask what kind of mistake is more injurious to the concept of the qualification as a guarantee: denying a qualification to someone who deserves to

⁶This attribute when manifested in the workplace, is known as *berufliche Handlungsfähigkeit* (Hanf (2011) as cited in Brockmann et al., 2011, p. 177). *Berufliche Handlungskompetenz* extends in fact beyond the workplace. This can be seen for example in German vocational curriculum documents (Kultusministerkonferenz (KMK), 2022).

gain it (false negative) or awarding a qualification to someone who does not deserve to gain it (false positive)?⁷

The social importance of many occupations, together with their potential and actual impact on the safety and well-being of the public, suggests that the balance of risk should lie with aspiring candidates to the occupation rather than to the public and those dependent on or involved with the occupation. In other words, the potential injustice inflicted on a candidate by a false negative is far outweighed by the potential harm to others that might result from a false positive. The presumption must then be on the rigour of the assessment procedure to eliminate as far as possible, false positives in the award of qualifications.

If this is accepted as a starting point, then we need to ask how assessment can be sufficiently thorough and comprehensive to meet such a requirement. To answer this question is not so easy as might be supposed. The problems tend to multiply the more complex the occupation actually is. As a start, we might suggest two diametrically opposed approaches to the problem. In the first case, the candidate is assessed on the basis of the underpinning knowledge necessary to practise the occupation and on what judgements or actions would be taken in certain circumstances (Prais, 1991). In the second case, the candidate is assessed on the basis of actual practice in the workplace (Jessup, 1991).

The first approach is vulnerable to the obvious objection that such an assessment could not provide any direct evidence about the candidates' actual ability to perform occupational tasks. We might learn something about their judgements in hypothetical or *post hoc* scenarios, but few would claim that this could provide convincing evidence of ability to perform satisfactorily in the occupation. The second approach looks, at first sight, more promising and indeed formed the basis of the English NVQs which were introduced in 1986. However, the problems with such an approach, although not so obvious as with the first, are serious and because not obvious, also insidious. The approach works best for the assessment of tasks or bundles of tasks that require little or no autonomy and are confined to a narrow range of situations with little or no variation. However, such are not the attributes of most occupations and thus such an approach will not be appropriate for those. Why not?

There are a number of reasons. Let us suppose that an occupation requires the practitioner to act sometimes independently and sometimes as part of an independent team in a wide variety of contexts. Let us further suppose that these contexts are themselves often complex, frequently contain new elements and are dynamic. We have to ask ourselves whether the observation of a limited number of cases of genuine occupational activity could provide sufficient evidence to underpin a guarantee of competence. This is by no means to claim that such evidence is irrelevant. Indeed, it is likely to be of the greatest importance. The problem, though, is that it is unlikely to be sufficient. We need evidence that candidates can perform competently in an indefinite range of situations which it is not practical to observe, while

⁷For an extended discussion of these issues see Davis and Winch (2015).

at the same time showing consistency in performance. We also need to be satisfied as to the soundness of their judgements, that is, the quality of their decision-making when embarking on a course of action (Winch, 2016).

A further consideration is that “real-life” or operational conditions are likely to be such that the possibility of poor judgement or of mistakes has to be minimised if serious consequences are not to occur. Therefore, assessing a candidate’s performance in realistic conditions is essential in forming an accurate judgement of competence. But this cannot be done until the assessors are satisfied that the candidate can perform well in operational conditions. This presents an apparent paradox that needs to be resolved: We cannot assess a candidate’s performance in operational conditions unless we are satisfied that s/he can function in operational conditions. We cannot therefore rely solely on performance in operational conditions except when making a final assessment of a candidate’s capability. The assessment of a candidate’s progress towards fully operational competence must, therefore, rely in part on assessment in a variety of environments short of the fully operational. So, the first conclusion to be drawn is that any robust assessment of professional competence will need to take into account a variety of situations, probably related to the developing expertise of the candidate, ranging from benign simulated conditions, through controlled, to fully operational conditions.

Fake and Frozen Know-How⁸

Let’s look more closely at the apparently contradictory requirements of *stability* and *adaptability* of performance (e.g., Ryle, 1976; Hornsby, 2011). We want to conclude inductively from observation of a particular performance that chance or luck were not responsible for success. We need to be assured that the candidate will be able to perform in much the same way in similar circumstances. One way in which we can do this is to assume that we are assessing not just behaviour, but rational action based on sound judgement. And if this is the case, we cannot rest satisfied with observation of behaviour alone. We need to ensure that the judgement that underpins the behaviour and which, together with the appropriate behaviour, makes the whole performance a rational action, is a sound one. We need to be sure of this even (or perhaps especially) in circumstances in which the opportunities for judgement are constrained, especially by time needed to come to a decision and to act. The agent’s having good reasons for acting suggests that performance will be consistent and not produced by chance.

At the same time, a particular action, for example, the use of a particular piece of equipment, is a token of a type, the type being the use of that particular equipment. But the tokens of an action type will not only differ quantitatively (occurring at different times and places), but also qualitatively. The use of a carpentry tool will

⁸A term adapted from Bennett (1964).

depend on a variety of factors that include the characteristics of the material, time needed and spatial constraints for example. In each case, the action required will need to be different in particular ways from others of the same type. Furthermore, judgements associated with the different token instances may also need to differ from each other, when for example, the same tool used on a previous occasion is judged to be necessary for a different situation. As we cannot, for practical reasons, examine all these different tokens we need to find alternative ways of judging the quality of an action. There are two ways in which this can be done. First, by assessing the judgement supporting the action observed we can learn something about the quality of the candidate's judgements. This is a *post hoc* procedure that should be able to tell us that the performance was genuine. It also tells us that the candidate is capable of forming appropriate judgements in professional situations and, if these are operational situations, that s/he can do so in operational conditions. Such procedures should lessen the risk that the candidate possesses fake know-how.

But this does not address the problem that, in complex professional environments, we need the assurance that the candidate can perform competently in circumstances which we have neither the time nor resources to observe directly and which the candidate may even be unlikely to encounter in the course of a normal professional life, but which may however demand a high level of response on the part of the professional. Some of these will call for actions of different types, some others will call for token variations in a type.⁹

In the latter kind of case, we are looking for the ability to adapt, and to take account of the circumstances in which action is required where the action is one that is perhaps familiar. The procedure mentioned above in relation to fake know-how can serve as a partial assurance on this point, namely that the candidate has made an appropriate judgement in relation to the action taken. In the other kind of case, where an action of a different type may be required, for example, choice of procedure or tool A rather than B, a different approach will need to be adopted. Here it will often become necessary to assess indirectly the quality of the action (and supporting judgement). A complication here is that competence will not merely depend on gauging the circumstances in which action takes place, but also how the systematic knowledge supporting the occupation may be brought to bear on the action, since a significantly new situation may require a different theoretical rationale for action. The situation is thus potentially complex.

Assessing How Theory Is Applied in Practice

If a professional does not have a good grasp of the theory or theories that support his practice, then it is of little use to enquire how well he is able to put theory into practice. On the other hand, his knowledge of the theory supporting practice will not of

⁹It is not particularly relevant to the argument here that type boundaries may not always be clearly marked.

itself be sufficient to warrant the judgment that he can use theory in practical professional situations. Is it then sufficient to assess practical judgement in professional situations in order to conclude that the candidate knows how to apply theory to practice? After all, if a practical action is taken which is the optimal one from a range of possibilities and in *post hoc* dialogue the candidate is able to explain and justify the action using both proximal (situation-related) and distal (related both to long-term aims and to theoretical propositions) considerations, then do we not have sufficient warrant to conclude that the candidate has a good enough grasp of the theory supporting professional practice in order to use it effectively?

Unfortunately, this is unlikely to be the case. Theories that support professional practices come in many different kinds but in most if not all cases they are systematically organised and are often structured hierarchically. They often work on fundamental principles, employ rules for inferring other propositions and rely on procedures for solving problems, producing new knowledge and discarding discredited beliefs (Lakatos, 1970). They are critically important in professional practice, not just in supporting decision-making in nonabnormal circumstances where problems need to be solved, but particularly in providing resources for dealing with unexpected situations where no guide from experience is sufficient to make an appropriate decision.

This reflection suggests that it is not sufficient to assess a candidate's grasp of the theory supporting his profession from the evidence that he is able to apply it in a range of practical situations that can be assessed, together with some questioning of the candidate of the reasons behind decisions, although as we have already seen, this latter step is important in assessing the reasoning behind action. Should, then, the supporting theory be assessed directly as an academic topic separately from the assessment of professional practice? I don't believe that there is one simple answer to this question. The reason is that different forms of professional activity require different levels of engagement with supporting theory. Someone carrying out fundamental research will clearly need to have mastered, at least to graduate level, the discipline which supports underlying theory and will have a more specialised and deep knowledge of some branch of the discipline. On the other hand, a semi-skilled worker who is only expected to follow protocols generated by the theory in limited professional situations, may need little or no understanding of the supporting theory, let alone the underlying discipline from which it is derived (Winch, 2016).

In between these two extreme cases we have to consider the role that supporting theory plays in the work of skilled workers (*Facharbeiter*), technologists and the traditional professions. The first of these are technicians in the sense that some sociologists use the term, that is workers who apply theoretical considerations routinely to their practice. This is normally all that skilled workers do (although generalisations here can be dangerous). The technologist, usually with a graduate or post-graduate qualification, may herself contribute to the theory supporting her practice, at least in those aspects that concern the practical effects of theoretical considerations. Within the traditional professions, the workers are, by and large

technologists rather than technicians, sometimes, but not necessarily having the capacity to contribute to the theory supporting their professional practice.¹⁰

What is the minimum required of technicians? They must be able to give reasons for their professional decisions, to solve problems making use of the supporting theory where appropriate and to be able to draw on theoretical resources when confronted with new and complex situations. This third point is particularly important. The broader the scope of the occupation and the greater the autonomy of the practitioner, the more likely it is that such situations will arise. It follows, therefore, that the scope and depth of supporting theory that they will need to master will be greater, as together with experience, supporting theory is the main resource that they will have to call on in coping with such situations. Therefore, the scope of operations and the autonomy afforded to the professional will largely determine the need for supporting theory that the professional will require. In some cases, this can be ascertained through examination of how they would be able to cope with such novel and possibly unexpected situations, without the need for formal examination of the supporting theory. In other cases, this may not be enough, if for example a solution to a problem requires an intimate acquaintance with the relevant supporting theory. There is no *a priori* answer and the decision about assessment must be made by the representatives of the profession and those whose responsibility it is to administer and/or regulate it.

How then does one assess the ability of a professional to make use of supporting theory and to cope with a range of possible professional circumstances without a direct examination of theoretical mastery? Given that direct assessment is not possible, the inference to professional competence will have to be made via hypothetical situations. Only in this way can an adequate sample of professional circumstances be made. There are a number of ways in which this can be done. These range from “paper and pencil” tests on responses to such situations, through the exploration of problem-solving scenarios (perhaps suitable where teamwork is essentially involved), through problem solving in a simulated professional situation or some combination of all these. One important feature of such practices is not only that grasp of supporting theory may be assessed, but such activities as problem solving through the use of scenarios allows scope for transversal abilities and social competences to be assessed.

To summarise the assessment situation when we are considering whether to certify professional competence, we need to be able to:

1. Assess competence to perform to a certain level in realistic operational conditions.
2. To ascertain that this performance is genuinely reason-guided and not fake know-how.
3. To ascertain that there is sufficient flexibility in the carrying out of professional work in realistic operational conditions. That is, know-how is not frozen.
4. To assess reasoning and decision-making competence in a range of hypothetical circumstances.

¹⁰One should assume that the boundaries between these roles are porous to a certain degree.

In the cases of (1) and (3) observation of work in operational conditions will be required. Condition (3) suggests that one observation in operational conditions may not be enough. In the case of (2), this should normally occur immediately *post hoc* in the circumstances of (1) condition (4) will require assessment of likely reasoning, decision-making and performance in a range of hypothetical circumstances, suggesting examinations and/or practical scenario exercises. In some cases, this may need to be supplemented by examination in the supporting theory itself rather than just in its applications.

Constructing and Maintaining Professional Qualifications

Even in those societies in which the state does not construct qualifications there is, for reasons explained in this article, a need to regulate them. Even in England, a country long wedded to the operation of market forces in the area of professional education, regulation of qualifications, albeit at “arm’s length,” is undertaken by a state body. However, the mere fact of such regulation leaves open the question as to how prescriptive it should be. On the argument presented above, such regulation should ensure, not just that qualifications fulfil some minimal requirements relating to their integrity and relevance, but that they are capable of providing a guarantee of professional competence or proficiency. But what is professional competence? On the arguments presented here it is more than ability to perform the operations currently required by occupational standards to a safe and efficient standard. The guarantee should encompass not only the full range of routine occupational performance but take account of future ones. It should aim to ensure the appropriate attitudes in practitioners and that they have sufficient independence to solve problems and manage projects in conjunction with fellow workers. Failure to provide such a guarantee devolves those responsibilities onto a management tier for whom it becomes necessary to provide such a guarantee.

Whichever way one looks at the matter it is indispensable that such attributes are taken account of at some level of the occupation. There are good reasons for thinking that they be devolved to the lowest level of managerial responsibility that is possible, but if not then at some higher managerial level. The schema presented in Table 2.1 is intended to provide a framework for making curricular decisions that would allow qualifications to meet the needs of a guarantee. The schema is indicative but could be used by a regulatory authority as a checklist for professional qualification design. Certain sections might remain unpopulated, but then it would be reasonable for the authority to request a reason why, for instance, systematic knowledge was not required for a particular occupational category, for example if it was accounted for at another level of the managerial hierarchy or if the occupation was conceived in such a narrow way that it was superfluous to ask for the possession of systematic knowledge. One way of making the regulation of qualifications more rigorous and more of a guarantee of professional competence is to adopt a schema like or similar to that outlined in Table 2.1 and to use it as a template for the

assessment of the probity and relevance of qualifications. That would both reduce path dependency and lead to a discussion of alternative ways of thinking about qualifications and the occupations that they cover.

The arguments also suggest that assessment (awarding the guarantee to an individual practitioner) has to be multidimensional in order to be a valid statement of occupational competence. Neither observed competent practice nor demonstrable supporting knowledge can be enough. Inference to competence in a wide range of possible occupational situations, which include the effective deployment of supporting knowledge where necessary is required, along with evidence about the effective use of professional judgement, including in constrained situations.

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Chapter 3

Improficiency and the Professionalization of Undisciplined Practices



Janet Banfield

I have drawn my inspiration for this chapter from previously published work, in which I proposed the idea of proto-practices (practices informed by influences from outside the accepted norms of the field of practice) as a potentially enduring influence in the development of artistic expertise (Banfield, 2017a). As such influences come from beyond the field of practice, they are the result of neither training nor disciplining in the ways of the field and would thus not be considered to constitute proficient practice within the field. I found such external, unsanctioned, and thereby unproficient influences on practice to function in an experimental fashion, whether by accident (e.g., dipping a paintbrush into a cup of coffee by mistake) or design (e.g., seeking out unconventional materials to use). Those experiments the artists concerned deemed successful they then incorporated into their evolving practice. Thus, the development of expertise could be characterized by the varying purpose of experimentation (e.g., to see what happens or to push one's limits) rather than by the proficiency of practice or quality of outcome. Potentially resulting in proto-elite practices in which a proto-element constitutes the novelty at the heart of attributions of style, conventional psychological accounts of expertise are unsettled as the development of expertise sustains rather than eradicates unsanctioned or undisciplined elements of practice. Extending that analysis from artistic practice to academic practice, I also suggested that different disciplines can serve as a source of proto-practices for each other in interdisciplinary entanglements (Banfield, 2017a), thereby contributing to the development of academic expertise. However, such interdisciplinary activity is evaluated in the context of disciplinary norms and expectations, generating contestation as to what constitutes expertise. It is this

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potential within and the implications of such interdisciplinary entanglements that I develop further here.

In this chapter, I draw auto-ethnographically on my own research activities and career experiences to date to interrogate the potential of interdisciplinary spaces as a source of academic novelty given ongoing pressures to conform with singular disciplines despite contemporary drives to increase interdisciplinary work. I bring together the four elements in the title to explore the relationship between understandings of expertise (improficiency), academic career prospects (professionalization), inter/disciplinary spaces (undisciplined), and research activities (practices). I consider the implications of contributions arising from such work for the spaces of disciplines themselves, for the interdisciplinary spatialization of emergent knowledges and the academics generating them, and for researchers' understandings of expertise in these myriad and muddled spaces. I conclude by calling for a reconfiguration of how we conceptualize interdisciplinarity to acknowledge the potential for individual academics—as much as teams—to be interdisciplinary and to parse an individual's academic output from the individual academic, by proposing a new conceptualization of quasi-disciplinary spaces to accommodate diverse spatialities of emergent knowledges and practices, and by proposing a refined understanding of expertise to create a more generous and generative validation of interdisciplinary practice to support interdisciplinary careers.

Positionality and Interdisciplinarity

At the time of writing, it is five years since I gained my doctorate. Although my doctorate is officially in geography, I also drew strongly on psychology, which I studied to postgraduate level, and although only a hobbyist in art, I used artistic practice as a research method. I teach only in geography but publish in both geography and psychology and draw on my former career in local government in my academic work, thoroughly confusing my disciplinary identity.

Specifically, the intersection of psychology and geography within my work relates to non-representational thinking, especially its concerns as to whether, how, and to what extent we might be able to access, apprehend, and work intentionally with our pre-reflective experience. Proponents of conventional non-representational geography consider that cognition (reflective, representational thinking) and affect (pre-reflective, embodied sensations, and dispositions) do not translate and that any attempt to speak from our pre-reflective understanding is thus futile (Gibbs, 2010; Pile, 2010). By contrast, the strand of non-representational thinking upon which I draw (the philosophical and psychotherapeutic work of Eugene Gendlin) allows for some—albeit limited—capacity to draw upon and think explicitly from our pre-reflective understanding, which Gendlin calls *implicit* (Gendlin, 1993, 1995). Consequently, and as illustrated in Figure 3.1, non-representational thinking in psychology differs from that in geography by allowing for a bidirectional relationship between reflective and pre-reflective registers of experience and greater interaction between individualized embodied and transpersonal environmental aspects of

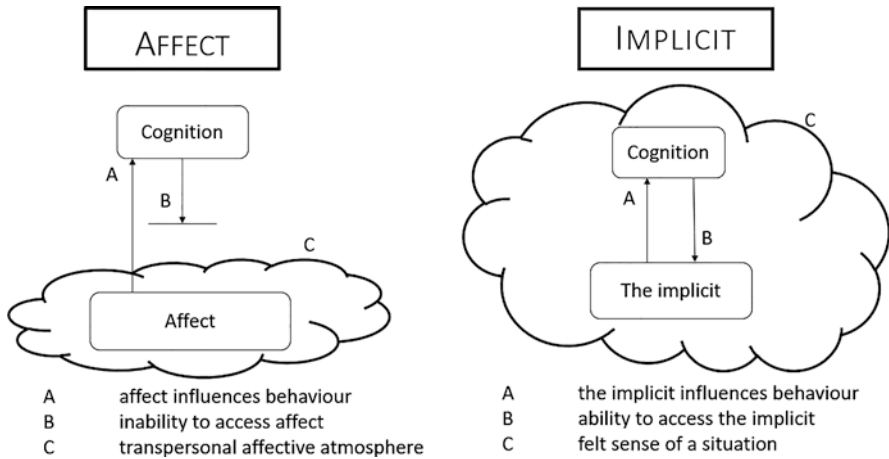


Fig. 3.1 Affect versus the implicit. Source: Design by author

pre-reflective experience. The transpersonal aspect is conceptualised differently in each discipline, being termed atmosphere in geography but felt sense in psychology.

I view the benefits of working with Gendlin’s ideas in the methodological possibilities that arise. Gendlin argues that one can (and does) think with the implicit (e.g., intuition or emotion), and that one can think into the implicit, intentionally mining it to refine our understanding of a situation from an implicit basis. Although formal thoughts and concepts are logically connected, they are also connected implicitly, enabling one to understand how things make more-than-logical sense even when they make no logical sense (e.g., comprehending metaphors), and one can use these connections creatively to generate new conceptual understanding from implicit understanding (Gendlin, 1993, 1995, 1997, 2009a, 2009b).

Gendlin oriented his psychotherapeutic work towards helping clients to engage intentionally with their pre-reflective experience to extract—or, in Gendlin’s terms, explicate—that pre-reflective or implicit understanding and shape it into something that can be worked with linguistically for therapeutic purposes. In adapting these ideas and techniques for use in geographical research, I sought to develop non-clinical means of facilitating the deliberate working with and explicating from pre-reflective experience. To that end, I both deprofessionalized Gendlin’s work by removing it from a clinical context and undisciplined his work by removing it from psychology and reframing it for geography.

Gendlin argues that it is often easier to develop (explicate) conceptual or linguistic understanding from implicit understanding if images are formed first, whether through mental visualization or actual image-making (Gendlin, 1980). Whereas for Gendlin such image-making might be scaffolded by a range of linguistic therapeutic techniques, I explored image-making (artistic practice) as its own way into implicit understanding, so that it could be used independently of formal therapeutic techniques, thereby bringing together geography, psychology, and art (Banfield, 2016a, 2016b).

I supplemented this approach with three mechanisms designed to direct attention to aspects of artistic practice that would normally be overlooked precisely because they function implicitly. Actively engaging in artistic practice alongside participants provided a comparative basis whereby in becoming aware of how other people do the same task differently, one is also made more aware of how one does that task oneself. In addition, in some research sessions, we would work with art materials with which we were unfamiliar, unsettling our practice conventions and effectively deprofessionalizing our respective practices (from whatever standard we previously exhibited) (Banfield, 2016a, 2016b). This not only established another comparative basis (between familiar and unfamiliar materials) but also generated moments in which by doing things differently participants also think differently (Thrift, Harrison, & Anderson, 2010). Finally, working with improficient as well as expert practice allowed the exploration of differences in the sensibilities and capacities exhibited at different stages of practice development (Banfield, 2017a, 2016b).

This work is starting to generate contributions as it reaches publication, not only in terms of its methodological innovations but also in relation to conceptual and theoretical developments. Beyond introducing Gendlin's work to geographers, contributions include: considering practices as much as people in synaesthetic terms to facilitate further geographical engagement with the implicit (Banfield, 2016c); injecting geographical ideas of experimentation into psychological understandings of descriptive phenomenological analysis (Banfield, 2016d); the conceptualization of proto-practices, as outlined earlier (Banfield, 2017a); the spatialization of the psychological concept of flow (Banfield, 2018); and conceptualizing powerful experiences of erraticism in novice practices (Banfield, 2017b).

Bringing these works to publication, however, has not been straightforward, for a host of reasons that support observations in the existing literature. These have included challenges concerning legitimacy, communication difficulties when working with different disciplinary languages, and resistance to alternative perspectives on established theoretical and methodological emphases (Bracken & Oughten, 2006; Darbellay, 2015; Moody & Darbellay, 2019; Moore, Martinson, Nurius, & Kemp, 2018). I also struggled to identify an appropriate conduit for the publication of these works, whereas editors had difficulty finding appropriate reviewers to establish and evaluate research quality (Bracken & Oughten, 2009; Felt, Igelsböck, Schikowitz, & Völker, 2013; Leahey, Beckman, & Stanko, 2017; Lyall, Bruce, Tait, & Meagher, 2011).

These are not, however, the only difficulties faced in interdisciplinary work. As disciplines are set within a broader academic and societal context, as outlined in Figure 3.2, their implications stretch down to the level of the individual. Societal issues include neoliberalization, the Research Excellence Framework, and the Impact Agenda, which together compel more quantifiable and fungible research activities and outcomes that do not fit easily with my own research. Disciplinary, interdisciplinary, and institutional contexts compel issues of definition or identity (e.g., whether a discipline is an art or a science), of status (e.g., whether established or early career), and of dominant concerns (e.g., whether teaching or research, legitimacy or career prospects). Within my own context, disciplinary issues include (for geography) definitional questions concerning the discipline's identity, coherence, and role in society, and (for psychology) questions of emphasis between

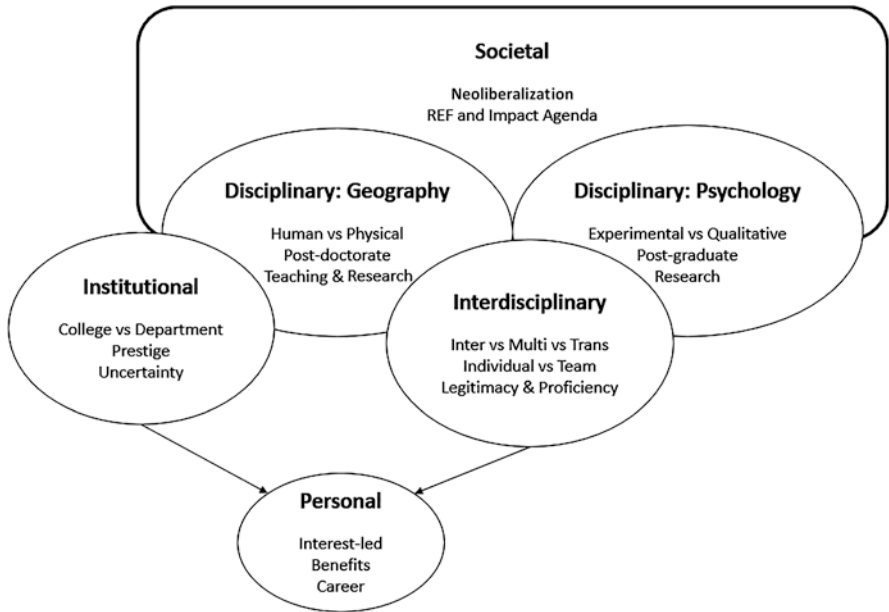


Fig. 3.2 Societal, inter/disciplinary, and institutional context. Source: Design by author

experimental and qualitative work, and of flexibility in established theoretical and methodological approaches. Together, these establish a complex context for my own activities. I have also attained a different professional standard in each discipline, and take on a different role in each: Whereas I am focused on research in psychology, I actively both teach and research in geography. Interdisciplinary issues include diverse definitions, questions of status relative to disciplinary work, and challenges in establishing the legitimacy and proficiency of such work. Besides these aspects, institutional factors include: the definitional difference between departmentally based and college-based academics, with implications for the funding and other forms of support available to each; the status or prestige of the university that potentially reduces the need for the university to grow its own internal talent; and concerns over the insecure nature of early-career and college-based employment, all of which constrain development opportunities. Finally, there are personal factors to consider, as there is a certain degree of choice in terms of how I work and what I work on. These include a determination to define my research by that which most interests me (rather than chasing funding), the benefits that I gain from working as I do that partially offset the frustrations and limitations, and concern over my future career prospects.

It is the specific configuration of these issues as they relate to my work that fuels much of the commentary in this chapter. In the next section, I focus on the implications of my way of working for how we think about interdisciplinarity as a mode of academic practice and how we can refine our conceptualization of the spatialities of emergent knowledges and practices, before progressing in the subsequent section to

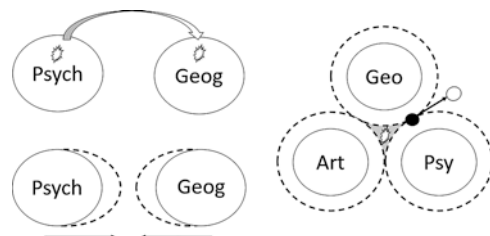
consider similarly vexed issues concerning legitimacy and proficiency in interdisciplinary work.

Inter/Disciplinary Spaces

With contributions starting to show through in publications, questions arise concerning what possible impacts such contributions can have on the disciplines to which they speak, given their roots in interdisciplinary work strongly influenced by another discipline, as explored in Figure 3.3. It is possible that the receiving discipline may simply absorb any contribution without so much as a rippled surface, leaving no impact on disciplinary emphases, interests, or configuration. Equally, a contribution might help to extend a discipline in some way, potentially expanding it towards the other in a shrinking of the interdisciplinary space between them. However, a contribution may fail to speak successfully to any discipline, effectively ending up in a disciplinary no-man's land. There is even a possibility that a contribution might carve for itself an a-disciplinary micro-enclave (of psychogeography in my case), recognizable to no one but its originator.

Of course, evolution in disciplinary identities and boundaries is nothing new, as discoveries are either rejected or adopted and disciplines expand, merge, or proliferate to accommodate them. Geography exemplifies this disciplinary flexibility well, as its emphasis has shifted over time: It has progressed from gazetteer geography in the era of exploration through differing prioritization of regionalism and universalism, the adoption of emphases on visual representation and environmentalism, varying degrees of engagement with social theory, and shifting characterization, from a spatial science to critical, activist, and more-than-human formulations (Bonnett, 2008; Martin & James, 1981; Livingstone, 1992; Smith, 2005). Indeed, geography is often described as an inherently interdisciplinary discipline, clearly manifesting tensions between desires to integrate different knowledges and desires to create and defend a distinctive identity: Despite its practitioners' longstanding aim to unify its human and physical aspects, researchers of each struggle to communicate with each other and debate continues about the discipline's coherence, canonicity, and social role (Baerwald, 2010; Bracken & Oughten, 2006, 2009; Castree, Demeritt, & Liverman, 2009; Keighren, Abahamsson, & della Dora, 2012; Lyall et al., 2011; Whatmore, 2013). What emerges through this initial discussion is a concern for how the disciplinary and the

Fig. 3.3 Disciplinary spaces. Source: Design by author



interdisciplinary relate, a question I examine in this section under two subheadings: Disciplinarity and Interdisciplinarity, and Beyond Interdisciplinarity.

Disciplinarity and Interdisciplinarity

Characteristic of any discipline and reflecting the formalization of professions more generally, disciplines determine standards for legitimacy and proficiency through the creation of competency demands, performance evaluation, and qualification conferment, and newcomers are trained (disciplined) in the discipline's pre-established ways to reinforce its identity and sustain its distinctiveness (Dahle, 2003; Evetts, 2013; MacDonald, 1995). This establishes what Fleck would understand as a thought mood among a thought collective as a way to resist external manipulation (Fleck, 1979; Ginev, 2015; Solska, 2015). However, academics are simultaneously expected to generate original contributions if they are to gain recognition as a legitimate contributor, prompting ongoing and highly political boundary work to manage who and what counts as legitimate, a process that is amplified by intercollective communication—interdisciplinarity—as this communication can generate the confrontation of novelty (Dahle, 2003; Evetts, 2013; Peine, 2011; Whatmore, 2013). It is hardly surprising that such disciplining forces persist so strongly, given increasing competition for resources and status and the diversely and politically populated nature of disciplines. These give rise to disciplinary identity politics enacted through exclusionary and demarcatory closure, whereby gatekeepers filter who is accepted as an initiate, and turf protectors erect barricades against potential threats from possible interlopers (Andrews & Wærness, 2011). Ultimately, then, disciplinarization—the active making and remaking of disciplines—has led to increasing specialization, which in turn has stimulated greater need for interdisciplinarity. Yet the more intense specialization becomes, the more challenging it is to engage in such interdisciplinarity—continually raising the stakes for those seeking to work in an interdisciplinary fashion.

Compounding these dynamics are two contemporary trends identified in social science literatures that can be discerned in relation to disciplinarity: post-politics and post-democracy (Doucette & Kang, 2018; Kenis, 2018; Banfield, 2020). As indicated in the previous section, geography is affected by the neoliberalism and impact agendas as much as any other discipline, but each of these works in a post-political fashion to conscript the discipline and its practitioners into a proceduralized focus on technicalities of specifying, measuring, valuing, and auditing their activities, thereby constraining debate as to the appropriateness of these agendas and limiting consideration of their deleterious effects on research that is no longer deemed worthy. In this context, then, post-politics reduces political debate within a discipline and externalizes and delegitimizes certain unfavored modes of academic practice. At the same time, although academics are encouraged to work in more interdisciplinary ways, the literature on interdisciplinarity exhibits strong post-democratic tendencies: Although its authors encourage disciplinary exchange, they

seem to be legitimizing only certain forms of interdisciplinarity. Specifically, they are validating team-based or collaborative approaches but not interdisciplinarity on the part of an individual academic. In this context, then, post-democracy not only invalidates certain forms of interdisciplinarity, but in so doing also constrains political debate between and among disciplines because these conversations can only legitimately involve academics speaking from the perspective of a single discipline. Consequently, these post-political and post-democratic tendencies exacerbate the disciplinary identity politics inherent to disciplinarity, with deleterious implications for interdisciplinarity.

Researchers have attributed the drive towards greater interdisciplinary working to growing awareness of the complexity of social and environmental issues, the limitations of working in strongly disciplinary ways, and changes to the broader societal context that directs shifts in the practice of academia, such as neoliberalism and the Impact Agenda (Darbellay, 2015; Felt et al., 2013; Lyall et al., 2011; Moody & Darbellay, 2019; Moore et al., 2018). Since coming to prominence in the 1960s and 1970s, a degree of consensus has emerged concerning core definitions for different ways in which cross-disciplinary work can be conducted, depending upon the degree of integration between the disciplines involved (Barry & Born, 2013; Darbellay, 2015; Kemp & Nurius, 2015; Lyall et al., 2011; Moody & Darbellay, 2019). Work whose practitioners involve different disciplines but hold these disciplinary understandings apart is generally described as multidisciplinary. Beyond this, work that involves some limited interaction between disciplines is termed interdisciplinary, whereas work that entails integration and adaptation of disciplinary understandings and practices is considered to constitute transdisciplinarity. In addition, some authors require transdisciplinary work to be targeted towards specified extra-academic goals and to involve non-academic stakeholders (Darbellay, 2015; Kemp & Nurius, 2015; Lyall et al., 2011). However, there is an overwhelming skew towards collaborative or team-based understandings of cross-disciplinary work, with many authors explicitly confining their discussion to collaborative work practices: Even where they acknowledge the possibility of an individual working in an interdisciplinary fashion, they give this opportunity scant attention rather than sustained interest (Darbellay, 2015; Huutoniemi, Klein, Bruun, & Hukkinen, 2010; Kemp & Nurius, 2015; Lyall et al., 2011). Furthermore, some authors emphasize the internal variation within any discipline and the porosity of disciplinary borders, which they argue establish interdisciplinarity as simply a different way of doing disciplinarity (Osborne, 2013; Szostak, 2012). Within this context, Osborne highlighted the limitations of superficial interdisciplinarity, and lent especially scathing characterization to individual modes of interdisciplinarity as usually involving a lot of trespassing, imposing the researcher's own view on another disciplinary area (Osborne, 2013).

This is especially concerning given my activity as a solo researcher, drawing directly on my own knowledge and experience of two disciplines. The disparaging view above (Osborne, 2013) rather presupposes the imposition of extradisciplinary perspectives on a receiving discipline rather than the productive integration or juxtaposition of such perspectives, but my personal approach to interdisciplinarity is

more akin to alternative views in the literature. One such view is that optimal interdisciplinary collaboration requires the involvement of two or more researchers on a sustained basis and that such collaborations are more effective if each researcher has a bedrock of knowledge and skills in more than one discipline (Rowe, 2008). My approach to interdisciplinarity fits neatly with this more affirmative view: My integration and juxtaposition of disciplinary perspectives is not a contingent amalgamation for a one-off project, but rather a sustained method. This is not just a different form of interdisciplinarity, then, but a different approach: an underlying attitude towards and interest in working conjointly across disciplines in a manner that is concerned less with whether an interdisciplinary approach is needed (Lyll et al., 2011) than with whether it will generate interesting conclusions. However, this mode of interdisciplinary practice is seemingly barely tolerated even where it is minimally acknowledged.

Despite these literary limitations, I engage in detail here with one specific epistemological framework of interdisciplinarity. Drawing on analysis of research proposals as an indication of researcher intentions, the creators of this framework identify three dimensions of interdisciplinary research: scope, type, and goal (Huutoniemi et al., 2010). Scope denotes the cultural and conceptual distance between the disciplines involved, such that closely related disciplines would have narrow scope. Type refers to the degree to which and ways in which the disciplines relate to each other and is subdivided into multi- and interdisciplinarity. Multidisciplinarity can take encyclopaedic (loosely related by topic), contextualizing (related for problem-framing only), or composite (coordination of complementary skills) forms, whereas interdisciplinarity can take empirical (analytically diverse), methodological (diverse approaches integrated), or theoretical (developments from contrast or synthesis) forms. Finally, the framework's authors define goals as either epistemological (aimed at growing knowledge), instrumental (addressing an extra-academic objective), or mixed (Huutoniemi et al., 2010). Although they lay their emphasis on collaborative forms of cross-disciplinary practice, the authors do acknowledge that interdisciplinary synthesis can be done individually, making this framework informative with respect to my own work as an individual interdisciplinarian.

The scope of my own work is narrow, for although geography and psychology conventionally sit within the social and life/medical sciences respectively, the aspects of psychology upon which I draw lie at the social end of the psychological spectrum, requiring the use of qualitative methods and the prioritization of positive psychology over psychopathology. Even were I to bring art back into the discussion, describing geography as a visual discipline and image-making as consistent with my Gendlinian perspective, the disciplines across which I work would remain closely aligned. In terms of type, my work would be interdisciplinary (either methodological or theoretical) as I modify the knowledge or practice that I extract from one discipline in order to shape it to the needs of the receiving discipline, which is in turn modified by the incoming material. Such knowledge, then, is not imposed upon but tailored to the receiving discipline, which in turn can modify the knowledge that it receives in a more reciprocal relationship than acknowledged in some quarters (Osborne, 2013). However, although epistemological goals of expanding

knowledge of a subject are relevant, I have no specific extra-academic objectives, and I would suggest other goals not acknowledged in the framework, such as methodological development and opening new avenues for research as well as personal interest and development.

Consequently, the framework (Huutoniemi et al., 2010) functions well in capturing my individual interdisciplinarity, although further refinement of categories of goal might be fruitful. However, a further consideration that arises is the distinction between contributions targeted towards social objectives and those targeted towards disciplines. Unlike collaborative approaches in which any interdisciplinary modification of a discipline is secondary to the delivery of the extra-academic objective, I draw inspiration for my work from one discipline in order to intervene in the other: I direct a contribution towards the discipline from which it did not spring. As a practitioner, then, I work between two disciplines, but direct the knowledge- and practice-based contributions arising from that work towards a single discipline. This, in turn, has implications for how one might spatialize emergent knowledges and practices in relation to their target discipline, as although bidirectional contributory traffic exists, these emergent knowledges and practices are uniquely configured waround each discipline. In contrast to conventional understandings of team-based interdisciplinarity, in which those collaborating speak from a single discipline and assume mutually interdisciplinary adaptations—even though they are both secondary to social objectives and no doubt configured differently in each discipline due precisely to the differences between them—in my own work it is the individual that is interdisciplinary and the contributions are acknowledged as uniquely disciplinary. This, then, provides my starting point for a foray beyond interdisciplinarity as a singular if contested concept to construct a more nuanced spatial understanding of the interdisciplinary.

Beyond Interdisciplinarity

Arguably, then, interdisciplinarity is entirely the wrong term for any situation in which researchers work only from their own home discipline. Equally, interdisciplinarity does not reflect very well either the ways in which my own contributions relate to the disciplines to which they speak or how the outcomes of collaborative interdisciplinary work are taken up by and thereby reconfigure the participating disciplines. On this basis, it seems sensible to distinguish between the academic practitioner/s and the emergent knowledges and practices that they generate. Accordingly, the practitioner/s might or might not be interdisciplinary depending upon whether they work from one discipline or more, but still be producing knowledges and practices that are best considered disciplinary due to their disciplinary specificity. Indeed, stemming from other disciplines, any contribution made to a discipline through interdisciplinary work is perhaps best conceived as fundamentally external to the target discipline.

Table 3.1 Variegated disciplinary spaces

Space	Relation	Perception	Response	Example
Paradisciplinary	External Abnormal Disordered	Threat	Excluded	Philosophical lineage: Gendlin
Epidisciplinary	Additional After Supplement	Potential	Acknowledged	Discordance in experimentalism Practices as synaesthetic
Peridisciplinary	Around Near Alignment	Proximity	Invited	Proto-practices and inexpertise in proficiency debates
Disciplinary	Internal	Identity	Incorporated	???

Note. Source: Design by author

Applying this perspective to my own work, I found no single way of describing or conceptualizing how an emergent contribution relates to its target discipline. Rather, one must think in more nuanced terms about graduated or variegated spaces of disciplinarity, reflecting different relations between emergent knowledges and target disciplines. In Table 3.1, I develop these ideas into an embryonic conceptual framework for these variegated disciplinary spaces in relation to different aspects of my emergent contributions from psychology to geography.

In this understanding, one may consider potential contributions as para-, epi-, or peridisciplinary. One may class them as *paradisciplinary* if fellow academics treat them as external to or somehow abnormal for the target discipline, perhaps perceiving them as a threat to disciplinary coherence and, given the power to do so, therefore excluding them. The philosophical side of Gendlin's work might fit this description, for although researchers have taken forward some of his methodological inspirations, his philosophical material has not (yet) received the same response. One may consider *epidisciplinary* work to add to or come after a discipline, acknowledged as a source of potential upon which to build, as seems to be the case with the methodological aspects of my work. One may describe work as *peridisciplinary* if it is perceived in terms of proximity to the discipline, being close to or having alignment with pre-existing interests. Such work might be invited further into the fold of the discipline, and the contributions to proficiency debates in the geographies of artistic practice might fit this description. Lastly, *disciplinary* work is fully internalized such that the discipline self-identifies with it, although none of my work currently fulfils this brief. Seemingly, then, one can use more differentiated terminology to describe more meaningfully the diverse spatial relations between emergent knowledges/practices and their target discipline, with a pair of quasi-disciplinary spaces identified between extra- or paradisciplinary space and intra- or disciplinary space.

Such reconceptualizations, however, raise further questions, three of which I attend to briefly here. Firstly, is this a patchwork or a process? With Table 3.1, I suggest a patchwork of discrete knowledges and practices that relate in distinctive ways to the same discipline, but there is also a sense in which these quasi-disciplinary

spaces could be considered as stages in a transformational process of progressive incorporation into the discipline. Whereas in Table 3.1 I refer only to psychology's contributions to geography, I could use a similar table for contributions in the other direction to illustrate how one contribution was initially excluded as a potentially threatening paradisciplinary knowledge but was subsequently reconfigured as episciplinary upon resubmission to a different publishing outlet. There would be no such table for contributions to art and no progression into art, as I am not seeking to publish in that field. In turn, the possibility arises that the progression an academic achieves by one contribution might benefit the reception of their other work, thus advancing their interests and career and highlighting the diverse and dynamic relationship between the practitioner behind the work, the work they produce, and the discipline concerned. It also brings together the patchwork and process perspectives both within single disciplines and across multiple disciplines, as suggested in Figure 3.4. In Figure 3.4b, I have more thoroughly incorporated my conceptual and methodological contributions than my theoretical contributions into geography, whereas with Figure 3.4c I evidence the dominance of geography over psychology in my academic practice and acknowledge my lack of progression in relation to art.

The possibility of one contribution aiding the incorporation of subsequent contributions prompts a second question concerning the universality or otherwise of such conceptualizations. For example, would early contributions in a sub-discipline always be described as paradisciplinary? Surely this would depend upon the status and reputation of the practitioner concerned. As an early career researcher, I have no guarantees that any of my work will be taken up, but had the same work been done by a leader in another area of the discipline it would be a very different story, full of expectation that the work would be received swiftly and with little resistance due to the disciplinary rootedness and reputation of the individual concerned. Here, the term *antedisciplinary* might be more appropriate to reflect this work coming before more-or-less guaranteed disciplinary acceptance, as indicated in Figure 3.5. This, then, would form a sub-set of intradisciplinary space, further complicating the relationship between the academic, their work, and their discipline/s. This, of course, reinserts the political, and does so in a manner that reverses the post-political tendency identified earlier: By focusing on the technicalities of emergent knowledges, attention is refocused towards rather than away from the politics of disciplinarity.

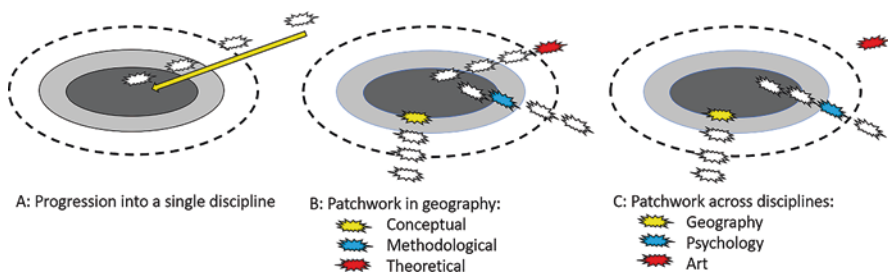
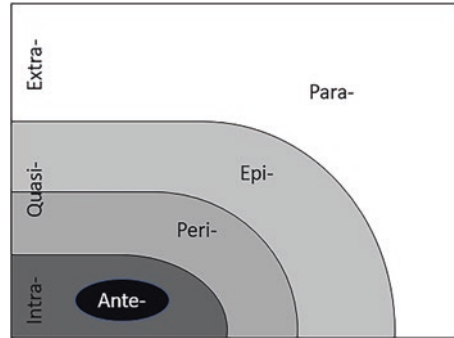


Fig. 3.4 Patchwork or process? Source: Design by author

Fig. 3.5 Graduated disciplinary spaces.
Source: Design by author



Thirdly, how might this framework be of benefit in an applied capacity? Here, I feel it fit to draw attention to early-career academics working in an interdisciplinary fashion. It might help to identify multiple ways in which such academics are disadvantaged in contemporary academia even compared to the disadvantages identified in conventional interdisciplinary contexts (Darbellay, 2015; Felt et al., 2013; Kemp & Nurius, 2015; Leahey et al., 2017; Lyall et al., 2011; Moore et al., 2018), and to signpost developmental support and/or disciplinary shifts in practice with which one could help alleviate this within specific institutional contexts. For example, such academics might be disadvantaged not simply due to their junior status, but also because they do interdisciplinary work (which sits uneasily with the drive to maintain coherent disciplinary identities) and because (like me) they do the wrong type of interdisciplinary work (individual), which is currently not legitimized.

Seemingly, then, there is both scope for and need for a reconceptualization of both interdisciplinarity as a mode of academic practice and the variegated spatialities of emergent knowledges and practices in terms of its potential as both an analytical and pedagogical tool. However, this explicit concern for early-career researchers and their developmental needs brings me to the last major area for discussion: the potential for interdisciplinary proficiency and associated implications for academics' understanding of expertise.

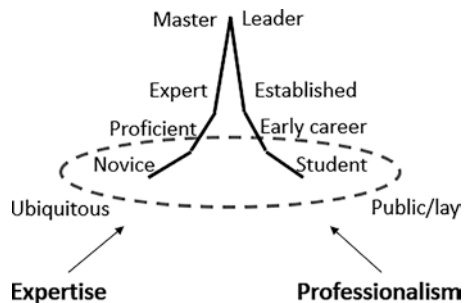
Inter/Disciplinary Knowledges

Similar difficulties arise in relation to interdisciplinary knowledges, as I demonstrated in relation to interdisciplinary spaces, meaning that despite drives to increase interdisciplinary working and despite identified needs—especially on the part of early-career academics—for enhanced support for interdisciplinary work (Darbellay, 2015; Felt et al., 2013; Kemp & Nurius, 2015; Leahey et al., 2017; Lyall et al., 2011; Moore et al., 2018), any such support is unlikely to be delivered in anything other than a discipline-specific fashion. This situation seemingly arises not only because of the disciplinary identity politics and the protectionist professionalization of disciplines, but also because of the long-standing prioritization of single-discipline

working practices, as those currently in positions of disciplinary authority would have limited knowledge and experience of working in a properly (individual) interdisciplinary fashion, making them ill-equipped to formulate proficiency standards for such work. Prospects for establishing standards for *interdisciplinary proficiency*, then, seem remote, especially given the vast number and diverse nature of alternative disciplines that such standards would need to accommodate. This leaves two other possibilities to consider. One is *undisciplined improficiency*: the continuance of proto- or illegitimate activities beyond the bounds of any discipline. The other is *professionalized indiscipline*: reprofessionalizing for the receiving discipline the proto-activities that arose from a different discipline. However, neither of these resolves the problem of establishing legitimacy and proficiency for interdisciplinary work. The former results in such activities being permanently excluded and delegitimized, stuck in an academic no-man’s land, whereas the latter reinforces disciplinary rather than validating interdisciplinarity. Ultimately, then, both interdisciplinary work and its associated knowledges seem destined to be externalized and delegitimized by the prevailing power of the disciplines, irrespective of any societal drives to promote interdisciplinary academic work.

This, though, prompts me to question what this might mean for academic expertise generally. Academics contest what expertise itself is, how one should conceptualize it, and how one can nurture it. Perspectives vary from the psychologically informed view of a staged process of individual development from rule-based learning to more fluent and intuitive performance (Dreyfus, 2006; Ericsson & Charness, 1994), through relational and social understandings that recognize the role of communities of practice in supporting the development of expertise and accrediting its attainment (Barbour, Sommer, & Gill, 2016; Collins & Evans, 2007; Evans & Collins, 2008; Fuller, 2006; Lamb, 2020), to performative notions of expertise as a communicative claim to knowledge, emphasizing the power dynamics of expertise (Kuhn & Rennstam, 2016; Treem & Leonardi, 2016). These, of course, need not be mutually exclusive, which brings me to the relationship between expertise as a signal of ability and professionalism as a marker of status. Situated within a broad community of practice that includes the most generic lay knowledges and practices, one can conceive an ever-steeper pyramid of progression as fewer people exhibit higher attainment, culminating in the leaders of a field at its pinnacle being both expert and professional. In Figure 3.6, I illustrate these parallels between the

Fig. 3.6 Expertise and professionalism. Source: Design by author



psychological staged perspective of expertise and the typology of lay through specialist expertise in a disciplinary context that combines the exclusiveness of expertise with the managerialist control of academic institutions (Collins & Evans, 2007; Correia, 2017; Dreyfus, 2006; Ericsson & Charness, 1994; Evans & Collins, 2008; Evetts, 2013).

Personally, I might self-identify as proficient in geography but as a novice-going-on-proficient in psychology, lacking doctoral certification in psychology yet still drawing on it for professional purposes—and in art, meanwhile, I possess little more than ubiquitous expertise as a hobbyist. However, my early-career status prompts me to conceptualize these expertises in combination rather than in isolation: I remain an early-career academic despite these differences in proficiency between disciplines. Again, one faces the challenge of accommodating interconnections evident in lived academic praxis within conceptualizations that are driven by disciplinary specificity. It is equally important to consider the differential scope between my three disciplinary fields, whereby psychology and geography overlap to a greater degree than either does with art: I am educated to university level and publish in both geography and psychology, but not in art. Bringing this differentiated relationality between disciplines into conversation with the expertise/professionalism binary discussed above, different visual landscapes of my interdisciplinary expertise emerge, as illustrated in Figure 3.7.

Clearly, expertise is not a singular phenomenon but multiple and variegated, with different researchers emphasizing this characteristic in different ways. Some focus on the context within which expertise comes to light, such as the interaction between objects and the different ways in which their manipulation gains value, thereby attributing value to the ability to manipulate (Kuhn & Rennstam, 2016). Others adopt a taxonomic approach, such as those mentioned above, classifying the diversity and hierarchy of expertises (Barbour et al., 2016; Collins & Evans, 2007; Ericsson & Charness, 1994; Evans & Collins, 2008), and yet others combine the two, taking into account occupational setting, associated norms of practice, and the individual's intentions (Winch, 2010). It is this last example, the conceptualization of dimensions of expertise, that forms the focus of my attention here.

With this framework of expertise, one can highlight both the distinction and close interaction between knowing that (systematic propositional knowledge of,

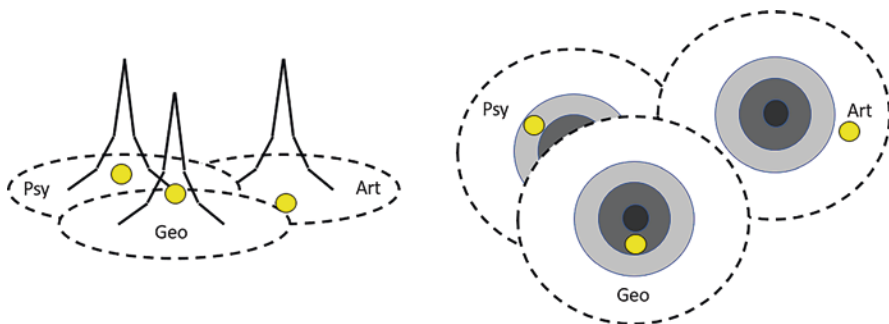
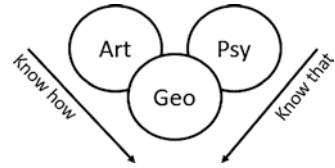


Fig. 3.7 Interdisciplinary expertise and professionalism. Source: Design by author

Fig. 3.8 Knowing how versus knowing that.
Source: Design by author



e.g., facts) and knowing how (practical knowledge of, e.g., processual activities), which—despite being conceived as different forms of knowing—are deeply interwoven (Winch, 2010). For any one discipline, a combination of knowing that and knowing how would constitute proficiency or expertise, some of which might be unique to that discipline, but some of which might not. Within my own work, the different ways of knowing do not feature equally between the disciplines, as shown in Figure 3.8. The strand coming from art is more knowing how than knowing that, as I value untutored and uninformed practice as much as formally accredited practice, whereas the strand from psychology is more knowing that than knowing how, as I draw on psychological concepts and theory rather than practical or methodological issues. Although one could argue that my untutored artistic endeavors do not constitute knowing how precisely because they are untutored, and that in drawing on Gendlin’s techniques I am employing psychological know-how, to do so would re-discipline these aspects of my work. In order to integrate them with geography, each has been deprofessionalized, yet they also do not meet geography’s conception of proficiency because they have come from beyond its borders: They are proto-practices.

In my own work, then, the constellation of knowing how and knowing that is interdisciplinary, as with it I integrate influences from multiple fields of practice. Yet it is also extradisciplinary, as none of the disciplines would recognize it individually, complicating evaluation of originality as a marker of academic expertise. In this context, closeness of fit between the intervention and the receiving discipline becomes critical. To count as legitimately belonging to a discipline in the first instance and as constituting an original contribution in the second instance, the intervention must be acknowledgeable within the prevailing normative structure of the receiving discipline (Winch, 2010). Integrating the issues of spatializing emergent knowledges and evaluating expertise, I have the impression that only contributions located within at least a quasi-disciplinary space are candidates for consideration as legitimate and original contributions.

Proponents of the Dimensions of Expertise framework also identify a tripartite distinction between ways in which expertise can be understood and developed: a vertical dimension functions hierarchically through formal accreditation; a horizontal dimension functions socially through scaffolded immersion in a community of practice without formal accreditation; and a scope dimension functions by forging increasingly complex and lengthy links between task-types (Winch, 2010). This distinction is then employed to illustrate how different occupational modes—such as professions versus crafts—are characterized by different configurations of these dimensions, with professions being more vertical and crafts more horizontal, which

in turn are characterized more by knowing that and knowing how respectively (Winch, 2010). Having already considered how knowing that and knowing how feature between my disciplinary interests in broad terms, it is informative to do likewise in relation to vertical, horizontal, and scoping dimensions.

As evidenced in Table 3.2, my disciplinary engagements are characterized by different constellations of the dimensions of expertise, with geography strong in all three dimensions by virtue of being the discipline in which I teach, and especially strong in both vertical and scoping dimensions. By contrast, psychology is characterized by vertical and horizontal dimensions of expertise to a lesser degree, as I am not as embedded within the psychology community as within the geography community, with the vertical dimension proving stronger than the horizontal. In relation to art, I would not claim any substantive knowing that. Yet although I am outside the professional art community, my research methods have afforded some degree of both horizontal and scoping dimensions, although less so than in geography, and with a stronger emphasis on the scoping than the horizontal dimension.

Table 3.2 Dimensions of expertise

Discipline	Vertical	Horizontal	Scoping	Evaluation
Geography	Strong on theoretical knowing that	Some specific knowing how, but methods informed by other disciplines and much of a generic academic nature	Forging links between aspects of knowing that	V H S
	Hierarchical in accrediting competence/expertise: jobs, funding, publications	Scaffolded development of expertise	Seeking to extend disciplinary ideas about knowing how Also scoping beyond the discipline	
Psychology	Strong but limited theoretical knowing that	Influenced by psychology knowing how but adapted for new discipline	Scoping more about links between disciplines than within psychology	v h -
	Some vertical accreditation, e.g. publications	Mostly outside community		
Art	Minimal theoretical knowing that	Mostly outside community of practice (lay/hobby only)	Scoping more about links between disciplines than within art	- h s
		Methods challenge horizontal development: unsettle practices No formal scaffolding but some gained by research methods	However, developing own practice through linking between artistic mediums within research method	

Note. Source: Design by author

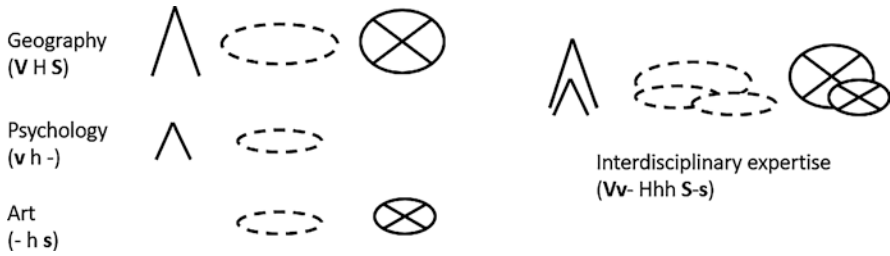


Fig. 3.9 Interdisciplinary dimensions of expertise. Source: Design by author

In conceptualizing expertise not in terms of its specificity with respect to each discipline but in terms of how it is bound into each discipline, one can move towards a more combinatorial appreciation of interdisciplinary expertise, as in Figure 3.9, with which I present a visualization of the dimensions of expertise for each discipline as evaluated in Table 3.2, both separately and in combination. By integrating the dimensions of expertise across disciplines in this way, I draw attention to the fact that although the horizontal dimension is the only dimension characterizing all three disciplines, it is the vertical and scoping dimensions that feature most strongly when they feature at all.

This makes clear that the authority of a field's hierarchy is more powerful in establishing my pattern of expertise than the scaffolded support of a field's community. Given that any individual is acknowledged as belonging to multiple communities but far fewer hierarchies—exoteric versus esoteric circles (Fleck, 1979) or ubiquitous versus specialist domains (Collins & Evans, 2007; Evans & Collins, 2008)—this might suggest that interdisciplinary expertise would be more appropriately rooted in the scaffolded support of broad communities than the authoritarian accreditation of a hierarchy. Perhaps researchers would find it easier to identify productive connections between different disciplines if they paid more attention to looser connections within lay expertises, which might be expected to overlap to a greater degree than specialist expertises, drawing on academics' ability to see informal connections between their varied communities of practice—connections that are potentially broken during the process of formalization, specialization, and professionalization of knowledge. Shifting the emphasis from the hierarchical to the social determination of expertise need not remove disciplinary hierarchies from the process but could enable broader communities of practice to play a stronger role in evaluating potential contributions of cross-disciplinary linkages and interventions by setting these evaluations in the context of broader and more (albeit loosely) interconnected lay expertises.

With Table 3.2, I also acknowledge that for psychology and art, I direct my scoping activities towards forging links between the disciplines rather than within them, whereas for geography, I form links both within and beyond the discipline. I thus raise the possibility of the scoping dimension (Winch, 2010) to facilitate the formulation of standards of legitimacy and proficiency for explicitly interdisciplinary work, as academics could redirect the emphasis away from questions of what is

being linked towards questions of how these things are being linked. Rather than a receiving discipline excluding an intervention because it rubs against a pre-existing emphasis, researchers might be more concerned with valuing the contribution made in the *rubbing against*: What is it that makes this intervention uncomfortable, how can one interrogate that further and to what ends for which disciplines? Significantly, this would direct academics' attention towards working with the ricochets among disciplines instead of policing the borders between them. In this context, the more uncomfortable an intervention, the more valuable its contribution—and thus the expertise of the individual behind it—may be. Perhaps, then, it is possible to move towards greater validation of genuinely interdisciplinary academic practice without having to dismantle the disciplinary architecture of the Academy.

However, this notion of scope as forging connections does not resolve the issues faced by individual interdisciplinarians. To elaborate on the significance of this, it is helpful to revisit Fleck's work on thought styles, collectives, and solidarity. If a thought style is a common way of thinking within a field of practice, thought collectives are groups of people who commit to the relevant thought style, and thought solidarity among the collective reinforces its prevailing thought style, thereby leading to rejection of others (Fleck, 1979; Punstein & Glückler, 2020), then this discussion has implications for how one understands each term. An individual who works in two disciplines simultaneously embodies two thought styles, thereby forging a bridge between separate thought collectives, but also constitutes an alternative form of thought collective: A collective of diverse thought styles in one individual rather than a collective of diverse individuals sharing a singular thought style. In the case of an individual interdisciplinarian, however, it is not the "other" that is rejected but one of the collective "us" who—despite committing to the thought style of the collective doing the rejecting—is rejected anyway precisely because of the connections that they forge.

Although one must acknowledge that such rejection is not inevitable, by drawing on research conducted with professionals (engineers and designers) engaged in different ways with product development (Punstein & Glückler, 2020), it becomes clear that any rejection of individual interdisciplinarians is fundamentally oppositional to both the interdisciplinary emphasis on the benefits of knowledge co-creation and the academic emphasis on originality within framings of proficiency. Punstein & Glückler found that such work was characterized by diverse relations between the two sets of professionals, ranging from mutual exclusion to genuinely engaged co-creation (Punstein & Glückler, 2020). Within the discussion of mutual exclusion, they noted that engineers sometimes accomplish the task of industrial design, thereby excluding the designers, but this might equally be considered a proto-practice: Engineering influenced from beyond its own field. Moreover, a later example of an engineer interested in design changing the thought style of their own collective (Punstein & Glückler, 2020)—if informed by any degree of formal engagement with the field of design—could constitute individual interdisciplinarity. With this example of an "exoteric push within a local professional collective" (Punstein & Glückler, 2020, p. 563), the design-interested engineer introduced design to their own thought collective and made it commensurable with its thought

style: Hence, this is not an imposition of individual views (Osborne, 2013) but the crafting of a conduit between otherwise disparate bodies of knowledge and practice, which was possible precisely because this individual had some level of engagement with and commitment to the exoteric “other.”

This conduit is forged at the level of the body: the body of the design-interested engineer that holds within it at least a proportion of know that and know how (Winch, 2010) belonging to each field or discipline, and that possesses the capability to render them commensurable. Given the infrequency with which researchers have found such co-creation to occur, this rendering commensurable is presumably a significant achievement, which brings into sharp relief the significance of social practice in establishing (in)commensurability (Punstein & Glückler, 2020) through the politics of disciplinary boundary marking. However, the invalidation of individual interdisciplinarity is starkly problematized if one considers the value deemed inherent in the permanent encounter of two collectives in a place, which can produce particular moods more conducive to this rendering commensurable (Punstein & Glückler, 2020). Although this might conventionally apply to team-based contexts, there *is* an enduring encounter of two collectives in one place evident in the exoteric push articulated: In the body of the design-interested engineer, or indeed, any individual interdisciplinarian. An individual interdisciplinarian has already taken on these divergent terminologies and understandings as their own: They have either already reconciled them or can see the potential to do so. In this instance, the individual human body forms a common crucible of understanding for divergent bodies of knowledge, whereas in team-based scenarios, the combined collective must construct its own social body as that common crucible.

Bringing this chapter back to my non-representational emphasis, the body of the individual interdisciplinarian could be considered a mood vessel, a capability of commensurability and a conductor of co-creation between different bodies of knowledge through the forging of connections between those knowledges. Arguably, then, individuals can be quintessentially interdisciplinary in a way that teams cannot: They might be able to perceive potential connections on an implicit level that would be harder to explicate in the discourse-dependent construction of a team-based social body. From a Gendlinian perspective, it should be easier for an individual to render commensurable different thought styles than for a collective to do so. The individual interdisciplinarian might be able to explicate into a conceptual formulation connections between thought styles that they sense within their implicit understanding at the level of the body, whereas in the collective context those connections can only be articulated rather than explicated, because there are no connections at the implicit level (as each individual has committed to only one thought style) and the articulation between different thought collectives is already anchored in the formal conceptual level and is thereby detached from the implicit within both thought collectives. If interdisciplinarity is about knowledge co-creation across disciplinary boundaries, then the individual interdisciplinarian is the archetypal embodiment of interdisciplinarity, yet such interdisciplinary formulations continue to be frowned upon despite their generativity as wellsprings of originality, which is meant to be the pinnacle of academic capability. The rejection of individual

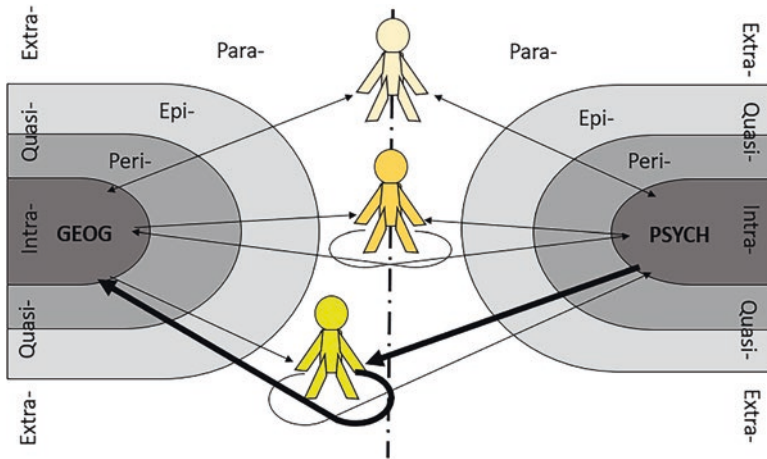


Fig. 3.10 Interdisciplinary spaces and subjects. Source: Design by author

interdisciplinarians, then, is contrary to both the aspirations of interdisciplinarity (knowledge co-creation) and one of the defining characteristics of academia (originality).

Using this as a springboard towards a conclusion, I have used Figure 3.10 to highlight my argument that despite conventional understandings of interdisciplinarity as team-based, it is a term more appropriately applied to individual academics, and underlines the unipolar relationality between emergent knowledges/practices and their target discipline. With the figures, I have also specified the extra-, quasi-, and intradisciplinary spatialities of emergent knowledges proposed earlier as they relate to my own work, and teased apart different ways in which an individual might conduct their interdisciplinary work. The top figure would be multidisciplinary, as although its research draws on each discipline and speaks to each discipline, there is no interdisciplinary connection or contribution. The middle figure would be the quintessential interdisciplinarian, contributing equally to each discipline from the other’s perspective. The bottom figure is me, contributing to each discipline from the perspective of the other but in a skewed fashion, contributing more to geography from psychology than vice versa due to my greater embeddedness within geography.

The challenge, though, is to deal with the dashed line down the middle of Figure 3.10, so that interdisciplinary work can become genuinely interdisciplinary rather than being progressively straightjacketed into prescriptive disciplines, and so that researchers can focus their efforts on optimizing the generativity of uncomfortable interventions and their ricocheting effects around the disciplinary architecture rather than excluding these interdisciplinary innovations, destroying interdisciplinary spaces, denying interdisciplinary knowledges, and quashing interdisciplinary career prospects in the process. As to how this might be achieved, I have suggested in this chapter that integrating dimensions of expertise (Winch, 2010) among the disciplines involved in interdisciplinary work, shifting the balance of power more

towards the scaffolded development of expertise through broader communities of practice than the current reliance on vertical accreditations, and focusing on the scoping dimension in forging links instead of reinforcing divisions between disciplines might be productive avenues to explore.

More specific suggestions as to how interdisciplinarity—especially at the level of the individual academic—might be both recognized and nurtured are focused on publication opportunities, and staff appraisals and support. It would be valuable to establish publication outlets for works that run up against journal editorial decisions about disciplinary boundaries precisely because they are seeking to question or unsettle the borders of a discipline, and this change would be enhanced if departments adopted an affirmative approach to challenging encounters in the publication process. The pressure to publish or perish encourages the production of “safe” works, but the greater potential contribution might come from works considered to be “dangerous” from a disciplinary perspective. Perhaps work that is initially rejected for transgressing disciplinary emphases should be reviewed by colleagues or institutions to consider this alternative contribution and how it might best be facilitated, which could be done at the level of an individual work, an individual academic, or a collective. In this way, certain aggravating publication encounters could become indicators of potential contribution rather than of deficient disciplinary work; individual interdisciplinarity would be validated; and its potential contribution might find new life, thereby facilitating the acceptance of such an academic’s contributions and accelerating the progression of their incorporation into a discipline without confining them to that discipline. Academics could further enhance this by actively emphasizing the value of working on an individual interdisciplinary basis in staff development or appraisal processes—in other words, if those conducting such processes could seek out and nurture those with the capability of commensurability, the attitude of interdisciplinarity. Not only would such shifts present disciplines as outward-looking and receptive rather than inward-looking and protectionist and provide a more welcoming and supportive environment for (especially early career) individual interdisciplinarians, but could also prompt curriculum diversification, which in time, would further embed this new brighter dawn of interdisciplinarity within the academy more broadly. This, then, is not so much about bringing together two disciplinary collectives—whether temporarily or permanently—to produce a mood conducive to co-creation of knowledge, but is much more about validating and supporting those academics who already embody—in their own enduring attitude and practice as an individual interdisciplinarian—two (or more) collectives to facilitate that co-creation of knowledge.

Conclusion

I drew my inspiration for this chapter from the suggestion that disciplines can serve as mutual sources of proto-practices in interdisciplinary entanglements and explored the implications of this through an auto-ethnographic interrogation of my own

academic interdisciplinarity, attending respectively to interdisciplinary spaces and interdisciplinary knowledges.

In relation to space, I unsettled conventional conceptualizations of interdisciplinarity by exposing the post-democratic function of such views in delegitimizing interdisciplinary practices undertaken by individual academics, reinforcing the disciplinary identity politics at play in maintaining disciplinary distinctiveness and autonomy. I suggested that “inter” is only an appropriate prefix in the context of individual interdisciplinarians, as in other contexts “inter” is never properly *inter* and cannot be sustained due to the power of disciplinary forces. I also recommended that a more variegated conceptualization of disciplinary spaces is needed to accommodate the diverse spatialities of emergent knowledges and practices, and proposed a classification for this purpose distinguishing between extra- or paradisciplinary, quasi-disciplinary (peri- and epi-), and intradisciplinary (or disciplinary) spaces.

In relation to knowledge, a similar picture emerged in that supposedly interdisciplinary knowledges and practices are acutely vulnerable to the conforming forces of disciplinarity by virtue of the disciplines’ power to establish introspective standards of legitimacy and proficiency. This, I proposed, fractures the connections being forged between disciplines in interdisciplinary work, as that work is only ever evaluated against the benchmark of an individual discipline; moreover, the longstanding dominance of unidisciplinary academic practice makes it difficult for disciplinary leaders to formulate meaningful standards for legitimacy and proficiency that could be applied to individual interdisciplinarians.

Seemingly, then, disciplinary spaces construct disciplinary knowledges but interdisciplinary spaces do not and, I suggest, cannot construct interdisciplinary knowledges: Disciplinary spaces first deny and then destroy interdisciplinary spaces, and subsequently either exclude or incorporate the interdisciplinary knowledges with which they would otherwise be associated. Such a process pulls the interdisciplinary rug from under the feet of interdisciplinarians and brings very sobering career prospects for academics seeking to work in this way, as they are perpetually denied both legitimacy and proficiency on anything other than a unidisciplinary basis. This denies and unravels the very quality of their work that they value and that generates academic contributions, even though they embody the permanent co-location of two collectives deemed valuable for the co-creation of knowledge that holds potential for the sustained generation of originality so central to academia.

However, interrogating the intersections between interdisciplinarity and understandings of proficiency through the lens of dimensions of expertise, it became apparent that there are ways in which more integrative understandings of expertise might be developed to accommodate interdisciplinary knowledges, practices, and expertises without having to dismantle the disciplinary architecture. By shifting the balance between dimensions of expertise to grant a stronger role to the horizontal scaffolding of communities of practice and refocusing notions of legitimacy and proficiency in interdisciplinary work on scoping activities through staff-development processes and provision of support, researchers might be able to validate the ways in which interdisciplinarity has the potential to ricochet among the disciplines,

rather than prioritizing the policing of borders between them, without having to jettison disciplinary distinctiveness.

Ultimately, then, my conclusion is cautiously optimistic, and I propose four productive opportunities. Firstly, researchers have the means to reconceptualise interdisciplinarity in a more democratic fashion that accommodates individual interdisciplinarians. Second, the fields are now in a position to develop and refine their understanding of disciplinary spaces to accommodate the diverse, intersecting, and shifting spatialities of emergent knowledges and practices encountered in the lived praxis of academia. Third, researchers have the conceptual tools necessary to reconfigure their understandings of expertise in the context of interdisciplinary working so that they attend less to the specifics of individual disciplines and more to how such working is bound into those disciplines, enabling them to validate interdisciplinary linkages, ricocheting, and uncomfortable encounters. Fourth, and finally, not only would this pave the way for brighter career prospects for individual interdisciplinarians by establishing their legitimacy and proficiency, but it would also more appropriately reflect and deliver contemporary trends towards greater interdisciplinary working, which could be supported by greater engagement with Gendlin's body of work. Perhaps there *is* a way, after all, to professionalize undisciplined practices and validate improficiency—or rather, to render interdisciplinarity proficient on its own terms even within the existing disciplinary architecture.

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Chapter 4

The Interplay of Knowledge, Strategies, and the Interest in the Development of Expertise within Professions



Patricia A. Alexander

For the past quarter century, I have investigated the nature of expertise in specific domains, and the factors and forces that shape individuals' journeys from novice to expert in professional fields (Alexander, 1997, 2018b). Within this chapter, I will characterize the central role that knowledge plays in individuals' professional development and how knowledge interacts with strategic processing and interests throughout the journey toward expertise (Ackerman, 2003; Alexander, 2004; Chase & Simon, 1973; Chi, Glaser, & Farr, 1988). The framework I employ to capture the dynamic changes that individuals undergo in their professional development is the Model of Domain Learning or MDL (Alexander, 1997, 2003). I will make evident that knowledge is a centerpiece of the MDL and core to each stage in the journey toward expertise in any profession.

Conceptualizing Professions, Expertise, and Knowledge

One problem that has long plagued the social sciences is a lack of conceptual specificity (Alexander, Schallert, & Hare, 1991). Within the physical and life sciences, as well as certain more applied professions such as engineering, practitioners commonly and consistently define those concepts regarded as foundational to the field. A kilometer is denoted the same in Germany and New Zealand; a quark means the same to an astrophysicist working in a laboratory in Switzerland or in the United States. Regrettably, the same is not true for key concepts

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J. Glückler et al. (eds.), *Professions and Proficiency*, Knowledge and Space 18,
https://doi.org/10.1007/978-3-031-24910-5_4

in the social sciences. Rather, practitioners of social science fields like education, psychology, and sociology, more often only poorly, variably, or loosely define core terms in professional discourse, or simply leave them unspecified (Murphy & Alexander, 2000). I thus begin this examination by explaining the meanings ascribed to the terms profession, expertise, and knowledge. I have also assembled a glossary of the italicized terms that appear in this chapter, along with illustrative examples, to further clarify their meaning (see [Appendix](#)).

Professions Characterized

For more than 100 years, the answer to the question of what constitutes a profession has remained elusive (Alexander, 1998). There is no shortage of characterizations or standards that have been proffered, often by communities of practice arguing for their recognition as professions (Cogan, 1955; Klass, 1961; Saks, 2012). Nonetheless, there are certain agreed-upon attributes of professions that distinguish them from related terms such as trade, vocation, or job. Specifically, *professions* are particular fields or domains that require formal preparation occurring over an extended time frame. This formal preparation time allows individuals to acquire the extensive body of specialized *knowledge* and *competencies* deemed essential to successful performance in that field. Further, membership into a profession is typically marked by degrees, examinations, or certifications intended to ensure that those requisite knowledge and competencies have been duly obtained. Within professions, there can also be monitoring of members to recertify their qualifications and a review of performance standards for the field to ensure the expected knowledge and competencies are current. Finally, members of professions often have an obligation to apply their specialized knowledge and competencies in service to others, such as clients, patients, or students.

According to Klass (1961), the earliest professions (i.e., divinity, law, and medicine) were directly aligned with the founding of the earliest universities. Even today, preparation for entry into professions remains largely the purview of higher education and professional schools. The domains of study within higher education—from economics to engineering—are the academic roots of professions. Thus, it is presumed that those who have successfully matriculated from universities and then completed their required studies in graduate or professional schools have achieved at least a foothold in their chosen professions.

The Nature of Expertise

As noted, the training that college students receive is an intended initial step toward entry into their chosen professions. However, this achievement represents only the first stage in the long journey toward expertise. *Experts*, as I will endeavor to

establish, are those select few within a profession who are widely recognized for their exceptional body of knowledge, creative insights or innovations, and outstanding problem-solving abilities, which researchers now see as pivotal to expertise development. Yet, this was not always the case. Although the systematic study of expertise traces back to Sir Francis Galton (1874/1970), the characterization offered here represents a more contemporary perspective. What fascinated Galton was the relation between “eminence” and heredity. In effect, he wanted to determine what genetic traits accounted for exceptional achievements—a pattern he observed within families, from which he surmised that parents passed these traits down to their offspring.

By the mid-twentieth century, fascination with exceptional performance had largely moved away from a focus on heredity and into the realm of *cognition* or the operations of the human mind. Researchers directed their attention toward the nature of mental processes and abilities manifested by experts (Ericsson & Charness, 1994; Groen & Patel, 1988). A primary catalyst for the growing interest in cognitive factors and processes were the emergent domains of cognitive science and computer science, and particularly the nascent field of artificial intelligence (AI). Although analytical machines had been around since the late 1800s, it was not until the 1940s, when these machines became powerful enough to solve algorithmic problems, that they came to be called computers.

By the late 1950s and early 1960s, with the influence of such powerhouses as Nobel Prize winning economist Herbert Simon, his colleague William Chase (Chase & Simon, 1973), and others (e.g., Newell & Gregor, 1999), AI researchers dedicated themselves to unraveling the mysteries of the “black box” of the human mind. They wanted to determine what happens when humans go about solving problems and what distinguishes expert performers from novices (Ericsson & Charness, 1994). They aimed to use what they discovered to fashion intelligent machines capable of mimicking expert behaviors. These researchers needed to identify those who were “experts” at such tasks so that their computer models could approximate the thinking and behaviors of these high performers. Chess was a favorite arena of intense investigation: An ideal venue for such study due to the contained problem space (the chess board), the limited number of elements (the pieces), and the regulated movements for each piece. Yet, there were clearly those who excelled at the game, notably the Grandmasters. What researchers learned through these investigations was that expert players had studied masters of the past, had accumulated rich knowledge of prior games and exceptional tactics, and could envision the game as a series of coordinated moves.

In addition to chess, researchers investigated problem solving among experts and novices in medicine, waitressing, economics, law, typewriting, and computer programming (e.g., Gentner, 1988; Ericsson & Polson, 1988; Voss, Blais, Means, Greene, & Ahwesh, 1986). Along with problem-solving strategies and tactics, cognitive scientists became intrigued with the significant differences in the depth and structure of knowledge that experts displayed compared to novices (Schoenfeld & Herrmann, 1982). With their findings, this research generation firmly established the influential role that knowledge plays in expert performance and the effects on

the implemented problem-solving strategies. However, there were constraints on what these researchers learned about the correspondence between knowledge and expertise development during this period, as they targeted task domains like waitressing or typewriting that do not require the extended training nor exhibit the intricacies ascribed to professions like medicine, economics, or computer science (Groen & Patel, 1988).

Although the insights gained from the expertise research in the late 1970s and 1980s were quite informative, the study of expertise and expertise development specific to professional domains required significant transformations in research methods and approaches (Ackerman & Heggstad, 1997; Sternberg, 2003). Multidimensionality, developmental orientation, and the expansion of the novice-expert dichotomy characterize this newer phase of expertise research (Dreyfus & Dreyfus, 2005; Hatano & Oura, 2003). The Model of Domain Learning (Alexander, 2018b) reflects this altered characterization of expertise and the expanded role that knowledge plays in professional development.

Knowledge

As I have argued, many concepts central to professions and expertise are only loosely or poorly defined (Dinsmore, Alexander, & Loughlin, 2008; Murphy & Alexander, 2000). One plausible explanation for this occurrence may be the unwarranted assumption that these concepts are so basic or commonplace that one can take their meanings for granted. There is no better example of this misguided assumption than the concept of *knowledge*. Researchers from such diverse fields as educational psychology, information sciences, cognitive neuroscience, philosophy, and communications have also provided ample evidence that misconceptions about knowledge can be highly consequential for (a) what individuals come to understand or believe, and (b) the decisions and choices they make or the actions they take, either consciously or unconsciously (Alexander, 1996; Alexander, Winters, Loughlin, & Grossnickle, 2012). To the layperson, knowledge may appear to be a simple, straightforward notion that needs no further explication, but to those who investigate human learning, expertise, or professional development, its definition is far from simple or straightforward.

For one thing, the meaning of knowledge varies according to whether one adopts a philosophical or psychological perspective. Philosophers who expressly study knowledge or *epistemology* define the word as referring to beliefs that have been justified or shown to be true on the basis of evidence. Laypersons may attach no set meaning to the notion of knowledge, and therefore easily supplant it with words like information, data, awareness, or facts. Yet, subtle differences in the meanings ascribed to knowledge may emerge in people's everyday discourse, as when someone claims: "I know *about*....;" "I know *of*....;" or "I know *that*..." This latter statement seems to be closest to the philosophical definition of knowledge as "justified true belief" (Grossnickle, List, & Alexander, 2015). Finally, for educational psychologists like me, knowledge signifies that information encountered in the external world that ultimately becomes

part of individuals' internalized mental storehouse and, thus, their mental universe (Alexander, 2006). That internalized knowledge can consequently be accurate or inaccurate, significant or trivial, explicit or tacit. It is this cognitive perspective on knowledge and the process of knowing that I represent in my model of expertise.

One other aspect of this cognitive bases of knowledge that has bearing on the examination of expertise within the professions pertains to the forms of knowledge. Although a litany of knowledge forms exist that I could overview, three are particularly relevant to professional development: declarative, procedural, and conditional knowledge, or simply the *what*, *how*, and *when* of knowledge, respectively (Alexander, 2006; De Jong & Ferguson-Hessler, 1996). As the "what," *declarative knowledge* comprises the particulars, facts, descriptions, or statements individuals can offer about some object, idea, or event (e.g., "This is a dog"; "Dover is the capital of Delaware"; "Economics is my area of expertise"). On the other hand, *procedural knowledge*, the "how," pertains to knowing how to successfully exert some process, technique, or routine. As an educational psychologist, I am able to name and describe five strategies for improving memory (declarative), but procedural knowledge requires that I can actually implement those strategies effectively.

The final form of knowledge, *conditional knowledge*, is the one that receives far too little attention during K-12 education, despite the vital role it plays in expertise. Conditional knowledge is vital because it pertains to when and where existing knowledge or competencies are to be utilized. Let me explain its importance with an illustrative case. Some nursing students had successfully learned what vitals they needed check when patients first entered a hospital or clinic (declarative knowledge) and how to perform routine procedures such as taking blood pressure, administering a shot, or inserting an IV (procedural knowledge). What these nursing students found harder to grasp, however, were the conditions under which they should not perform these "routine" procedures, or should perform them in a non-routine way. It can be challenging for non-experts to understand precisely when they should activate their acquired declarative and procedural knowledge. Yet for those working in professional domains, all three of these knowledge forms must operate smoothly and interactively if they are to achieve successful performance.

A Model of Expertise Development

The driving question that sparked the formulation of the Model of Domain Learning or MDL (Alexander, 1997, 2018b) was: What is the nature of expertise development? Simply defined, *expertise development* refers to the systematic changes that take place in individuals from when they are first exposed to a particular field of study until they reach the highest level of proficiency in that field. My search for an empirically-grounded answer to that question ultimately led me to conceptualize the model I present here. However, before introducing the MDL, let me position it within a richer context that acknowledges both the larger or macro-forces and the more particularized or micro-factors that can propel or prohibit expertise development in any profession.

For that reason, I describe the MDL as a mid-level model of expertise development to acknowledge that there exist macro-forces—societal, cultural, political, and economic—that can alter the course of individuals’ movement toward expertise. Likewise, individual difference factors such as memory, perception, attention, or spatial ability operate at the micro-level that can impede or facilitate professional growth. These macro-forces and micro-factors fall outside of the MDL’s scope. In that sense, the MDL is not a complete model of expertise development; but then, no model of such a complex phenomenon is ever truly complete.

Unique Contributions

Despite these just-acknowledged limitations, the MDL’s adopters sought to expand prevailing views of expertise and expertise development in several ways, including how knowledge is conceptualized and seen to interact with other essential components. Those contributions include the following:

- *They discounted the notion that individuals can be simply categorized as either novices or experts in any profession.*

Across the decades of expertise studies, researchers have treated expertise dichotomously. They have labeled individuals as experts or novices, with nothing in between. Yet, in reality, few individuals are true novices if they have been exposed to domains as part of their formal education. Nor are most individuals practicing in professional settings true experts according to the characterization forwarded in the MDL. This false novice/expert dichotomy complicates one’s ability to position individuals accurately as they learn and develop within their professions. Thus, the MDL’s developers set out to accurately describe those who fall between novice and expert in complex domains.

- *They replaced the dichotomous models of the past with a three-stage model of expertise development.*

To represent the journey toward expertise more fully and more realistically, I have incorporated a stage of development between novice and expert, which I have labeled competence. With this label, I intend to convey that those within this intermediate stage are able to function adequately or competently within their professions, albeit to differing degrees. These competent individuals have oriented themselves to the profession and the knowledge and processes it entails, but they have yet to reach the point where they are performing at an expert level. The MDL is not the only multiple-stage model of expertise in the literature. With their Five-Stage Model (Dreyfus, 1982, 2004; Dreyfus & Dreyfus, 2005), the Dreyfus’s also describe a developmental progression from beginner to expertise in complex domains. One critical difference between the MDL and the Dreyfus model is that the five stages of the five-stage model pertain only to skill acquisition and not to all facets of expertise considered in the MDL.

- *The MDL is predicated on the assumption that only a relatively few members of any professional community will achieve expert status.*

One of the vagaries of prevailing theories of expertise is whether any or all individuals can conceivably reach this pinnacle within professional domains. In contrast, does the confluence of factors and forces that must be achieved and maintained over years make it likely that only a relative few who begin the journey will cross the threshold into expertise? Although the reality may be hard to accept, only a small percent of any professional community is likely to achieve expertise as characterized in the MDL. Some stumble due to a lack of opportunities and experiences that would propel them forward. Some falter because the struggles to acquire increasingly complex knowledge and relevant competencies prove overwhelming. Still others choose to end their pursuit of expert status because the personal costs were too high or the personal gains were too low.

- *There was explicit recognition that non-cognitive factors, such as interest, influence expertise development.*

Another area of concern is the portrayal of expertise in theory and research as a “coldly cognitive” enterprise (Pintrich, Marx, & Boyle, 1993), attributable solely to such factors as knowledge, hours of deliberate practice, or problem-solving skills. However, it is inconceivable that expertise in any profession is achieved without individuals’ deep, personal commitment to that pursuit. Therefore, unlike coldly cognitive models, the MDL’s developers incorporated a motivational component in the form of interest as key to the attainment of expertise. With these unique contributions of the MDL overviewed, let me introduce its stages and principal components. I will also endeavor to illustrate how the interplay of those components over time shapes the journey toward expertise in professional domains and gives each of the model’s stages its distinguishing characteristics.

MDL Stages

As previously stated, the development of expertise in the MDL unfolds in three stages: acclimation, competence, and proficiency or expertise (Fig. 4.1). Those familiar with the Dreyfus model (1982) will note certain similarities in the titles attached to stages. The initial stage of development for all individuals, whether they seek to become experts or not, is *acclimation*. I have chosen this label, acclimation, for this initial stage to communicate that these neophytes must first become oriented to a domain or a profession. For example, what does a neurobiologist do or what does a career in macroeconomics really involve? Whether exposure to a domain begins in primary, secondary, or tertiary school, students are unlikely to have formulated a rich picture of what practice in professions encompass (Twenge, 2017). Nonetheless, this early exposure to professional fields can plant the seeds for continued pursuit. For many, that continued pursuit occurs when tertiary students

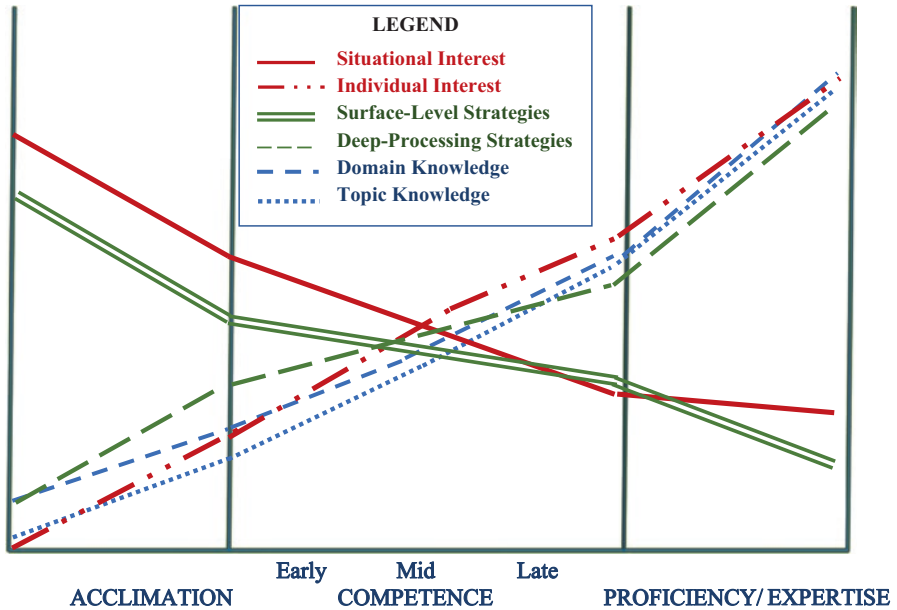


Fig. 4.1 The stages and components of the Model Of Domain Learning. Source: Design by author

declare a major or field of study and gain knowledge, problem-solving strategies, and interests needed to step over the threshold into competence.

As the intermediate stage in expertise development, *competence* occupies the greatest span in the journey from acclimation to proficiency. This is also the stage in expertise development where most individuals practicing in professional domains eventually settle. That is one reason I parsed this stage into three periods, early, mid, and late competence. This period is pivotal to professional development in that individuals will make significant career decisions during it. Specifically, when individuals reach early or mid-competence, they will likely have a better understanding of the domains in which they feel capable and personally interested. Based on those judgments, these individuals may consider subsequent educational or work experiences that could propel them deeper into competence.

Finally, the select few who continue to grow their declarative, procedural, or conditional knowledge, hone their strategic capabilities, and deepen their interest in a profession, may realize the final stage of *proficiency* or *expertise*. Yet simply stepping from competence into proficiency does not ensure that individuals will merit the designation of expert in perpetuity. The pursuit of expertise does not cease. It demands continued dedication because professional domains are not fixed or stagnant. Rather, professions undergo change—some more rapidly than others (e.g., computer technology versus philosophy).

MDL Components

In many ways, the specific components that comprise the MDL and the nature of their interactions over time set it apart as a model of expertise development. I have already been introduced one key component, *knowledge*, that is central to this chapter. Generally speaking, knowledge encompasses all the declarative, procedural, and conditional understandings that individuals have acquired, whether those understandings represent formal or informal, real or abstract, accurate or misleading information. However, when one focuses on a specialized field of study, as in the MDL, two forms of knowledge become significant to expertise development: domain and topic knowledge. *Domain knowledge* represents the scope or breadth of declarative, conceptual, and procedural knowledge associated with that field, whereas *topic knowledge* pertains to the depth of knowledge one possesses about particular objects, ideas, or experiences specific to the profession (Alexander et al., 1991).

Let me illustrate the distinction between domain and topic knowledge by drawing on an example of a meteorologist, Jackson, working with a local weather station. The scope of information that Jackson possesses about his field—including weather systems, humidity, climate changes, and extreme weather conditions—constitutes his domain knowledge. However, as a meteorologist in Oklahoma, Jackson has acquired far more topic knowledge related to tornadoes (common in this state) and seasonal temperature that are critical to farmers in his local area. As I show in Figure 4.1, both domain and topic knowledge are expected to grow incrementally across the stages of development. Qualitative changes, too, occur.

Specifically, domain and topic knowledge for those who have yet reached competence are often spotty or piecemeal and not well connected. This means that students learning about weather in school may have learned about tornadoes, but they do not understand how tornadoes are tied to other atmospheric or meteorological topics such as humidity, pressure cells, and more. Those approaching expertise or in the stage of proficiency, by comparison, have a wealth of both domain and topic knowledge about meteorology, but more importantly understand how all that knowledge is interconnected and mutually informative. What these experts possess, according to Gelman and Greeno (1989), is *principled knowledge*.

Along with knowledge, another component has long been a part of contemporary characterizations of expertise—strategic processing (Alexander, Graham, & Harris, 1998; Dinsmore, Fryer, & Parkinson, 2020). *Strategies* are a special class of procedural knowledge that individuals purposefully or intentionally employ when encountering problems that require solution or resolution (Dinsmore, 2017). When researchers report differences between novices' and experts' problem-solving abilities, approaches, and effectiveness, they are describing strategy differences. Researchers long presumed that experts employ more strategies during problem solving than non-experts. However, when I tested that presumption in the early 1980s, that relation between frequency of strategy use and level of expertise did not emerge (Alexander & Judy, 1988). This led me to delve deeper into the nature of strategies, which in turn resulted in a distinction between surface-level and deep-processing strategies (Fig. 4.1).

Surface-level strategies, as the name implies, are those with which one focuses on the surface or given elements of a problem or task (Dinsmore & Alexander, 2016). By comparison, *deep-processing strategies* involve the manipulation, transformation, reframing, or reformulation of given problems. Let me use an example to illustrate the differences in these two forms of strategies. Two doctoral students in a statistics course are given a dataset that was collected to test the effects of two writing interventions and a control condition on the quality of students' argumentative essay writing. Their task was to construct and to test a model with which one could assess the change from pre- to post-intervention. One student opens the software program he is familiar with and, together with the software manual, starts working step-by-step through a simple repeated measures ANOVA procedure to assess the change, simply feeding the data into the program.

The other student first inspects the dataset to ensure that she chooses a modeling approach that is compatible with the messy nature of classroom data while maximizing the likelihood that a real effect, if present, is detected. Then, she checks that her data meet all the assumptions for two competing theoretically plausible structural equation models (SEM) she intends to fit. Although both students are being strategic, the former is staying close to the problem given, whereas the second is delving more deeply into what successful task completion requires. Thus, the first student is demonstrating more surface-level strategies, whereas the second student is employing deep-processing strategies. Deep processing may also entail determining the most effective strategies needed to achieve success, along with the monitoring of performance (Dinsmore & Fryer, 2019). The second student's decision to test two competing models is illustrative of this type of reasoning and monitoring.

As I show in Figure 4.1, there is a heavy reliance on surface-level strategies in acclimation with that dependency decreasing during competence. In contrast to the trajectory of surface-level strategies, deep-processing strategies manifest infrequently in acclimation, with an increase during competence. Similarly, the reliance on deep-processing strategies takes a sharp upturn during proficiency because of experts' engagement in the generation of new knowledge. Although I have here drawn a sharp distinction between these two forms of strategy, it is critical to recognize that development in any professional domain requires the utilization of both surface-level and deep-processing strategies in an orchestrated fashion. Where the MDL and the Dreyfus model (1982, 2004), previously mentioned, seemingly converge is in the expectation that movement across stages of expertise are marked by the increased automaticity of common procedures, routines, or problem types—what Dreyfus calls intuition. This automaticity largely fuels the MDL's decreased reliance on surface-level strategies, permitting greater attention to deeper issues, questions, or concerns as signified by the rise in deeper-processing strategies.

The final component defining the MDL is the element that differentiates this expertise model from those that are entirely cognitive—*interest* (Hidi & Renninger, 2006; Schiefele, 1991). In general, interest signifies an object, idea, or event that draws persons' attention or has personal value to them (Garner, Alexander, Gillingham, Kulikowich, & Brown, 1991; Murphy & Alexander, 2000). Within the literature, authors have conceptualized and operationalized two forms of interest that are

represented in the MDL: individual and situational interest. Like many other contemporary scholars, researchers' views on individual interest in the MDL have been greatly influenced by the writings of John Dewey (1903, 1913).

Individual interest, or what Dewey called true interest, is a driving force that originates from within persons and that reflects their values, personal investment, and self-identity (Hidi & Renninger, 2006; Schiefele, 1991). Individual interest in professional domains is unlikely to manifest during acclimation. However, individual interest in a profession may show signs of emergence in late acclimation and grow during competence as individuals are schooled in the academic domains that are the roots of professions (Fig. 4.1). A particular turning point in expertise development in the MDL is predicted to occur in mid-competence when individuals' individual interest can be a catalyst for their pursuit of additional educational or work experiences. Students who find that they enjoy mathematics, for instance, may elect to pursue more advanced mathematics courses in secondary school which, in turn, may lead them to contemplate careers that center around mathematics, such as economics, statistics, mechanical engineering, physics, or mathematics. Thus, from mid-competence onward, this strengthening personal interest may become tied to one's professional identity. For some individuals, personal and deep-seated investment in the profession continues to rise well into the proficiency stage, sustaining momentum for years.

Situational interest follows a very different path than individual interest over the stages of expertise development. In contrast to internally-driven and enduring individual interest, *situational interest* is short-lived or fleeting attraction that is bound to conditions within the immediate context that capture attention, prove fascinating, or pique curiosity (Garner, Gillingham, & White, 1989; Schiefele, 1991). Understandably, those in acclimation or early competence require an environment that is situationally interesting to draw their attention or pique their curiosity about domain-related ideas and processes. Moreover, although the influence of situationally-interesting content and contexts declines as individuals progress toward expertise, it never completely disappears. Humans are curious by nature and drawn to ideas, events, or experiences that they perceive as surprising, intriguing, or novel. Even those who are highly competent or proficient in their professions can find themselves fascinated by some anomalous or unexpected occurrence. Thus, although situational interest continues to play a role in professional development, its relative importance vis-à-vis individual interest declines dramatically over time (Fig. 4.1).

Characterizing the Interplay of Knowledge with Strategic Processing and Interest

Although I have described each of the MDL's components separately in the preceding discussion, it is critical to understand that it is the different ways knowledge, strategic processing, and interest interact across the stages of professional

development that becomes more determinative. To make that point more clearly and emphatically, I want to return to the central focus of this chapter, knowledge, and illustrate how changes in individuals' knowledge are pivotal to the professions they pursue and how competent or even proficient they become in those professions. The approach I have taken is to posit claims about knowledge within the professions that I then explicate and illustrate.

- *A rudimentary level of knowledge is requisite to formulate realistic ideas about what a profession is and what would be expected of those working within that profession.*

Those reading this chapter may well have committed to and be currently engaged in a specific profession. As you reflect back on your personal path to that career pursuit, you may recollect the point in your life when you decided to follow this professional course. It would be rare, indeed, if that critical juncture occurred in childhood, when youngsters envision becoming pirates, princesses, doctors, or maybe astronauts. Instead, it may have been in college that you first gave serious thought to your future career. One reason for this chronology is that it takes time to acquire knowledge about what professions exist in the world and what precisely members of those professions do. People also require time to learn about their own capabilities and interests relative to the tasks and responsibilities aligned with a given profession. This *self-knowledge*, all the information individuals possess about themselves, can be academic in nature (e.g., "I am not particularly good at mathematics") or center on personality traits (e.g., "I do not have the patience or empathy to be a good therapist") or values (e.g., "I need a career that pays very well"). Chosen careers likely fall in the area where professional and personal attributes and values are most compatible—a determination that requires an adequate base of knowledge about professions and about the self.

- *A rich body of knowledge allows professionals to deeply analyze problems common to their fields and to select and execute appropriate strategies efficiently and elegantly.*

When it comes to the relations between knowledge and strategic processing, one can extrapolate from the earlier discussion of expert chess players to professions like medicine, engineering, psychology, or law. Those who are highly competent or proficient in their professions have accumulated a great deal of knowledge about problems or tasks that are commonplace in their fields. Consequently, they spend almost no time on surface-level strategies dedicated to understanding the nature or underlying structure of these rather routine problems or tasks. Instead, they can direct their cognitive energy toward more complex problems, devising alternative ways for attacking existing problems, or creating new problems that other members of the field have not yet addressed.

- *Although those in all stages of development continue to acquire new knowledge about their profession, experts are also expected to generate new knowledge or achieve new insights relevant to their field.*

One characteristic that sets experts apart from those in all the other stages is very directly related to knowledge. In effect, those who merit the designation of “expert” are required to contribute new knowledge, insights, or practices to the profession. When one is an acknowledged expert, it is no longer enough to acquire knowledge or procedures that others have contributed to the domain. Experts are agents of change within their professional communities. It is precisely because of this expectation that researchers hypothesized a spike in deep-processing strategies in proficiency, as these strategies are required to manipulate, transform, reframe, or reformulate existing knowledge and procedures in the domain (Dinsmore & Fryer, 2019).

- *Knowledge gained through in-school and out-of-school experiences can nurture one’s interest in a profession.*

Within the interest literature, authors frequently ask: How do individual interests take shape; what are the seeds of such enduring commitments or fascinations? Dewey (1903) argued that those seeds are present in very young children. These “true interests” only need to be recognized and nurtured if they are to thrive. Others contend that situationally interesting experiences might take hold and transform into individual interests (Hidi & Renninger, 2006). Whether the source of such enduring interests is internal or external, there is no question that knowledge gained from in-school or out-of-school experiences is necessary to feed such interests if progress toward expertise is to be sustained or energized.

For those who have achieved competence in professional domains, common experiences they pursue as a result of abiding and enduring interests include continued education in the form of graduate programs or enrollment in professional schools. Internships or specialized on-the-job training are also valuable contributions to new knowledge that can serve to deepen interest directly or expand opportunities that can lead to increased interests. What is important to keep in mind is that individuals are choosing to pursue these professional experiences on their own—these experiences are not mandatory. The voluntary nature of these experiences that both nurture interest and propel individuals toward expertise serves as a reminder that primary-secondary-tertiary educational systems are not constructed to produce experts in any professional field. At best, these mandatory educational systems may be used to build a foundation of professional knowledge and to fan the sparks of individual interest. However, much more is required for individuals to progress deeper into competence or approach expertise (Rikers & Paas, 2005).

The Changing Societal Landscape and Expertise Development

At an invitational conference on the subject of Knowledge and the Professions (Alexander, 2019), I spoke about several significant trends within society at large that are impacting views of knowledge, experts, and expertise development. The growing presence and power of the internet and social media are already shaping

perceptions of knowledge, professional domains, and experts. Indeed, it would be impossible to move through the world and not recognize the influence that digital technologies are having in every corner of our lives. From mobile phones, self-driving cars, and Smart boards to GPS devices, e-commerce, and virtual reality, digital technologies are omnipresent. Moreover, their pervasiveness has found its way into educational institutions at all academic levels. Digital technologies have altered how knowledge is generated, transmitted, acquired, and evaluated, including the knowledge associated with professional domains (Alexander, 2018c; Ferguson, Bråten, & Strømsø, 2012). Likewise, this pervasiveness of digital technologies has dramatically affected the valuing of knowledge, which is a centerpiece of the MDL and key to problem identification and strategic processing (Alexander, 2018b; Rapp, Donovan, & Salovich, 2020). Finally, this global change has created new professional domains, while rendering others less relevant, and has allowed for a less mediated path for communicating new knowledge and insights to a wider and more diverse audience (Frey & Osborne, 2017). Let me briefly expand on these transformations and their implications for reframing expertise.

Learners and Learning

As an educational psychologist, I am especially concerned with how the changing “connected” landscape affects how students learn, how instructors teach, and what school leaders and policymakers value as foundational knowledge and skills. Although the internet has been around for generations, it is only recently that research on the effects of technology has come to the forefront (Anderson & Jiang, 2018; Rosen, 2012). Previously, researchers had focused on how to guarantee that students from all socioeconomic strata had access to the technology they would require for success; how to infuse technology into classrooms and into instructional and assessment routines; and, how to ensure that students were digitally literate (Greene, Seung, & Copeland, 2014; Warschauer, 2003). The few naysayers who dared to wave red flags, like Larry Cuban (1986, 2018) and Neil Postman (1992), were treated as alarmists or luddites. However, the tide has turned—at least to some extent. A burgeoning body of researchers has begun to ask the tough questions about technological effects on learners and learning, such as: What are the long-term effects of children’s and youths’ dependence on their digital devices? How is social media impacting reasoning and decision making? And what can be done to prevent the weaponization of misinformation? (Sinatra & Lombardi, 2020; Singer & Alexander, 2017a)

What this expanding literature has revealed is that digital technologies have significant implications for expertise development. These implications include students’ waning attention and declining self-regulatory abilities, which are requisite for acquiring essential content and for using it appropriately (Richtel, 2010). In

addition, researchers have reported that a quarter of 18- to 29-year-olds are almost constantly online (Anderson & Rainie, 2018) and are often spending their time passively in ways that do not promote deeper learning (Rideout, Foehr, & Roberts, 2010). It is worth noting that these papers and reports predated the year-long pandemic, which sparked forced quarantines and online learning. Conceivably, the picture of technology use and learning has only darkened.

Further, there is an increasing tendency for those who have grown up in this digitally-obsessed world—the iGeneration (Twenge, 2017)—to mistakenly assume that they do not need to build a knowledge base, as they can easily and almost instantaneously find everything online. Yet, the ability to navigate the flood of online data to find accurate information is tied directly to individuals' existing knowledge and their skills at distinguishing credible information from misleading content (Alexander, 2018a; Sinatra & Lombardi, 2020). There is also ample evidence that many individuals lack the ability to accurately judge their understanding or the quality and accuracy of their performance (i.e., calibration), especially when working in online environments (Singer & Alexander, 2017b). Yet the concerns are not solely cognitive. Researchers have reported an increased sense of isolation among the iGeneration; a rise in reported cases of depression and even suicide; a decline in basic human interaction skills; and struggle to carry on face-to-face conversations (Rosen, Whaling, Rab, Carrier, & Cheever, 2013; Twenge, 2017). Again, these are now likely conservative estimates, given the potential effects of forced isolation during the COVID-19 pandemic (Pfefferbaum & North, 2020).

What lines can one draw between these shifting characteristics of learners and the learning process and the MDL? For one thing, many within the iGeneration have an overly simplistic view of knowledge. They believe that knowledge entails simple answers they can quickly and rather effortlessly find online (e.g., “Hey Siri”). They do not necessarily regard knowledge as a valued commodity to be actively pursued. That bodes poorly for these individuals' ability to acquire the extensive and principled knowledge essential for professional development (Grossnickle et al., 2015). Relatedly, the ease of locating information with little mental effort and without critical analysis of its legitimacy or validity works against the development of deeper-processing strategies (List, Grossnickle, & Alexander, 2016). Unless learners put themselves in positions to struggle cognitively with an issue, and unless they have occasions to transform or reframe problems, their likelihood of progressing into competence in any profession is jeopardized. Finally, as I noted, there is an intricate and reciprocal relation between knowledge and individual interest (Alexander, Jetton, & Kulikowich, 1995; Hidi & Renninger, 2006). In essence, the more learners forge principled knowledge in a professional domain, the greater their reported interest in and identity with that field. Therefore, without the active pursuit of knowledge, these individuals' interest in professional development may wane and their progress toward expertise may stall.

The Nature of Professions

I grant that the picture I have painted seems cheerless and decidedly one-sided. I acknowledge that there are untold advantages accrued from living, learning, and working within today's technology-rich, interconnected world. Yet, my task in this chapter was to consider the implications of current and future conditions for those who may set out to become proficient in professional domains. Toward that end, there is one more formidable trend that must be examined—the automation occurring within professions. Interestingly, those in AI who played a significant role in sparking contemporary interest in expertise have assumed a rather paradoxical position in recent years. Specifically, AI researchers who started out studying the performance of experts in order to program intelligent machines that could approximate human thinking are now striving to build machines that can surpass human performance. This goal reversal was epitomized by the historic chess matches between Deep Blue, the IBM computer, and Garry Kasparov, the world chess champion, in the late 1990s. It was unthinkable that the #1 chess champion in the world would lose to a computer, which is precisely what happened in their second match in 1997. Today, such outcomes for man-versus-machine match-ups would surprise few. That is due to the continued investment in building smarter machines capable of undertaking increasingly more complex, more sophisticated tasks and of performing those tasks faster and more efficiently than humans.

In what way does this push for smarter machines impact the development of expertise? What does the rise of more intelligence machines have to do with the nature and pursuit of proficiency or expertise? To capture that potential influence, there is one more thread that needs to be unraveled—the movement toward more automated jobs (e.g., Lake, Ullman, Tenenbaum, & Gershman, 2017). For example, AI economists Huang and Rust (2018) recently argued that there are four levels of “intelligence” into which jobs and professions can be placed: mechanical (precise, routine, little adaptation required); analytical (algorithmic or rule-based processing, minimal learning involved); intuitive (holistic or integrated thinking necessary); and empathetic (social and emotional awareness and responsiveness critical). Based on their extensive analysis of labor markets, Huang and Rust contended that intelligent machines already have the capacity to perform service jobs that are mechanical in nature as efficiently, effectively, and perhaps even better than humans (call center agents, self-driving vehicles, food ordering/delivery). They also stated that this automation is expanding into more analytical or rule-based jobs, such as those required to diagnosis a car problem or prepare tax forms. Even more prophetically, these AI researchers posited that in the not-too-distant future, machines would render many human workers obsolete in all four areas of intelligence.

Even though I personally find efforts to supplant human workers with smart machines seriously troubling, the deeper concern for the future of expertise development in the professions arises when those efforts come face-to-face with the less desirable habits that today's learners are forming, such as their non-smart use of smart technologies, that make them more vulnerable for replacement. Of course, those in certain professions may find themselves more at risk than others. But the

big question is: which professions? Which current professions will survive in generations to come, what new fields will emerge, and which ones will go the way of switchboard operators, milkmen, elevator attendants, or video store clerks? What professions will continue to rely principally on human rather than artificial experts? Or will expertise in complex domains require some purposeful union of human and machine intelligences, as Huang and Rust (2018) concluded?

Although these critical questions remain to be answered, the claims that AI researchers are making about the expanding presence of intelligent machines into the world of professional domains and the decreasing need for certain forms of human intelligence are more likely to become a reality if today's students continue to forego their active pursuit of expertise. On the other hand, if members of the iGeneration:

- refuse to be lulled into accepting a role as passive consumers of information, striving instead to be active producers of knowledge;
- probe and critically analyze information they encounter online and offline, rather than accepting quick, simple answers;
- forge a meaningful interest in professions and personal connections to members of professional communities, instead of relying on moment-by-moment stimulation and superficial relationships;

then these individuals are more likely to make significant progress toward expertise, and to experience greater pleasure and enjoyment in the journey as well. That is a future those invested in the study of expertise and expertise development envision for all who set out in pursuit of proficiency in professional domains. Further, it is a worthy end for all those with the mind, heart, and spirit to undertake this journey toward expertise in any professional domain.

Appendix: Glossary of Key Terms

Term	Definition	Illustrative example
Acclimation	Acclimation is the initial stage in the Model of Domain Learning. During this period of expertise development, individuals become oriented to a field of study and what that field may involve.	The first grader who is introduced to a range of school subjects, from reading to mathematics and science, begins to form a very primitive idea of what these subjects represent and whether she enjoys one or another.
Cognition	Cognition is a term for all the mental processes in which the mind engages, including perception, thinking, comprehending, remembering, reasoning, and decision-making.	As you are reading this definition, you are engaged in cognitive activities such as pronouncing the words, encoding their individual and collective meanings, and perhaps relating what you comprehended to the subject of expertise.

(continued)

Term	Definition	Illustrative example
Competence	The middle stage in the Model of Domain Learning, competence is the period in expertise development when individuals have acquired an adequate base of knowledge, a workable inventory of strategies, and at least a passing interest in a particular profession.	By the time Markus graduated from secondary school, he was quite skilled in mathematics—particularly calculus—and found physics well suited to his interests and abilities. He had decided to pursue a master’s degree in physics, for which calculus is vital. These characteristics would place him at mid-competence in the Model of Domain Learning.
Competencies	Within the expertise literature, one can understand competencies as particular skills or capabilities that individuals can demonstrate. Professions typically require their members to possess the competencies deemed foundational to successful performance.	Before Julianne can practice law, she must pass the bar exam. The bar exam is an assessment meant to determine if Julianne has acquired the competencies needed to perform adequately as a contracts lawyer. These basic competencies include functional knowledge of the precedents and principles key to contract law.
Conditional Knowledge	For individuals to draw on their knowledge successfully, they must be aware of when and where that knowledge is best used. This is the conditional form of knowledge.	Mechanical engineers trying to fix a flaw in the city’s streetlights must determine which of the possible design procedures would work best for this setting.
Declarative Knowledge	Declarative knowledge is that portion of one’s knowledge base that deals with particular details, facts, or state-able content; the “whats” of knowledge.	When a geologist explains the different forms of soil deposits in a region and the natural forces that result in such social deposits, she is sharing declarative knowledge.
Deep-Processing Strategies	When the strategies that individuals implement to aid their learning involve the manipulation, transformation, reframing, or reformulation of the given problem or task, one describes these as deep-processing strategies.	A sixth grader working on math word problems finds the wording of a problem confusing. She decides to recast the problem as a mathematical formula. This ensured that she was focusing on the deep structure of the problem and not the confusing words.
Domain Knowledge	The scope of individuals’ knowledge that is related to a particular field of study or a specific profession is called domain knowledge.	As a professor of European History with identified expertise in the Renaissance Period, Dr. Kuhn has a wealth of knowledge about key persons, events, as well as monarchical and religious institutions of this era. He also has extensive knowledge of the conflicts, political alliances, art, music, and traditions across Europe that defined this period.

(continued)

Term	Definition	Illustrative example
Epistemology	Epistemology is the branch of philosophy that deals with knowledge and what it means to know.	To philosophers, knowledge represents “justified true beliefs,” which means that there is sufficient evidence or reason to hold that something is, in fact, true.
Expertise	Expertise refers to the specialized and extensive knowledge and associated competencies or skills that those who are experts in a profession are presumed to have acquired.	In the field of theoretical physics, expertise not only entails the scientific and mathematical knowledge and competencies held by experts in physics, but also requires an ability to devise alternative theoretical notions or envision plausible explanations for phenomena never directly tested.
Expertise Development	Expertise development describes the process of change individuals undergo as they gain knowledge and competencies in a specific domain or field of study.	Jackson was always good at science and decided to major in genetics in college. He went on to earn his master’s and then doctorate in molecular biology. He now holds the position of leading research scientist for a national institute of health. These events describe the course of his expertise development.
Experts	Experts are those select few within any profession who are widely recognized for their wealth of knowledge and consistently exceptional problem-solving abilities, as well as for their creative insights and innovations that advance the field.	K. Anders Ericsson has been acknowledged as an expert in psychology for his groundbreaking theories and research on expertise. He set forth the notion that 10,000 h of deliberate practice are required to achieve expertise in any domain or profession.
Individual Interest	There are those ideas, topics, or experiences that are consistently and deeply intriguing to people and with which they self-identify. These are called individual interests. These individual interests are evident in the activities in which people voluntarily engage and the professions they choose to pursue.	Even as a young child, Adolph was fascinated by how things worked. His parents remarked how he would dismantle every toy he was given. Over the years, Adolph’s fascination became centered on mechanical engineering and the ability to build things that operated effectively on both a large (turbines) and small scale (solar powered toys).
Interest	Interest is a motivation construct that encompasses the attraction, allure, fascination, or value an object, idea, or event holds for a person, whether that sensation is momentary or persistent.	Researchers have demonstrated that humans are predictably draw to surprising, scary, or shocking events, and any references to sex, death, and money. These are described as universally “interesting” stimuli.

(continued)

Term	Definition	Illustrative example
Knowledge	When data encountered in the external world is internalized and personalized, becoming part of a person's mental store of information, it is called knowledge.	Referred to as "prior knowledge," when people recall, remember, or reflect they are using their store of knowledge, which colors or shapes what they will subsequently learn.
Principled Knowledge	There are several key concepts or principles that are central to every domain or profession and to which many other concepts, processes, or competencies pertinent to that field are related. When individuals integrate their professional knowledge around these key concepts or principles, they are said to have principled knowledge.	Within biology, two core principles that must be understood are that (a) all living organisms are composed of cells; and (b) the genetic code that determines the nature of that living organism is carried within those cells. A multitude of information learned in biology is tied to these two principles. Those individuals with principled biology knowledge recognize how so much information in their field clusters around these and other core ideas.
Procedural Knowledge	Some knowledge takes the form of processes or an executable sequence of steps; this "how to" knowledge is procedural.	When cognitive scientists conduct experiments, they adhere to the scientific method. Knowing how to carry out this method successfully represents procedural knowledge.
Professions	Professions are particular occupations that require years of preparation in order to acquire the specialized body of <i>knowledge</i> and performance <i>competencies</i> that have been established as essential to successful practice. Evidence of the attainment of the core knowledge and competences is often required.	Medicine and law as professions required individuals to be accepted into professional programs where they spend years acquiring the mandatory knowledge and competencies. Before individuals are permitted to practice, they must also pass exams that result in licensure.
Proficiency	Proficiency or expertise is the final stage in the Model of Domain Learning. It is at this stage that an individual manifests the characteristics of an expert: extensive domain and topic knowledge; heavy reliance on deep-processing strategies; an enduring interest in the profession; strong identity as a member of that professional community; and the contribution of new knowledge to the field.	After having devoted more than 20 years to the study of writing, Dr. Graham is widely recognized as a leading authority in this field. He has dedicated his research to devising specific techniques or strategies that can be taught to novice writers to significantly improve their writing ability.

(continued)

Term	Definition	Illustrative example
Self-Knowledge	Self-knowledge can be described as persons' awareness of themselves as cognitive, social, emotional, and behavioral beings. As such, self-knowledge can relate to individuals' beliefs, values, and motives; their preferences and interests; and their judgments about their knowledge and competencies in specific domains and professions.	When asked to judge where they are in the journey toward expertise in the majors, undergraduates will justify their position in the Model of Domain Learning by sharing self-knowledge. They will discuss how much domain and topic knowledge they have in their major, how interested and committed to that major they are, and in what way they operate strategically when working on problems in their majors. All these descriptions rely on their self-knowledge.
Situational Interest	Whenever there is something within the immediate environment that draws an individual's attention or that they find fascinating, intriguing, salacious, or confounding, they are manifesting situational interest.	Traffic will always back up when there is an accident on the highway. People just have to look. Also, when reading a history text that mentions Horatio Nelson's affairs, individuals recall such a seductive detail without trying. These are cases of situational interest.
Strategies	Strategies are a special class of procedural knowledge that individuals purposefully or intentionally use when encountering problems that require solution or resolution.	While writing code for a new app she was designing, Sofie kept encountering an error. She therefore decided to try an alternative approach. She broke the task into three subcomponents and then wrote the codes for these separately. Finally, she created codes to link the subroutine.
Surface-Level Strategies	When trying to deal with a problem or task at hand, individuals may need to focus their cognitive energies on specific elements or features of the problem or task that are available. The procedures or actions they take represent surface-level strategies.	When a graduate student in psychology is first exposed to structural equation modeling, she may need to read and re-read the steps in the manual just to be sure that she understands what she is supposed to do to set up her data to run SEM correctly.
Topic Knowledge	Some of the knowledge that individuals possess in a domain or a profession is very concentrated on certain topics rather than widely distributed across the field. This more focused information is labeled topic knowledge	Jess is a computer scientist who has been fascinated by volcanoes since he was young. He still reads whatever he finds on the subject and has visited several active volcano sites in Europe and New Zealand. Such experiences have increased his topic knowledge of volcanoes.

Note. Source: Design by author

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Chapter 5

What Does It Take to Be a Professional Translator? Identity as a Resource



Rakefet Sela-Sheffy

From a culture-analysis perspective, occupations—the activities people perform regularly to secure their livelihoods—are important spheres of cultural production and identity construction. We tend to “take as axiomatic that work is a natural locale for the study of identity since we spend so much of our adult life at it” (Van Maanen, 2010, p. 111), and because individuals often define themselves (and are defined by others) by “what they do” (Lepisto, Crosina, & Pratt, 2015, p. 23). This cultural insight sparks a vital question: How does a *profession*, as a structure, correspond with workers’ perception of work and their dispositions to action? That is, how does it shape and reflect practitioners’ view of their required competencies? Researchers of professions and organizations have long expressed interest in professional identities, calling attention to workers’ agency in constructing, transforming, and adjusting their occupations (Alvesson, Ashcraft, & Thomas, 2008; Dent & Whitehead, 2002; Ibarra, 1999; Lepisto et al., 2015; Pratt, Rockmann, & Kaufmann, 2006; among others). Without disputing the sociological view of professions as mechanisms of institutional control and legitimacy (Abbott, 1988; Friedson, 2001), those adopting this perspective move away from a structural model of professionalization, anchored in formal traits, to explore workers’ meaning making, by which they tacitly construct their requirements and value-scales as professionals (Lively, 2001; Van Maanen & Barley, 1984). This obviously bears on understanding *professionalism*. Rather than defining it through standardized and systematically acquired knowledge and skills, professionalism is taken here as socially learned competencies, embodied in individuals’ performances and contingent on their self-perceptions as members of occupational communities (Ashcraft, 2013; Lively, 2001).

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Researching professional identity thus offers an important lens to the current problematization of professions (e.g., Kirkpatrick, Muzio, & Ackroyd, 2011; Muzio, Hodgson, Faulconbridge, Beaverstock, & Hall, 2011; Noordegraaf, 2007), especially regarding the diverse occupations that proliferate despite lacking firm professionalization. These two research agendas have thus far developed in parallel without much intersection; I hereby propose integrating them in my analysis of translation as a fluid occupational domain (Sela-Sheffy, 2014). Although scholars of professions have, strangely enough, hardly touched on the subject of translators, I find them a quintessential case for rethinking professions and professionalism, and the limitations of professionalization. In the absence of objective reasons why full professionalization should be suspended in the domain of translation, the role of professional identities surfaces. In this and similar domains, I contend, a prevailing effect of *counter-professionalization* is a strategy of producing professionalism—contingent on practitioners’ discursive-identity production thereof (Sela-Sheffy, 2022).

Using evidence from my ongoing research on translators in Israel, I below present my view on professional identity as a pivotal force in the construction of professions. I focus my analysis around two intertwined questions: (1) What competencies must translators hold to be recognized as *professional*, and how are these determined? (2) How do these competencies—translators’ implied idea of professionalism—correspond with the status structure of their occupation? I proceed by briefly introducing relevant premises of the two hitherto disconnected conceptual frameworks—the symbolic approach to professions, and professional identity research—and then introduce my analysis with illustrations from the field of translators.

Professional Identity and the Construction of Professionalism

Professionalism as Symbolic Capital

Scholars largely agree that professions are about status and power, yet differ in conceiving of where professional status lies. In the classical sociological view becoming a profession entails formalizing and standardizing knowledge and skills, and establishing means of control of their acquisition and implementation, to secure legitimacy and autonomy (Abbott, 1988; Friedson, 2001). In this view, professionalism lies in measurable proficiencies and ethics, determined by formal “traits” (e.g., education, certification, ranks; Ackroyd, 2016). Developing a strong bureaucratized professionalization apparatus is, in this model, what marks out a profession from other occupations, granting them status as modern elites (Sciulli, 2007).

The distinction effect of professionalization is conspicuous, not only in drawing boundaries between high and low-ranked occupations, but also in creating inner hierarchies between workers’ competencies in every occupational domain, in that formally qualified experts are being privileged over untrained workers, or amateurs. Symbolically, the deeper logic behind this mechanism is getting as remote as possible from an “anyone can do it” practice (Sela-Sheffy, 2022). This symbolic aspect

is vital: As self-evident as it may seem, it does not always stand at the focus of research on professions. Given the prevalent view that formal traits are what define a profession, the fact is often concealed that beyond their rational function, these traits serve primarily as symbolic distinction markers. From a cultural perspective, this means that professions' power lies not in these traits as such, but in the values workers assign them by striving for professional recognition and authority.

This understanding of professions is growingly endorsed by current approaches, applied mainly by studies of less-established or hybrid domains such as management (Fournier, 1999; Muzio et al., 2011; Noordegraaf, 2007), journalism (Aldridge & Evetts, 2003; Elsaka, 2005), librarianship (Garcia & Barbour, 2018), or data science (Avnoon, 2021), to mention but a few. In these occupational domains, multiple, even clashing, ideas of "being professional" are continuously contested. Embracing the symbolic-economy conceptualization of Pierre Bourdieu, Noordegraaf and Schinkel (2011), among others, have proposed that professionalism is a symbolic capital, constantly negotiated by workers, irreducible a-priori to any given institutional format. What may be called *pure professionalism* (Noordegraaf, 2007), produced by formal measures, is an ideal type, a canonical category, which is in itself normative. Accordingly, "the appeal to professionalism" (to cite Fournier, 1999; also Evetts, 2003) lies in its serving, to various degrees, as a reference point in workers' negotiation of symbolic capital, regardless of how strictly this apparatus operates in practice.

This view problematizes the understanding of occupations, which otherwise may be viewed as cases of "incomplete" or "failed" professionalization (Denzin & Mettlin, 1968; Elsaka, 2005). In reality, the strictly defined professionalization apparatus is limited to some paradigmatic professions, notably medicine, law, or engineering. And even there, as has been often pointed out, practice is not always consistent with formal rules and knowledge is often indeterminate (Atkinson, Reid, & Sheldrake, 1977), or crosses disciplinary boundaries, transformed and recreated (Punstein & Glückler, 2020). With standards and boundaries frequently fuzzier than assumed, tensions are at play in these domains between established highly-codified methods and marginal ones—whether those of rising new trends or of traditional dated ones (with the latter often revived as new occupational trends). Such is, for instance, the tension between biomedical and alternative therapy (e.g., Barnes, 2003), medical and traditional midwifery (e.g., Foley, 2005), or between engineers and industrial designers (Punstein & Glückler, 2020), and examples are ample. In all these cases, different types of professionalism, as an ethos invested in workers' action, are resources at stake in their ongoing status contests.

In emerging or "hybrid" occupations (Aldridge & Evetts, 2003; Colley & Guéry, 2015; Hammond & Czyszczon, 2014; Noordegraaf, 2007), one may conceive this situation as a transitory, embryonic phase in the evolution of a "full-fledged" profession. Yet often, such ongoing negotiations and unresolved ambiguity are necessary for maintaining professional capital (e.g., Garcia & Barbour, 2018; Lively, 2001; among others). In other words, in many occupational settings, including traditional longstanding ones (such as translation), professionalization is persistently suspended, with a blurred distinction between *professionals* and *occasional workers* always at stake (Banfield, 2017; Nicey, 2016; Stebbins, 1992). According to the

classical view, these are all symptoms of de-professionalization, as it were, conceived as detrimental. From a culture-analysis perspective, it is precisely such cases that are most revealing of the symbolic logic of professionalism.

Identity as a Resource: Workers' Construction of Professionalism

In the latter cases, with formal measures absent, professionalism is entirely embedded in actors' self-perception and their intuitive ways of feeling and acting. Constructing a professional identity is crucial for gaining credit as a professional (Van Maanen, 2010; Webb, 2016). In the symbolic-interactionist tradition, following Erving Goffman (1959), actors are constantly engaged in constructing identity, oriented towards maintaining status. In this view, workers interactively perform and modify professional personas to demonstrate their aptness for the job in terms of desired competencies and ethics. The growing research on professional identity examines how practitioners ascribe meaning and value to personal dispositions and abilities, to construct their professionalism oriented toward images of "a good worker"—or what Ashcraft (2013) calls a "figurative practitioner." The focus here is on actors' *identity work*, understood as the "individual projecting a particular image and . . . others mirroring back and reinforcing (or not) that image as a legitimate identity" (DeRue & Ashford, 2010, p. 630; cf. Sveningsson & Alvesson, 2003). Researchers perceive this dynamic in itself as vital for forming a profession (Brown & Coupland, 2015; Dent & Whitehead, 2002; Ibarra, 1999; Kyratsis, Atun, Phillips, Tracey, & George, 2017; Pratt et al., 2006).

Although identity negotiation is crucial in all professional settings, in under-established occupations it emerges as the ultimate way to gain professional capital (cf. Avnoon & Sela-Sheffy, 2021). This view accords with Bourdieu's (1983, 1996) analysis of the intellectual and creative industries and their *artization* status processes, serving as paradigmatic cases of non-professionalized spheres. There, as Bourdieu suggested, relying on symbolic attributes alone (giftedness, personal virtues)—countering professionalization—provides the rationale for what otherwise appears as amorphous (e.g., unregulated education and career trajectories, worker-employer rapport, or conditions and pay), often serving as a moral justification for lack of diplomas and ranks and economic insecurity (what Bourdieu called the ethos of "disinterestedness"). The same logic, I contend, applies in other under-professionalized professions, such as translation.

The Profession of Translation

Translators provide a quintessential example because of their enduring ambiguous status as a profession. Although translation and interpreting (both written and oral) have been in high demand throughout history for their indispensable intercultural

mediation functions (Delisle & Woodsworth, 1995), they are still permanently under-professionalized. This holds even for the more prosperous translation markets today (e.g., the Danish market; Dam & Zethsen, 2010, 2011, and more). True, academization of translation has intensified in recent decades (Dybiec-Gajer, 2014; Furmanek, 2013), which is a typical sign of professionalization. Ever since the 1970s, theories of translation have proliferated and translation studies is gaining momentum worldwide. Yet, this progress in academia is often much ahead of the reality in the translation markets (Dybiec-Gajer, 2014; Furmanek, 2013; King, 2017; Pym, Grin, Sfreddo, & Chan, 2012). Graduates of translation programs do not necessarily expect a career in translation, and praxis is still largely impacted by chance and opportunity. Theoretical learning is not obligatory for practice, which usually requires neither training nor a diploma, and regulation is almost as good as non-existent. Scholars are increasingly concerned with constructing a pedagogy of translation teaching (in Western as well as in recently modernizing cultural settings; e.g., Abu-ghararah, 2017; Mizab & Bahloul, 2016). They all admit, however, that the market is flooded by “unqualified workers,” who mostly work as freelancers, often part-time or a second job after retirement, with neither formal trajectories and ranks nor explicit standards of work and pay. Although recent attempts to professionalize receive increasing scholarly attention, their overall impact is still scant.

Apart from certain specialist niches (notably, sworn translation; Pym et al., 2012; or, to a lesser degree, conference interpreting; Duflou, 2016), the status of translation thus resembles that of freelancers, or service and care jobs, where professional competencies are negotiated within loose professional logics (Fournier, 1999; Lively, 2001). These competencies are mostly, sometimes only, socially acquired (Lave & Wenger, 1991; also Billett, Harteis, & Gruber, 2018; Punstein & Glückler, 2020), supervised through informal social control (Van Maanen, 2010). Hence, workers’ competencies and idea of best practice in these domains remain largely tacit, uncodified dispositions to action that pertain to one’s habitus (Stephens & Delamont, 2009; cf. Sela-Sheffy, 2014), contingent only on social belonging and a sense of being “one of us” (Bayerl, Horton, & Jacobs, 2018). Despite complaints and criticism by both practitioners and scholars of translation, this situation has not yet changed dramatically.

The discrepancy between the demand on translation practices in the culture-production and service industries as well as in commerce, on the one hand, and their under-professionalization, on the other, requires special attention. Obviously, whether or not professionalization occurs depends on market incentives and governmental interests. Yet, as the history of modern professions shows, the major impetus toward self-control comes from workers’ collective efforts to capitalize on their specific competencies (e.g., Brain, 1991). This process often entails the creation of worker associations and other autonomous channels, striving for legal recognition and monopoly. This logic does not apply to the greater part of translation workers. Translators’ associations and journals, which have recently been multiplying in Europe, mostly still operate as social clubs, dealing with such loose notions as translators’ *professional development*, more than as efficient bodies fighting for union-type empowering tools, such as work conditions and fees (Pym, 2014). It is not that state policies always discourage such translators’ initiatives, if taken. In fact, in

some cases in which translators seriously struggle towards these goals they achieve progress (Furmanek, 2013; Pym et al., 2012). Nor are objective status threats (such as manual labor or an uneducated workforce) in play that could impede professionalization efforts. Therefore, the reason for translators' suspended professionalization must lie elsewhere. In line with Ashcraft (2013), Van Maanen (2010), and many others, I contend that, as observable in the translators' case, an occupation's status depends less on institutional regulation than on the professional *ethos* embedded in workers' identity, which may accelerate or impede professionalization.

Materials and Study Design: An Example from the Israeli Case

I base my analysis of this field on a comprehensive study I conducted in Israel. Given this country's bi-national and multilingual sociocultural space, and its high dependency on global exchange, the Israeli translation occupations' situation is revealing. With my study, I have aimed to reframe the question of translators' professionalism, and their under-professionalization, from the perspective of the actors, by obtaining a closer look at their self-perception as practitioners. I ask how they understand their expertise, and what they consider to be the characteristic that makes her or him a worthy worker. I have confined my research to practitioners engaged in translating into Hebrew, namely, those targeting the local culture, leaving aside the domestic market of translation into and between other languages (notably Arabic or Russian) as well as translation activities targeted at international markets. As translation is not even registered as a profession in Israel, nor is it regulated by effective professional bodies, official data is scarce. Information can only be partially extrapolated from various popular channels (e.g., Heruti-Sover, 2008; Kaufman, 2011; Malach, 2019; Shwimmer, 2014; Translation fees: What is a translator's salary in Israel?, n.d.; among others). Kaufman (2011), for instance, claims that some three thousand translators have operated in this country in the last decade. Yet this is obviously an underestimation of the total number of people engaged one way or another in translation practices, in various official and unofficial capacities.

Although the largest and most unspecialized sector is that of translators of business and technical documents, it is the smallest sector of literary translation that enjoys by far the highest public exposure (via printing their names on the books' front page, or using them to promote new publications, or via reports and interviews in magazines and the media). Therefore, information available about this specific sector is disproportionately greater than that regarding all other translation sectors. Aiming to capture as broader a picture as possible of this diversified occupational field, I have used evidence from various written and internet sources, as well as a corpus of 95 in-depth long interviews with rank-and-file translators and interpreters. The latter was compiled in a joint project I conducted 2006–2009 with my late colleague Miriam Shlesinger.

This project targeted five main translatorial sectors (with 15–20 interviews in each): commercial/technical text translation (including legal, medical, etc.), non-elite literary translation, film and TV subtitling (a thriving industry in Israel, as in other “minor cultures”), conference interpreting, and community interpreting (including courts and sign language). These categories comprise the main forms of translation practice, but they do not represent clear groupings of practitioners. Apart from the fact that the written translation market is far larger and more diverse than that of oral interpreting, the boundaries between the different sectors are often blurred, as many individual workers are engaged in more than one job type (in our sample, this applies to 41 out of 95 interviewees). For lack of data, we recruited our interviewees through miscellaneous methods, from consulting translation agencies or corporations employing translators to private ads and word-of-mouth inquiries. Although we took parameters such as gender, source languages, or nature of employment (self-employed vs. salaried) into account, our only firm guideline for recruiting interviewees was that the workers possessed at least several years of uninterrupted, full-time practicing experience.

In the tradition of situated conversation analysis (Cameron, 2001; Gee, 1999; Gumperz, 1992; De Fina, Schiffrin, & Bamberg, 2006) interviews are regarded as socially embedded speech events, in which speakers present themselves to others. To allow the workers to best reveal their self-perception through their own words and contextualization logic, we used open-ended and long interviews (90–120 min each), encouraging individuals’ narratives with minimal leading questions (Labov, 1973; Rapley, 2001). We fully recorded and meticulously transcribed the results, paying special attention to the para-lingual cues that are critical for a discourse analysis aimed at identifying the speakers’ unspoken convictions, concerns, and aspirations as *translators* (Gee, 1999; Gumperz, 1992; Rapley, 2001). Three research assistants conducted the interviews. Preliminary analysis was conducted by myself with the help of two research assistants. Utilizing a grounded-theory approach (Corbin & Strauss, 1998), we first analyzed each interview (by two research team members separately) and coded the material for social background, career trajectories, job preferences, and so forth. We then compared the different categories across all the interviews to tap different and similar narrative forms, attitudes to work, etc., thereby uncovering options of a *figurative practitioner* (Ashcraft, 2013).

Translators’ Professional Identity: Constructing a Sense of Professionalism

Consider, for instance, the following citation from a translator’s account of her work experience¹:

¹Ellipses and underlines in the quotations stand either for hesitation or for omissions, pointing at unspoken sensitive information.

There is some plastic factory [where] the girl (chuckling) who makes the orders speaks Russian, she is a secretary there, and usually, she tells me that, . . . she does the translations, just, *ordinarily*. [But sometimes] she's just 'overloaded with work' (mimic tone), so *I* do it. But it's ok, I don't mind it so much (chuckling), they are nice. (Interview with Linda, a business & technical translator and a subtitler from English, and a simultaneous interpreter from Russian)²

The embarrassment expressed in this elliptically narrated story is characteristic. In this and many similar stories, translators betray that they are chronically under threat of being seen as unqualified workers with unspecified competencies, engaged in an “anyone can do it” work. They express themselves aware of an implied competition with ad hoc *natural translators* (Harris, 1978; Toury, 2012), who perform translation sporadically in everyday circumstances, with neither training nor the ambition to pursue a career in it. Such natural translators are countless and often impossible to trace. They may be secretaries in commercial firms (as in the story cited above), students or other anonymous volunteers doing occasional media translation (e.g., Brand, 2009; Pym, Orrego-Carmona, & Torres-Simón, 2016), or members of underprivileged groups who find themselves interpreting out of necessity or goodwill for relatives in encounters with officials (e.g., in health clinics, banks, welfare services, etc.; Angelelli, 2010). All these people have the “basic ability to translate,” which amounts, according to Harris, to the “innate verbal skill” of bilingualism “within the limits of their mastery of the two languages” (Harris & Sherwood, 1978, p. 1). In contrast to occasional translators, those who do it as a career must prove their advantage and establish their professionalism to distinguish themselves from the latter.

Various researchers have recently attempted to systematically describe the *specialized translation* occupation (Gouadec, 2007; also, Drugan, 2013; Tyulenev, 2015), seeking to identify the qualifications by which a bilingual person becomes a professional translator (Toury, 2012). However, theoretical endeavors (e.g., Cao, 1996; Sakwe, 2015; Snell-Hornby, 2002; Whyatt, 2012) fail to define specific requirements beyond the level of linguistic proficiencies—which all language jobs more or less share (Sela-Sheffy, 2022). As Toury has suggested, it is eventually through a social feedback process that a person gains recognition and self-assurance as a translator. In line with Toury, and contrary to the other scholarly efforts, I argue based on my findings that practicing translators feel they must prove their professionalism not through formal knowledge and skills, but through personal abilities and dispositions. This kind of knowhow goes beyond definable proficiencies, and consists of an envisioned persona—a figurative practitioner—that determines a legitimate translator's reputation. In short, in translation, identity emerges as a powerful status resource, surpassing professionalization traits.

Moreover, by focusing attention to professional identity, my findings show that translators create their professionalism by allocating the highest value to the image of the natural translator. Precisely because it is de-formalized and ambiguous, rather than contesting this image, those who aspire to be recognized as professional

²All names are pseudonyms. All translations from the Hebrew are mine.

translators are able to transform its meaning and strive to capitalize on it as their prime symbolic resource.

An Exclusive Professional Identity: Translating as a Natural Ability: Or the Artization of Translation

Contrarily to occupational domains where an expert elite leads the charge in pursuing professionalization, in translation it is an elite group that rejects professionalization. Highbrow literary translator propagate a translator “by nature” rather than by formal qualifications as the ideal figurative practitioner. This fact surfaces in publications about translators that have appeared in Israeli literary and cultural magazines throughout recent decades. Surveying these materials, one gleans that dozens of famous literary translators demonstrate a strong sense of personal agency as individuals, sharing and propagating their vision of translators’ professionalism (Sela-Sheffy, 2010; cf. e.g., Allen & Bernofsky, 2013)—a vision that entails a natural predisposition to translating, regardless of formal professionalization markers. As I have elaborated on previously (Sela-Sheffy, 2010, and elsewhere), in doing so they play by what Bourdieu (1996) calls “the rules of art,” which consist of denying standardization and regulation. In their discourse, they thus reverse and elevate the notion of a natural translator. Instead of implying a lack of requirements and restrictions on practice, here this notion conveys the mystique of professionalism, which lies entirely in the person, as a higher threshold, giving scope for recognition only to those few endowed with certain undefined abilities and inclinations.

Using available discursive channels, acclaimed translators jointly construct a *counter-professionalization* ethos as their professional capital, describing doing translation as a natural disposition that has developed with their inner self: “I translate as I breathe. Naturally. I have been doing this since I was born,” says Nitsa Ben-Ari (in Katz, 2016), one of the most prolific senior figures in the contemporary literary translation scene, who translates from French, German, English, and Italian, working as an editor and a scholar of translation. Like many of her peers with similar reputations, she associates this natural disposition with two main elements in her self-presentation: a habitus-based multilingualism and love for languages, as a child of a multicultural family, and a profound literary sensitivity. Being so inherently disposed to translating, she explains, she experiences translation as a metaphysical process of self-transformation, in which she intimately connects with the original texts and their authors, to the point of completely merging into them:

Translating literature is the most relaxing and most exciting practice I know, as absurd as it may sound. It allows me to get into the minds of great writers, follow the course of their thoughts, browse through their associations, see through their eyes and live their lives as well. That way I can change identities and enjoy more lives. (ibid.)

Along the same line, translators describe themselves as performer artists who “embody the author by virtue of their authenticity” (Shira Hefer in Schwimmer, 2011).

In its extreme form, this self-perception includes the idea that a professional translator must be a natural virtuoso, endowed with giftedness and passion that can be neither taught nor analyzed (cf. Subotnik & Jarvin, 2005). The higher one's position as a literary translator, the more strongly one rejects standard training and praises an autodidactic self-refinement, where skills and methods are obscured by the notions of inspiration and creativity. This has been formulated most clearly by the late Nili Mirsky, crowned as Israel's queen translator ever since the 1980s, whose reputation of having perfected "a style of Hebrew translation" seems uncontested. Throughout her career, as a translator of German and Russian classics and an editor, she had propagated this view in numerous reports and interviews, asserting her mistrust in academic learning and her conviction that translation requires the personal abilities and mindset that render it a "mission impossible" for a layman (Sela-Sheffy, 2010). Translators of the younger generation have echoed this mantra, similarly feeling that a translator's competence lies in a mix of obscure exceptional sensibilities (linguistic, cultural, emotional), as expected from artists:

A good translation requires above all a sensitive ear to the language, its nuances, layers, registers, a lot of experience, cultural knowledge, curiosity, willingness to work hard and, yes, talent. And a lot of love, because translation is done with love, or not at all. (Merav Sachs-Portal in Shwimmer, 2011)

Pertaining to this idealized idea of a natural translator is the feeling of being predestined to this vocation and devotion to it from birth. Often, translators' narratives of becoming include an early-life revelation, in which inborn abilities magically find expression with such compelling effect that one "becomes addicted to it" (Mirsky in Melamed, 1989, p. 32).

All of the above go hand in hand with the ethics of "disinterestedness" (Bourdieu, 1983), typifying the idea of *art for art's sake*. Both senior and younger aspiring translators make a point of proclaiming that a good translator operates by no principle other than artistic judgment. The novices among them sometimes complain that they are unable to make a living by translating because of their strict artistic ethics (Shwimmer, 2014). Yet even the most celebrated ones, those well paid for their work, equally deny all forms of practical and economic considerations, declaring commitment to pure artistic guidelines. Let me cite, for instance, Rami Saari, a poet and a prominent figure in the contemporary Hebrew literary translation, who is admired for his translations from a range of languages, from imperial ones, such as Spanish, Portuguese, Greek, and Turkish, to these of smaller nations, such as Hungarian, Catalan, Finnish, Estonian, and Albanian:

I would not hesitate to say to a publisher, "Thanks very much, I do need money and want to work, but I will not translate this book, because I do not translate books that are not good in my opinion. Economic considerations are not my considerations". (Saari in Blass, 2012)

Finally, although they deny formal ranks and power positions, these translators' vocational ethos includes an assumed social responsibility, either as guardians of culture or as cultural brokers, or as both. In the former case, a good translator must have profound knowledge of the domestic language and culture, and commit to educating the readers about their own linguistic lore. The latter case requires

cosmopolitanism, assuming the task of “a cultural delegate” (Zevi Arad in Moznayim, 1983, p. 26) who salvages the domestic culture from provincialism. High-status translators often combine both of these public-intellectual responsibilities in their discourse, forming a declaredly elitist message. The late Aminadav Dyckmann, a praised translator of Greek and Latin classics as well as of French and Russian poetry, and a professor of translation, accentuated this highbrow dual position:

Translation is a mediation, and there is a dimension of responsibility for this mediation ... I am not prepared to measure culture by the degree of ignorance of its receivers ... Hebrew translation is an integral part of Hebrew literature. Without it, Hebrew literature would be a very strange creature. (Dyckmann in Hirshfeld, 2019)

This professional identity is distinctly constructed by a small group of acclaimed translators, most of whom are recognized actors in the literary field, where they act simultaneously in one or more additional capacities, as writers, critics, lecturers and editors, or academics. Holding strong positions in the literary industry, they also enjoy the visibility of intellectual personae in the public sphere at large. In this sense, they are part of what Bourdieu (1985) calls “the small-scale field of production,” where producers (the translators, in this case) and consecrating-agents (critics, academics, publishers, etc.) interact and jointly construct their symbolic capital, with their back to the public. Translators thereby gain both autonomy and closure. In relation to their clients, they disavow the role of service givers, demanding artistic license (in selecting the corpus to be translated and developing their own translation norms), and being in a position to negotiate their salaries and terms of work. Publicizing their professional identity, they also draw a line between themselves and the masses of rank-and-file translators, whom they deny the identity of “real translators.” With respect to the latter, they apply the popular connotation of natural translators in the negative sense, as unqualified workers, whose only skill is some knowledge of another language in addition to Hebrew (most commonly English). Using the logic that “it is very easy to translate from English and *anyone can do it*” (Merav Sachs-Portal in Shwimmer, 2011; emphasis added), they accuse the latter of undermining the status of the translation profession as a whole.

An exclusive, yet vague, self-image as natural professionals in the artistic sense is thus the only measure by which a distinction is drawn between elite translators and mere language conduits—anyone who can perform inter-lingual exchanges. In their case, I contend, counter-professionalization, which builds on natural competencies, outweighs formal professionalization as professional capital, precisely by blurring standards of knowledge and learning.

The Ambivalent Professional Identity of Rank-and-File Translators: Translators’ Unified Symbolic Market

Whereas a small group of highbrow translators promote the above-described artist-like professional identity, the majority of rank-and-file practitioners in the various translation sectors are less confident in their professional identity, showing

confusion about their proficiency (Fraser, 2000; among others). It is this confusion that scholars face while attempting to formalize “the translators’ profile” (Bajčić & Dobrić Basanež, 2016; Gouadec, 2007; Sakwe, 2015), usually concluding that translators’ proficiency is hard to define.

As specialization is not the name of the game for thousands of anonymous workers—apart from small niches such as conference, court and sign language interpreting, or localization—their competencies vary according to their different translatorial jobs. Moving between diverse media and formats (written translation, oral interpreting, or subtitling), subject to different market structures and worker-client rapports, they have no common platform for creating a distinct sense of vocation to claim occupational self-control. At the same time, despite differences in sector requirements, in reality workers do not tend to specialize in one job type, leaving no clear boundaries discernible between them as professional communities divided by knowledge and skills. When asked to reflect on their profession, practitioners express this ambiguity: They fail to specify their proficiency, betraying ambivalence about their professional status. Eventually, the only model of a respected proficient translator that surfaces from their talk as a reference point in presenting their multi-tasking professional self is the one propagated by highbrow literary translators.

Non-elite translators thereby affirm and reproduce the same figurative practitioner, or idealized translator, as their ultimate resource of professional capital. Yet non-elite translators are very mindful of the gap between this symbolic worker and the reality of their occupational life, applying various strategies of avowing and disavowing this professional identity. Their constant negotiating and readjusting of it, I contend, is what maintains the structure and hierarchy of this occupation, which otherwise appears as amorphous, and the position of highbrow literary translators at the top. Translators manifest this in various ways in accounts of their work.

Ambiguous Vocational Ethos

Even the most experienced and confident workers in the diverse translation sectors are usually careful not to sound too “artistic.” They, too, play with the idea that being a good translator requires natural giftedness and creativity, but they never go so far as to center their self-presentation on these attributes. When they reflect on their work, they do not hide their economic and pragmatic concerns and the constraints with which they must comply. Their narrative of becoming is typically demystified. They usually tell stories of chance and compromise, of “one thing led to another,” in which translating ranks as one of many opportunities that may fit their abilities (mainly linguistic) and education, among other considerations. Clara, a translator of business and technical documents from English and Russian, typically downplays her aspirations in narrating her successful professional trajectory:

I was a student of English, so there’s a huge demand at the university for translating articles and stuff like that. And then ... I mean, this is an area I really like, dealing with texts in general. Then I went to learn language editing. I can’t remember anything specific, I worked

at the same time as a hire for—how many years? almost three, in some research project of ... an American university, and they needed a contact person here [in Israel] with [command of] three languages. Uh... it was in fact not related to [my] field at all. It was public health ... so they needed someone who mastered these languages, and I was also fitting in other respects too. Uh and so, in fact, a big part of my job was transcribing interviews ... [Gradually] I started to introduce myself as [a translator]. I'd say that it's just in the last six months that I'm really starting to make a living [out of translating].

Nevertheless, as indecisive as their narratives appear, these translators do betray their tacit ideal of a professional self (Webb, 2016), hinting at what they feel are unique personal dispositions required for a professional. For instance, although many of them would expand on the pragmatic benefits of working at home (especially for the young mothers among them), they would at the same time highlight the symbolic benefits they expect from their loosely structured and multitasking working routine. These symbolic benefits usually include moral gratifications, such as personal advancement and individual freedom, which they often present as their prime justifications for becoming a translator. Emma, a translator of business and technical documents, a subtitler and a conference interpreter from English, idealizes her occupational life as fitting her personal sensitivities, as do many of her peers:

First of all, the benefits are that you gain immense knowledge. From my personal point of view, it's fantastic, it suits me terribly, because, like I said, ... I am less interested in getting into the depth of a very narrow field. I am more interested in expanding throughout my life, I love to get knowledge, I love to learn. So, translation really allows me to collect lots of stuff, lots of fields [of interests] ... Beyond that, the nature of my job, as a freelancer, it gives me freedom... almost completely, to choose, who I work with, who I don't work with, how long [performing a certain job] will take, what will be the degree of stress I put myself in, what comes at the expense of what, how the family and work [fit together]. Uh... I mean, there are always these dilemmas ... But I'd rather have the choice ... All the time you have to make decisions, you get up in the morning, and you ask yourself, "What will I do first, laundry or translation?" I have the opportunity to change every day.

Some translators even talk about their artist-like creativity, if only as a fantasy or as an inspiring sideline activity. Nina, a technical translator and a subtitler from Russian, draws a line between what she does for a living and her true passion: "I don't work for free, no way ... To translate is my profession. I'm sorry, don't do unpaid work ... unless it is poetry translation which I do for fun for myself." Others say that they make concessions in earning because their personality is not of the "business-oriented" kind. Esther, a translator of business and technical documents, and occasionally of fiction, maintains professional dignity by navigating between these two prestige resources—her allegedly objective market prospects and her unconventional personality:

If I had the [appropriate] character, I would have been able to make money of [my abilities]. Listen, I know the translator who got a million sheqels [Israeli currency; RS] ... Don't get me wrong, it is not impossible to make money off these things, [it's] just that I don't have the right personality.

This dual self-perception is especially noticeable among practitioners who, in addition to various other translatorial jobs, translate popular fiction (e.g., romances, thrillers, science fiction, and other popular forms), or non-literary genres like

popular science and help books, but who have no prospects of joining the club of highbrow literary translators (Sela-Sheffy, 2010). The strong impact of the vocational ethos of the latter is reflected in the dual-identity work of the former. Expressing frustration with their humble position in the text-production industry, second-rate book translators make a point that this is the system's fault, which is oblivious of their own professional abilities and inspirations. Aware of their weak personal agency, they nevertheless invoke the artist-like ethos expected from literary translators, as Esther does very clearly: "Of course it is a kind of creation ... otherwise why would I have insisted that my voice be preserved [in the output] and bother so much to polish up every detail?"

Indifference to Formal Markers of Professionalism

In line with the above, although business and technical translators usually do not hide their concerns about work conditions and fees, they hardly strive to establish means of self-control to secure these conditions. Most of them are not members of *The Israeli Translators Association*, which for decades has remained a powerless body maintained by several dozens of activist translators. Quite similarly to their elite peers, some of my interviewees expressed mistrust in the association (without clear reasons), whereas others were even unaware of its existence. Nor can they specify what necessary training an accomplished translator would undergo. These practitioners usually have academic education in the humanities or the social sciences, but not specifically in translation studies. Although diploma programs and extra academic workshops are available (and some of my study's participants have attended one in the past), these training courses hardly feature as a milestone in their life-narratives. Eventually, although they are forced to much greater compliance with market demands than elite literary translators, they, too, express the attitude of "free spirits" and pursue their careers as autodidacts. Overall, they embrace a very vague notion of professionalism, rejecting the potential of professionalization as a status resource. Linda's hesitation is typical:

I [do] think that a *professional* should do the translation, but it never happens [this way]. Really, everybody translates, apparently ... I don't mean specifically people who studied translation in particular, but ... Oh, I don't know what it takes [to be a translator] (giggles) ... You need knowledge of languages. I think that, I think it certainly wouldn't do harm if you study the profession, because there are things that ... [But] maybe with the years you can also achieve them anyway.

Undefined Expertise

As mentioned, rank-and-file translators are usually disinclined to specialize. Not only do many of them perform more than one translatorial job, but they often also report performing other writing-related jobs, such as editing, transcribing, and so forth. Consequently, they avoid specifying an expertise for which they can claim

monopoly on work. Some of them mention virtues that are expected from service providers, such as meticulousness, efficiency and reliability, or technological literacy, as well as modesty and good communication with clients. Nevertheless, all of them place a far greater emphasis on *linguistic competencies*. It is evidently talent and love for foreign languages, as well as for writing, that these translators feel more confident to present as their forte (cf. Heino, 2017). Moreover, they often associate their linguistic abilities with a passion for literature and for cultures in general, as their true reason for becoming translators: “Even before I was a student,” says Sarah, a senior translator of popular fiction and business documents from English, French and Italian,

I discovered my talent for languages, and my greatest love is the love for literature, for books. So I connected between them, or I thought I was connecting between them. So I went to study English and French first ... I also like Hebrew very much, and this is where the other things emanate from, too.

When they speak about their passion for languages, some translators frequently borrow emotional vocabulary and life narratives that are specifically used by elite literary translators. Iris, a translator of business and technical texts as well as fiction from English, expands on her natural multilingual disposition:

It comes from a natural gift for languages, ... from my attraction to languages, even today I have enormous interest in languages ... I can pick up languages very easily, I can chat in Italian, German, in Spanish, without even having ever learned them in my life ... When I was a child ... I learned French at one point ... My dream was to learn French. If my parents had money then I would have told them to send me also to ... I wanted French lessons so badly.

At the same time, rank-and-file translators are no less aware than their elite peers that knowledge of languages in itself is insufficient for claiming professional expertise. This is particularly true in an immigration country like Israel. There, knowledge of foreign languages—especially of the most commonly learned or spoken ones (notably English and Russian)—may appear in itself trivial, unless one demonstrates elaborate command of the language beyond that of the average speaker (see the above quotation from Sach-Portal in Shwimmer, 2011). To refute this devaluation effect, when translators talk about their linguistic abilities, they usually strive to frame them as part of a dignified cultural and educational background, whether that of a bi-cultural immigrant or transnational families, or as relating to former careers in other intellectual professions. Notwithstanding, they eventually fail to provide a coherent idea of their advantage as qualified translators even in terms of language abilities. This fact often emerges from their responses to the question, “What makes one a good translator in your opinion?” Here is how Ina, a prolific translator of business and technical documents, and occasionally of popular fiction from English, in addition to working as interpreter from Russian, struggles with this question, indecisively negotiating several options:

Well (chuckling) a good translator, it is first and foremost someone who has a perfect command of the languages with which they work, and it's not scientific, after all I am not in the position to determine, but as far as I can tell ... Actually [they] should be languages that you

think with, not just languages that you know very well. So not the *range* of languages [is what counts] ... of course also being in command, not just command of the language, but also of its grammatical rules, of the tongue. Eh... and ... a sort of literary sensitivity, a way, an ability to express yourself, not just to translate, like a dictionary, to *feel* the language.

Disavowal of Cultural Agency

Finally, there is no doubt that the work of business and technical translators, as well as of oral interpreters of all types, has far greater direct consequences for everyday life than that of literary translators. Nevertheless, “ordinary” translators hesitate to claim the same cultural role as the latter, tending to disclaim the title of cultural mediators. When they are explicitly asked to comment on this potent image, they usually acknowledge it, but deny its relevance to their own personal experience. Esther, a prolific and experienced non-elite translator of fiction, discloses this ambivalence:

Eh... certainly, indeed, the issue of culture transmission, that is, to give the broad audience the ability to get to know other cultures, of course it has enormous ideological significance. [Yet] I personally, eh... am not so much into it, so from my own viewpoint it's not so eh ...

By invoking and disputing the ideal of artist-like professional persona, non-elite translators, in their diverse jobs, perform complex identity work, affirming and reproducing this figurative practitioner as the professional capital at stake in their occupations. By constantly negotiating and readjusting this professional identity, keeping it ambiguous, they are implicitly granted the prestige of intellectual or creative workers without fully enduring the implications of artization rules to which highbrow translators are committed.

Concluding Points

I have discussed the translation occupations here as a paradigmatic case for exploring the role of identity in constructing professionalism in occupational fields that lack formal professionalization. I proceed from the seeming paradox that although those who build their careers as translators are acutely aware of the need to refute the occupation's “anyone can do it” reputation, they resist standardizing their competencies, and reject the formal means of acquiring and controlling these competencies that are common in established professions. Despite theoretical and pedagogical attempts to systematize translators' expertise, in practice, translators' job requirements hardly extend beyond the basic linguistic abilities that allow a lay person—or what scholars call a natural translator—to perform translation tasks occasionally. According to the classical model of modern professions, this non-professionalization culture may seem detrimental. Ostensibly, those who seek recognition as translators have no way to mark their distinction and claim legitimacy and status.

However, as shown through the translators' case, professional status is not entirely dependent on formal professionalization. Understanding professionalism as symbolic capital brings to the fore the normativity of professionalism, the content of which is contingent on actors' negotiations. With this cultural lens, the focus shifts from the given traits of a *profession* to the *professionals* (Lively, 2001), the actors and their perception of being professional as opposed to non-professionals. Seen thus, formal professionalization is a canonical type of professional capital, but not the only one. Identity—namely, the kind of a person one identifies with—emerges as a key resource of professionalism (Van Maanen, 2010). Analysis of translators' self-imaging discourse, reveals how they build their professionalism, however tacitly, on personal dispositions and ethics, by which they draw distinction and construct hierarchies. My contention is this: Translators' professional identity is not only independent of professionalization—its function as a higher form of capital lies precisely in the ethos of *counter-professionalization*. In light of this, I must emphasize two points about how to conceive of translators' professional identity:

(1) As much as translators rebut the status of a natural translator, rather than rejecting this image they embrace it as a higher symbolic resource; they transform its meaning from signaling an unqualified workforce to implying a mystified, embodied artistic-like sense of professionalism. Avoiding definition of their expertise, they promote a vague notion of natural aptness, in contrast to which systematically acquired knowledge and skills appear as irrelevant, if not demeaning. With this imagery, they bring forward a sense of professionalism that lies entirely in the person. Avoiding rational standards, their reputation as worthy workers depends solely on individuals' display of personal virtues, such as giftedness, intuition, and devotion, like those of artists. In other words, translators build their professional distinction by blurring the very idea of measurable competencies. In this field, obscuring workers' proficiency, rather than standardizing them, is the name of the game.

(2) The wide impact of this mystique of professionalism across translation sectors means that, as amorphous and diversified as this field may be, it is nevertheless structured by a *market of symbolic goods*, to use Bourdieu's much-cited metaphor (1985). In this symbolic market, profession identity is the only capital by which workers gain occupational authority and autonomy (*vis-à-vis* other occupations, as well as clients). Professional identity also provides the logic of this occupation's inner boundaries and hierarchy (regardless of objective technical categories, such as written vs. oral or text translation vs. subtitling). This tacit logic is that of artization. In the field of translation, the smallest sector of highbrow literary translators nurtures it as a weapon of exclusion. This limited circle extensively sanctions the rules of art, disallowing whatsoever rational bureaucratized formats (accreditation, standards, tariffs, etc.) members of other translation sectors may strive towards. They thereby draw a distinction between the elite sector and all other translators. As an identity discourse, however, masses of translators accept a counter-professionalization logic across the board, even though they are denied access to highbrow cultural spheres. Given that many practicing translators converge between more than one job type, the artist-translator self-image appears to be the only

common ground uniting translators as an occupation, despite the diverse interests, methods, and constraints their different working spheres impose. Those who work at the intersection between the text production industry and the miscellaneous translating markets, serve, although with ambivalence, as especially effective transmitters of the artization ethos across this occupation.

Finally, as professional-identity researchers are currently discussing, a similar dynamic is common in every occupation, including the more established ones (e.g., Brown & Coupland, 2015; Kyratsis et al., 2017; Prat et al., 2006). There, this dynamic either serves as a channel for negotiating defined expertise and value-scales, or gives rise to alternative ones. As scholars have already pointed out with reference to other professional domains, workers are evaluated predominantly by their performed professional identities (Webb, 2016). However, in the domain of translation, as in other extremely under-professionalized occupations, this identity dynamic appears to be the major status generator, one that provides the actors with occupational credit without committing them to formal regulation and institutionalized settings (cf. Avnoon & Sela-Sheffy, 2021). In this field, displaying natural abilities and personal self-refinement replaces professionalization, so that its members deem this process unworthy.

These findings support attempts to rethink professionalism and question the pivotal role attributed to professionalization traits. By locating professionalism in identity rather than in formally defined and regulated expertise, one conceives the distinction between professionals and non-professionals not as dichotomous, but as vacillating along a scale that the actors themselves constantly re-negotiate. Understanding workers' perspective, one can thus dissect the logic of what otherwise seems unexplained—namely, the persistent under-professionalization of translation and other non-professionalized occupations, despite their crucial social function and high demand (and despite some attempts made towards professionalization). This is not a case of failed professionalization, but of *counter-professionalism*, wielded as an alternative and forceful status strategy, structuring occupational fields.

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Part II
Transformation of Professions

Chapter 6

The Changing Fortunes of the Architectural Profession in Postwar Britain: Complexity, Technological Change, and the (Re)construction of Knowledge



Michael Siebert and Paul Windrum

In this chapter, we examine the ways in which changes in technology and associated knowledge have impacted the architectural profession's role and power within the UK over the past half century, and look set to affect them once more in the near future.

One of the basic definitions of architecture is the provision of shelter and comfort for the human body. The nineteenth century German architect Gottfried Semper described the built architectural space as a *surrogate skin*. House design comprises four core dimensions: the financial, the social, the environmental, and the aesthetic. These dimensions are not wholly independent; their relationship is complex.

Construction projects are, in themselves, complex systems that involve a large number of people, products, and processes interacting in a nonlinear fashion (Azim et al., 2010; Xia & Chan, 2012). Small differences in initial conditions such as geography, available skills, and materials can result in very different outcomes, and positive and negative feedback loops contribute to emergent behavior and unpredictability in complex systems. Holdups or problems in delivery in one component part can have a tremendous impact on others (Brockmann & Kalle, 2012; Schalcher, 2015). Holdups can have major impacts on cost and even force a redesign. Complex construction projects require *soft integration* by a key actor, often supported by tools and techniques for managing the people, products, and processes of the project environment (Xia & Chan, 2012).

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J. Glückler et al. (eds.), *Professions and Proficiency*, Knowledge and Space 18,
https://doi.org/10.1007/978-3-031-24910-5_6

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The *professionalization* of housebuilding is a relatively recent phenomenon, marking the end of a far longer period of vernacular building methods still responsible for over 90% of the world's housing provision (Kazimee, 2009). Having one's house, as opposed to any other building, designed for one by a professional is very much a construct of the modern world.

Research on professions dates back to Parsons (1951) and his delineation of *professionals* and *bureaucrats*. Professions, through their collegial organization and shared identity, represent an alternative approach to bureaucracy to achieve the same normative ends. Those offering current definitions of professions emphasize two aspects. One is the profession as a mode of governing and regulating the exchange of *expert labor* in the provision of a service (Freidson, 1994). Another is the profession as an underpinning knowledge base that usually involves a period of tertiary education, vocational training, and experience (Crompton, 1990). Professions are the structural, occupational, and institutional arrangements for dealing with work associated with the uncertainties of modern work lives in risk societies. Professionals are extensively engaged in dealing with risk managing risk assessment, through the use of expert knowledge, and enabling customers and clients to deal with uncertainty. In section “[Literature on professions](#)”, we provide a detailed discussion of each of these aspects of architectural professionalism in the UK.

In section “[Rise and decline: the changing role of the architect in postwar Britain](#)”, we examine how the professional standing of UK architects has been eroded by providing a broad historical analysis of the changes that occurred in residential building construction during the postwar era and how these have affected the architectural profession's role and power. We distinguish between endogenous factors at play within the UK architectural profession and those exogenous factors that have played a role in knowledge, roles, and power shifting away from the architects and towards those within the construction industry who were formally under their control. With respect to the endogenous factors, we highlight historical divisions that have existed in the UK architectural profession. Notably, UK architects are represented by competing professional bodies—the Royal Institute of British Architects (RIBA) and the Architects' Registration Board (ARB), both effectively set up to ensure the quality of work and professionalism of working practices provided, whilst establishing and protecting the fee scales that for many years ensured an architect's income could not be eroded from either outside or inside the camp. But the existence of two bodies performing this role fractured power and weakened the UK profession's ability to resist and/or reshape to their advantage threats posed by exogenous factors. These factors include technological change (such as the transition from the drawing board to computer-aided design) and the increased marketization of UK construction during the 1970s and 1980s, driven by a neoliberal political agenda. We show how some of these external factors were reinforcing, whilst others had a major impact on UK architects' roles, knowledge structures, and power vis-à-vis building contractors and developers.

In section “[New challenges: the re-emergence of the architect as system coordinator?](#)”, we consider the architectural profession’s possible future role in the UK, and whether architects may once again take on an integrational role in the face of the increasing environmental, social, and political demands made of new residential housing. Here we consider parallels between the historical experiences of architects and those of other professional bodies who have similarly undergone a period of disruptive change due to digitization of their working practices.

Literature on Professions

There exists an extensive literature on tensions between professionals and organizations in health care and law. Architecture, by contrast, is relatively neglected within this literature (Cohen, Wilkinson, Arnold, & Finn, 2005). By examining the UK architectural profession’s post-war experience, one gains an interesting insight into how a professional group’s status, role, and power can change quickly in the face of exogenous changes in politics, technology, and industry structure. We shall show how certain endogenous factors within the UK profession itself made it vulnerable to these external changes.

Professionalism has been a dominant alternative to both the market and to public bureaucracy for the organization of work and the delivery of services (McClelland, 1990). To cite professionalism is to stress autonomy and the self-regulation of work by practitioners, with professionals best placed to act in the best interests of their clients. A core component of occupational professionalism is the creation of customized solutions to clients’ problems (Larson, 1977; Empson, 2008). This is dependent on specialist knowledge and skills rooted in a theoretical foundation of a particular knowledge subfield (Abel, 1988; Freidson, 1994; MacDonald, 1995). Professionals have extensive individual autonomy in decision-making, determining themselves how best to apply their specialist knowledge to the development and delivery of customized services (Derber, 1982; Freidson, 1994; Faulconbridge & Muzio, 2008).

Here it is useful to link with Harry Collins’ work on expertise in science and medicine (Collins & Pinch, 1998, 2005; Collins & Evans, 2007). Collins and Evans (2007) demarcate specialist tacit knowledge held by active practitioners from ubiquitous tacit knowledge held by the general lay public. Specialist tacit knowledge comprises two categories: *interactional expertise* and *contributory expertise*. Importantly, Collins and Evans (ibid) categorize only these two as expertise.

Those with contributory expertise are actively contributing to the knowledge field—e.g., through scientific/medical research and publication. Achieving this level of proficiency requires training (apprenticeship), access to specialist social networks containing other contributory experts (meeting at conferences, workshops etc.), and access to resources (grants etc.) to fund new research. People with interactional expertise have also received training (apprenticeship) and may also access specialist social networks containing contributory experts, but they do not engage in active research at the knowledge frontier.

The lay public hold varying degrees of knowledge below that of expertise. *Popular understanding* is acquired through specialist TV programs or magazines, with someone else *translating* current knowledge into layman's terms. Those holding *primary source knowledge* are able to read the original source material—scientific/medical journals, official reports etc.—and understand the general message and implications even if they do not understand the statistical methods or equations.

Another key theme in Collin's work is that of scientific instrumentation—particularly for the measurement of gravitation waves. Machines are not designed in a neutral manner, but are built based on a specific set of precepts and assumptions their builders hold about what is and what is not to be measured, and why. This is a key source of power for those who have *contributory expertise* in a science and medicine. In section “[Rise and decline: the changing role of the architect in postwar Britain](#)”, we show how the advent of new forms of IT—the parallel equivalent of scientific machines—was one of the key factors that led to large contractors replacing architects as the key organizer in the UK.

Other core components of professionalism are professional values, moral commitment, and self-regulation. Governance flows through collegial relationships and working arrangements. To speak of professional values is to emphasize a shared identity based on competencies (produced by education, training, and apprenticeship socialization) and legal responsibility (sometimes guaranteed by licensing). Professional relations are characterized as cooperative and mutually supportive, and relations of trust characterize practitioner-client and practitioner-employer interactions.

Abel (1988) distinguishes between two dimensions of self-regulation: the *production of producers* (e.g., architects) and *production by producers* (e.g., buildings). Both dimensions can be administered by the state or by professional associations, or by a combination of both. Regulation of training—the production of producers—involves (i) a defining of the content of education and training requirements; (ii) exerting influence over the organizations that educate and train professionals; (iii) evaluating candidates after initial training—for example, in the UK, a chartered architect currently undertakes a three-part training program over a minimum of 7 years, two of which are in practice. Part 1 is a 3-year full-time university undergraduate degree (a BA or BSc in Architecture), followed by 1 year in an architect's practice (Stage 1). Part 2 is a 2-year full-time university degree (B.Arch, Diploma, or M.Arch award), followed by a further year in practice (Stage 2). Part 3 is the Advanced Diploma in Professional Practice in Architecture, which RIBA administers at one of its validated course providers. Only after passing the Part 3 examination can someone register as an architect and for RIBA membership. By setting the final Part 4 exam, RIBA has significant regulatory control over the training of new architects, shaping the content of the university-delivered Parts 1 and 2.

The regulation of services produced by professionals—production by producers—covers the production, distribution, and consumption of services. Those creating these regulations have sought to guarantee quality and preserve public interests, prevent malpractice and conflicts of interest, and mediate between different interests within the profession (Quack & Schüßler, 2015). With respect to ethics and

moral values, the clients' interests supposedly out-rank the profit motive in professional codes of conduct, for example, in medicine the Hippocratic Oath to "first, do no harm" (*primum non nocere*).

Key instruments of service self-regulation include (i) setting professional and ethical standards; (ii) restricting organizational forms to individual practices or partnerships on the grounds that incorporation increases liability problems and invites conflict of interests; and (iii) limiting competition between members of the profession by placing restrictions on, for example, geographical areas of practice, mandatory fee scales, and bans or limits on advertising (Morgan & Quack, 2005; Garoupa, 2011).

Utilizing the UK architects' case, we shall demonstrate that the boundary between professional and state regulation is not fixed; rather, actors from state and professional groups consistently negotiate and re-negotiate governance.

Professions, like other occupations, are subject to deskilling pressures (Suddaby & Muzio, 2015). In the next section we show how large contract builders displaced UK architects as the system coordinator within the residential new build sector during the 1980s. Large contract builders used a highly standardized *Design and Build* business model, with which they exploited new IT to set up and manage a network of contractual arrangements to control both costs and profits. They thus eroded the architectural profession's control over expert knowledge and commodified design work, reducing architects to "just another contractor." With the displacement of architects there was a change in ethos, as architects had tended to prioritize aesthetics and social goals for housing over cost control (and profits).

Adherents of a particular strand of research within the professionalism literature posit the existence of *hybrid professionalism*, that is, a hybrid of organizational and occupational professionalism (e.g., Skelcher & Smith, 2015). Rather than simply accepting the existence of two, fixed, idealized typologies of professionalism, researchers have sought to identify the ways in which professionalism is acted upon, and itself changes and evolves over time (e.g., Evetts, 2011; Tonkens, Bröer, van Sambeek, & van Hassel, 2013; Witman, Smid, Meurs, & Willems, 2011). They identify professionals making use of managerial pressures and technologies to further their own interests. These professionals are also adept at adjusting their work and their working relationships to external factors, such as market growth in public systems, enterprise, and economic contracting.

Noordegraaf (2016) has sought to move beyond this hybrid model. He proposes that professionals are entering a new era of organizing professionalism, defined as one in which "organizing becomes a normal part of professional work, rather than an uneasy hybrid" (Noordegraaf, 2016, p. 187). This is due to a variety of factors, including (but not limited to) austerity, changing organizational structures, changes in the nature of the professional workforce, and new technology. Noordegraaf's work is vital because he goes beyond the dichotomies of professional/managerial, and professional/organizational logics to a broader analysis of the forces of change for professionals within organizations.

Developing the notion of organizing professionalism, we here consider whether the architectural profession should reestablish itself in the system coordinator role by, firstly, reshaping itself by absorbing and subsuming the rhetoric of the market

customer, developing and using performance metrics to control costs—both previously the cornerstones of the large contractor’s managerialism—and, secondly, taking on the pressing needs of environmental and social pressures that the large building contractor is less motivated to meet.

Rise and Decline: The Changing Role of the Architect in Postwar Britain

One can divide residential construction into three distinct submarkets: top-end bespoke housing, private household new build (speculative), and social housing. The architect was once the system coordinator across all UK residential construction. However, during the 1980s, commercial developer firms began to take over the coordinator role, most significantly within the speculative new build subsector.

The importance of this change can be understood with reference to Figure 6.1. From the 1970s onwards, the speculative market significantly grew as a percentage of all residential building in the UK. Today, the six largest construction firms—Barratt, Taylor Wimpey, Persimmon, Berkeley, Bellway, and Redrow—account for over two thirds of residential construction. Yet although the speculative housing market makes up in the largest percentage in terms of volume, it employs the smallest number of architects. This is because commercial developer firms use a pattern book business model, from which they repeatedly apply a limited set of highly standardized house plans. By standardizing this fixed set of house designs and using

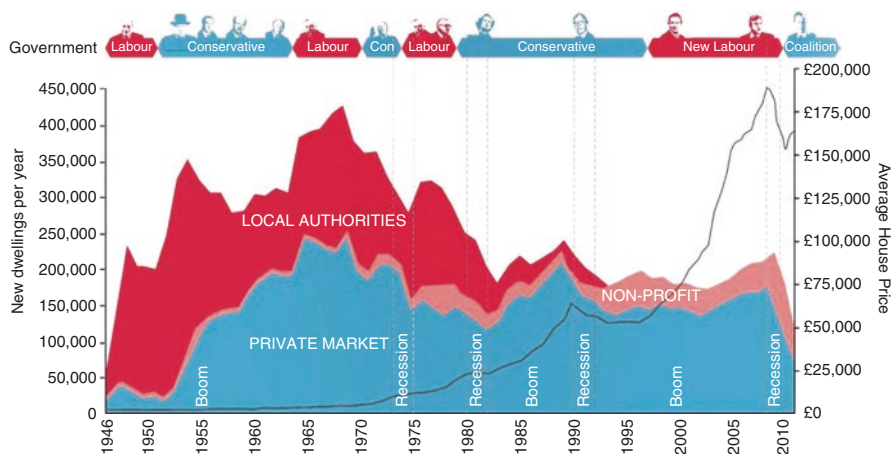


Fig. 6.1 UK housebuilding rates since the Second World War. Reprinted from *A right to build* (p. 10), by A. Parvin, D. Saxby, C. Cerulli, and T. Schneider, 2011, Sheffield: The University of Sheffield, Architecture 00:/. Copyright 2011 by University of Sheffield School of Architecture and Architecture 00:/. Reprinted with permission

common components across projects, commercial developers are able to create and profit from economies of scale.

UK architects have retained their position as system coordinator to a greater extent within social housing, but this subsector declined markedly after the 1970s. A number of political and economic factors fueled this decline in volume, and we will discuss them below. Today, the delivery of new social housing is largely tied to new speculative build developments over a certain size, although the precise requirement varies with local and central government policy. Social housing is thus dictated by the new builds and, in turn, is affected by economic cycles. Social housing tends to involve a more complex set of social and environmental requirements than speculative housing. In this subsector, small architectural businesses often work with, or for, housing associations. Small- and medium-sized architect practices, plus a number of individual sole traders, continue to control the top-end bespoke submarket.

We will now consider the exogenous and endogenous factors that led to this change in knowledge, power, and control of architects as a professional body (see Fig. 6.2).

One of the key endogenous factors is the lack of a single professional association for architects in the UK. There exist two membership associations: the more recognized but voluntary RIBA and the mandatory ARB. Each attempts to control architectural standards and prescriptions for practice through codes of conduct (Cohen et al., 2005). We will show how the balkanization of the professional representation adversely affected the ability of the architectural profession, as a whole, to resist external forces of globalization, deregulation, and the rise of large construction firms who were better able to use IT to develop managerialist approaches to cost control integration and coordination.

The end of the Second World War was, in many respects, a reset point for the UK (Artis, 1996). Structural realignments ranging from economic theory to the creation of the modern UK welfare state flourished. In house building, new possibilities opened up thanks to new materials and construction methods that had their origins in wartime production, and newly redundant armaments factories and a (de-mobbed) semi-skilled industrial workforce offered plenty of capacity. An aging Victorian housing stock, exacerbated by bombing in many major UK cities, created a need for new housing on a previously unknown scale. However, there were also significant financial restrictions, and very high levels of national debt accumulated through wartime financing. Any one of these factors, in isolation, would have represented a challenge for an established architectural profession, yet a new, inexperienced tranche of young architects and town planners confronted a completely transformative palette of factors to deal with, urged on by a nation with utopian aspirations.

It was perhaps this combination of necessity and the nation's desire for a bright future that allowed such a generational social experiment to unfold over the following decades. Some important antecedents facilitated this. With its 1919 Housing and Town Planning Act, the government enabled councils to provide domestic dwellings. The new council homes provided electricity, running water, bathrooms, indoor toilets, and front/rear gardens. This was not the first high-quality council housing,

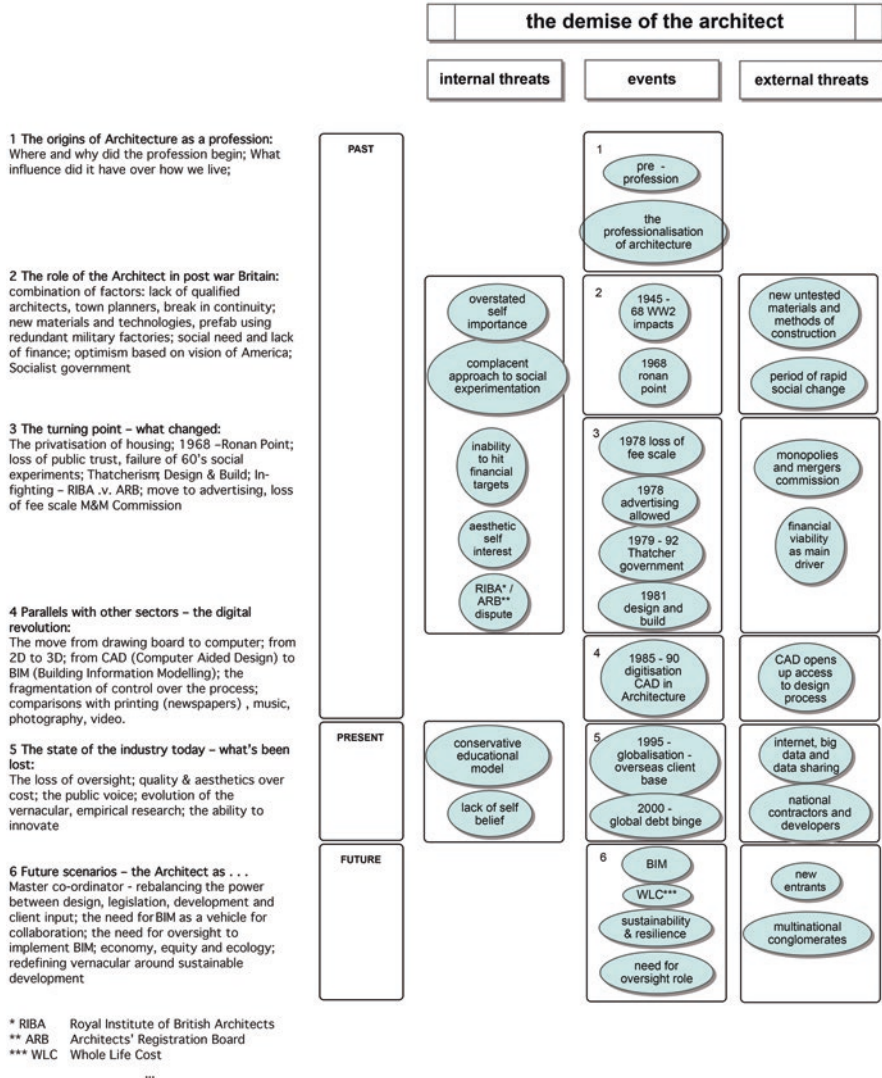


Fig. 6.2 The exogenous and endogenous threats to the architectural profession. Source: Design by authors

however. Liverpool led the way, under a Conservative-led council, in constructing the first council housing in Europe in 1869.

The development of improved social housing in the UK coincided with the *new consumerism* of the 1950s. The postwar boom saw the growth of car ownership, changing the dynamics of urban and suburban living. The home, too, underwent massive changes. The 1951 Festival of Britain introduced the concept of open-plan living, with fitted kitchens containing new electrical appliances such as washing

machines, refrigerators and fridges, and electrical food appliances such as blenders and toasters. Here the suburban living of the 1950s US provided a lens for future UK consumerism throughout the 1950s and 1960s.

It was the architect who was expected to deliver this utopian vision for housing, and who was subsequently held accountable for a failure to deliver. The pace of rebuilding in the 1950s and 1960s, primarily through social housing (Fig. 6.1), allowed little time for debate, prototyping, or reflection. It was nevertheless to prove something of a golden age for the UK architectural profession, in terms of its position and the quantity of work available for architects. Richard Crossman (Minister for Housing and Local Government under Harold Wilson) recorded a cabinet committee in June 1966 discussing 500,000 housing starts, split equally between the public and private sector (Derbyshire, 2014). It was an era which gave rise to movements in social architecture, like Team 10, CIAM, and the search for *a utopia of the present*. There was an excitement, at that time, amongst architects who were given freedom to experiment in an atmosphere of lax controls and an unshakeable belief in all things modern. Young UK architects included Chamberlin, Powell, and Bon, who designed the Golden Lane Estate in 1952 (the tallest residential building in Britain at the time of its construction) and later the Barbican complex in London, and Alison and Peter Smithson, who designed the Robin Hood Gardens in Poplar, London, in the late 1960s.

There was a postwar consensus on what needed to be improved—hygiene in the form of running water, sanitation, and clean air; comfort in the form of central heating; and more space, both inside and out. These were aspirations from the Edwardian age, transmitted to the middle class by newly built suburbs in the 1920s and 1930s. Now project developers were to fulfill these aspirations for the inner-city working class and lower middle class by replacing back-to-back terraced housing and tenement blocks (Mowat, 1955).

There was no established public consensus on modern architecture. Young architects had presumptions about what the public needed or wanted from new housing, and it was this—as much as a lack of financial and human resources as demand increased—that was at the root of the shortfalls which led to the demise of an entire era of domestic modern architecture in the UK. For instance, UK architects had a keen desire to replicate the work of Le Corbusier, exemplified by his *Unité d’Habitation* in Marseilles, and thereby ignored how the realities of life in Glasgow (to use an extreme example) and the very different climate of Scotland’s western Lowlands differed from the South of France.

These architects also overlooked the social needs of communities, who were often dispersed, and even when kept together and rehoused in the same locality, isolated by the physical barriers of *vertical living* of tower blocks. Robin Hood Gardens was one group of architects’ early reaction against Le Corbusier’s *Unité d’Habitation*. Here was social housing in long concrete blocks linked by broad aerial walkways—“streets in the sky.” They were responding to the loss of community felt by those with nowhere to informally meet with neighbors. Yet this merely exposed the limits to what could be recreated, even in theory, in this new high-density, high-rise living.

This era of prolific social housebuilding ended suddenly and dramatically. The symbolic turning point was the partial collapse of Ronan Point on May 16th, 1968, just two months after opening. This 22-storey tower block in Canning Town in Newham, East London, was, in hindsight, a poorly constructed, socially inadequate, and aesthetically redundant edifice. Four people were killed and seventeen were injured when an entire corner of the building collapsed due to a gas explosion that critically weakened a loadbearing wall. The dramatic nature of this failure sparked a loss of public confidence in high-rise residential buildings in the UK, and major changes in UK building regulations followed. Ronan Point was the last residential tower block to be built in an era of prolific housebuilding that has yet to be matched in the UK. The general public, the government, and the construction industry as a whole all participated in a far-reaching reassessment of the architectural profession's ability to shape the already fading vision of a utopian, modernist future.

Other exogenous changes also impacted the architectural profession's changing fortunes. One such change was a realignment in UK politics and the rise of the corporatist state during the late 1970s and early 1980s. This altered the relationship between the state and the professions, including architects and surveyors in the construction industry. The corporatist state received impetus from Thatcherism but had begun under the previous (Labour) Callaghan government, precipitated by the 1976 Financial Crisis, during which the UK government was forced to borrow \$3.9 billion from the International Monetary Fund (IMF). Under the terms of the IMF's loan agreement, the Callaghan Labour government had introduced the first monetarist policy to end Keynesian fiscal management (Artis, Cobahm, & Wickham-Jones, 1992). This directly affected housing construction, which successive Conservative and Labour governments had used as a critical tool in countercyclical macroeconomic management.

Turning to the academic literature on professions, and professional power and independence, the regulative bargain lies at the core of the relationship between the state and professions. In the neoliberal corporatist state, the relationship is reconfigured, with professions being used as a channel for state action, especially via controls (MacDonald, 1995, p. 115).

The corporatist UK state is suspicious of monopoly, promoting competition between practitioners as a means of increasing consumer awareness and power, and encouraging variety in services and practitioners. In terms of the architectural profession, the Monopolies and Mergers Commission (MMC, 1977b) report led to the end of fixed-fee scales and the removal of the ban on advertising by architects, with the RIBA amending its rules accordingly in 1982. This attacked an important ethos and practice of all professional groups: not undercutting one's fellow professional. Professional bodies would have disciplined, or even struck off, members for competing on fees. An earlier MMC report on surveyors (MMC, 1977a) had also recommended terminating fixed fees amongst surveyors. Since this change, the majority of commissions for professional services in the construction and property industries in the UK have been on a competitive fee tendered basis.

The loss of the architect's fee scale, along with the removal of advertising ban, can be viewed as the first step towards the democratization of the profession by opening the door to free market competition. There were, however, some important

downsides to this. The abolition of fixed fees in the UK triggered a steady decline in fee levels. During the recessions of the early 1980s and 1990s, architects' fees fell to unprecedentedly low levels (Hoxley, 1998). The authors of the 1977 MMC architect's report had foreseen this: "We do not ... exclude the possibility that fee-cutting in a recession might be deep and widespread" (MMC, 1977b, para. 231). With this came an inevitable drop in quality, with architects unable to deliver the same level of service at a much reduced fee.

The architectural profession's ability to resist this exogenous challenge from the state was hampered by the representational split between the RIBA and the ARB. This is highly unusual (Cohen et al., 2005; MacDonald, 1995). Professional associations conduct much of the collective work of professional groups, on behalf of their members. This work ranges from oversight of training and education (qualification of members), to defining and monitoring standards of practice, to resolving legal matters and governance over its membership. The RIBA fought the termination of fixed fees but was unable to pull together agreement from the entirety of the profession. The Thatcher government exploited the divisions and the RIBA capitulated, changing its rules in 1982.

The balkanization of professional representation also adversely affected UK architects' ability to control other exogenous forces—globalization, technological change, and the rise of large construction firms who made better use of IT to develop managerialist approaches to cost control integration and coordination.

In the early 1980s, the public began to question the architect's role as *social designer*. The Prince of Wales delivered his "Carbuncle" attack on modern architecture in 1984. Later, Wates and Knevitt's *Community Architecture*, published in Wates and Knevitt (1987) suggested that modern architecture was remote and austere, and that postwar housing estates were linked to the social breakdown, social unrest, and riots witnessed on UK streets during the early 1980s. Wates and Knevitt (1987) called for a new *community architecture*: one that was more participatory for those who were to live in urban cities, to ensure more stable and self-sufficient communities. The divided UK architectural professional associations seemed unable to respond to, let alone manage, this public debate on the future of architecture, and the role of architects within it (Till, 1998).

As it transpired, there was no realignment around new notions of the *social* and *community*. Rather, there was a fundamental shift away from the social to a new, financially driven model of construction during the 1980s. It was a shift that has shaped the evolution of the UK housing industry to the present day.

Those applying this new, financially driven model of managerial control, with its focus on profits and cost control, highlighted architects' inability to prioritize cost over their own aesthetic or social considerations. Architects had long held a reputation for being reluctant to prioritize the client's budget over their own aesthetic sensibilities, and the industry how had an alternative route to take.

New types of computer IT facilitated the move to managerialist control by large building contractors. The art of designing, itself, became a computerized process, as early computer-aided design (CAD) systems were brought over from manufacturing. This opened up the field to those prepared to learn new IT tools and take

advantage of the abilities that they offered. Design modifications no longer needed to be shuttled back and forth to an architect. They could be made at any stage in the design process and even on site by someone trained to use the IT system.

New forms of computer IT also facilitated the development of large contractor-led Design and Build programs during the 1980s. Decision-makers within this new, managerialist type of system focused profit, not aesthetic or social design. They achieved control and coordination through a web of contracts with a myriad of individual suppliers and contractors, specifying tasks and completion dates in detail to enable building work to be completed on time and at cost. Using the Design and Build system, the large building contractor took the position of system coordinator, with the architect becoming a subcontracted designer. In place of the architect's network of personal contacts and experience, forged through previous work with local contractors and suppliers, those using Design and Build utilized collateral warranties as protection against delivery failures on the more stringent contractual agreements demanded by a new breed of developer-client. They extended contracted relationships beyond the local to national and even international provision, providing opportunities for further cost cutting.

New Challenges: The Re-emergence of the Architect as System Coordinator?

In this section, we consider the architect's future in the UK residential housing sector. In particular, we discuss whether architects could re-emerge as the system coordinator, and the requirements for UK architects to act as a professional group in order to ensure this.

As noted, housing design comprises four core dimensions: the financial, the social, the environmental, and the aesthetic. The speculative housing model's success lies in having a limited set of highly standardized house designs, held within a *pattern book*, which can be replicated nationally. Project actors can make only minor change to these designs, if required to satisfy local planning authorities. Those utilizing Design and Build as a procurement route have been very successful in meeting the agenda of those developers wanting to gain control of the whole build process with in-house designers and tight financial controls. In this model however, aesthetics, social benefit, and environmental dimensions are demoted and made subservient to the financial dimension, with enforcement by planners and other legislative bodies often their main or only driver. Consequently, the housing industry as a whole has struggled to keep these issues on the agenda in a market where the self-regulating contractor is dominant.

Whilst the speculative housing model has been highly successful for those large contractors who have honed its development over the past 40 years, there is growing public and political dissatisfaction with quality and choice, and also with the affordability of the housing large contractors are willing to supply.

Politicians and the media have both recently highlighted the issue of quality. For example, in July 2019, the Welsh government's Minister for Housing Julie James complained about substandard developments and accused the private house-building industry of creating the "slums of the future" (Servini, 2019). In the same month, an hour-long Channel 4 TV documentary investigated complaints customers had raised against Persimmon, the UK's second largest builder, of sub-standard construction, poor customer care, and excessive profits (All 4, 2019).

With respect to supply, the UK now has a chronic housing shortage, resulting in house prices that have outstripped wages for all but a few; most stand in line for housing that at best can be described as adequate. Going forward, it is becoming increasingly difficult for smaller private contractors to develop competitively priced, innovative house designs that will meet the necessary tougher environmental regulations. Because the financial returns are much lower on pre-existing *brown field* sites, the smaller private contractors also struggle to deliver the large-scale renewal of inner-city housing in the UK, which is in urgent need of high-quality but affordable new housing.

Clearly, the UK needs a new model in which the four dimensions of housing design are brought into a more balanced alignment. What is less clear is whether the architect is the person best placed to be the system coordinator within that new model. Some subsectors within the housing market arguably offer a better fit for the architect's broader skillsets than others, with the bespoke housing market most allowing the flights of fancy for which the profession is recognized. Increasingly, however, architectural students are entering the profession driven more by a social or environmental calling than by viewing it as an opportunity for self-expression (Coutts, 2016). For this generation, the third sector inhabited by housing associations and council-funded housing programs possibly offers the best prospects for professional satisfaction. One can expect a better balance between the four requirements of the financial, social, environmental, and aesthetic in this sector, which therefore requires more oversight to marry these often conflicting factors. If the profession is to stage a comeback within the UK, then its members must do so by taking on that coordinating role, and it is in this sector that the opportunities are greatest, despite its diminished role within the greater housing industry.

Turning to the academic literature on professions, the architectural profession could succeed in the UK if it were to move towards Noordegraaf's model of organizing professionalism, taking on and embodying within its practices financial cost control and balancing this with its strengths in the social, environmental, and aesthetic dimensions. This requires a change in the nature of the professional workforce, and the leveraging of new technological opportunities. Examples of the latter include IT systems that facilitate standardization of components (rather than of entire buildings), enabling flexibility in design and cost control. In other words, it is a shift that requires the profession's members to not just subsume the rhetoric of the market-costs customer, but to develop cost-performance metrics and other metrics that have, until now, remained the preserve of managerialism under the large contractor.

Applying Building Information Modelling (BIM) throws up an interesting possibility. We have discussed how large builders utilized new IT to take over the coordination role from architects during the 1980s. Researchers of professions have previously highlighted the link between the emergence of new computer technologies, the commodification of work, and deskilling as professions lose control over expert knowledge (e.g., Haug, 1972; Johnson, 1972; Jones & Moore, 1993). BIM thus offers an opportunity for another actor to become the system coordinator. Why is this? In one sense, BIM is the continuation of the process of digitization. It requires disparate actors—structural and mechanical engineers, town planners, and interior designers as well as large housing contractors—to coalesce through a common interface to enable a seamless flow of information to pass back and forth. In so doing, BIM would replace the myriad of incompatible IT platforms that currently exist. Researchers recognize the benefits to all parties, as well as the costs of not successfully coordinating the shift to a common IT platform. In their Farrell and Saloner (1988) paper on the coordination of a common standard, Farrell and Saloner highlight the need for an actor, or else a strong committee, to ensure that all actors switch to a common platform simultaneously.

Much is riding on BIM's successful adoption across the industry beyond its current low-level acceptance enforced through public works programs. Much of this is central to the next generation of architects' motivations: Without BIM, it is difficult to coordinate the early decision-making needed to promote the benefits of modern methods of construction, not least of off-site manufacturing, thereby strengthening the hand of the status quo. The industry cannot calculate the principles of sustainability, and in particular Whole Life Costing and the EPDs (Environmental Product Declarations), that this depends upon to make the financial case that will change minds without the functionality of BIM. BIM, in essence, represents the missing piece in the jigsaw that is preventing the industry from seeing the benefits of the bigger picture.

"Master Coordinator" would be an appropriate name for the actor who oversees the entire design and construction process through BIM. To what extent can architects—rather than developers, contractors, or any other active participants—lay claim to this role? This is for the architectural profession to clearly articulate. There is evidence that architects themselves believe they are best positioned for this new coordination role. The 2012 survey by BuildingDesign (Morrell, 2012) found that 80% of respondents, who were predominantly architects and architect technicians, believed that architects should be responsible for BIM coordination on construction projects.

Architects may be the best-placed party given that they have a greater overview of all four core dimensions within house design—financial, social, environmental, and aesthetic. The architect is doubtlessly best situated to see and understand the wider implications of decisions made throughout the design, if not also the construction, process.

As previously discussed, the profession's Achilles heel has been financial control within projects. Are there any signs of this improvement here? Most architects would admit to being driven primarily by either a social or environmental

conscience, with a desire to placate their own aesthetic sensibilities also high on their agendas. Few would profess to being “in it for the money.” Does this relative lack of personal financial motivation suggest that the problem of architects “staying within budget” persists?

One move recently undertaken to redress this imbalance has been the introduction of apprenticeship schemes, whereby universities offer their courses as part-time placements for students in practice over a 4-year period. The aim is to incorporate a more financially minded approach to the educational process during those formative years when architectural students learn how to tackle design problems. Another equally influential addition to the design process, this time aimed at the procurement end of the build program, has been the introduction of the *Value Toolkit* as a way of broadening the industry’s definition of value to include societal and environmental benefits alongside the more commonly used short-term financial benefits that currently define the tendering process. Together, these two interventions strengthen the hand of those architects looking to reinstate an overseeing role that can help generate the more collaborative working environment being called for.

However, the other issue UK architects must address is the division in representation and loss of influence that has arisen from having more than one professional body representing its key membership group. This does not happen in medicine or in law in the UK. As well as adversely affecting internal governance procedures, having two professional bodies diminishes the UK profession’s negotiating power with developers, contractors, and, possibly most importantly, with government. But this is set to continue, with both bodies responding to these new challenges. ARB is currently consulting with its members over broadening routes into architecture and has doubled its fees to fund a transformation in education and training over the next 5 years. The RIBA has set its 2030 Climate Challenge to encourage the architectural profession to lead a collaborative shift towards sustainable design throughout the construction industry. These measures exemplify the long-term, informed, and balanced guidance that the construction industry, and housing in particular, requires—and a reconstructed architectural profession still seems to offer the best hope of objectively delivering this guidance.

Summary and Reflections

We have laid out the various endogenous and exogenous factors that led the UK architectural profession to lose its position as system coordinator and considered whether the profession could re-establish itself in the near future.

Reflecting upon the literature on professions, we have used this particular example to highlight the importance of new technologies—particularly IT—in providing opportunities for other actors to contest a professional group’s position as system coordinator. The advent of new IT replaced pre-existing methods of drawing and the control of the design process itself. Creators of new IT design software facilitated

the development of Design and Build, in which the large contractor is the key system coordinator. With greater automation, actors could for the first time easily standardize their plans, and even non-architects could make minor amendments to these standardized plans.

It is interesting to contrast this experience with that of other occupational groups. Product designers have further developed their position as a system integrator (Windrum, Frenken, & Green, 2017). This occupational group has successfully established itself as the technology interpreter and practical translator (Lawson, 2005), and integrated design, engineering, and marketing functions within the new product development process (Moenaert & Souder, 1990; Perks, Cooper, & Jones, 2005). Indeed, by moving towards *design thinking* (Brown, 2008) one places the designer at the center of all aspects of the business and makes them the key actor who drives innovation (Verganti, 2009), as a means of structuring strategic product development and design's role in articulating creativity and innovation.

It would be interesting in future research to consider, through comparative studies, how IT has affected knowledge and control in different occupational groups who have undergone similar periods of disruptive change. For example, professional photographers are another group of highly skilled service workers who have seen digital cameras and digital imaging software open up (democratize) the process of high-quality image making and image distribution to a wider public. Yet professional photographers' specialist knowledge of composition, lighting, and color, as well as their technical expertise, has enabled this group to maintain their independence and control within their field.

An important connection here may exist between the digitization of working practices and the redesign of service creation and delivery—more commonly referred to as *process innovation*. For example, the introduction of customer self-service, first in grocery and subsequently in many other services, uses the manpower of customers to significantly reduce the number of paid employees required to deliver a service. It involves a purposeful reconfiguring of the role(s) of the customer and taking advantage of new opportunities afforded by new IT (Windrum, 2023). It would be interesting to extend this line of research to consider examples such as Design and Build, and BIM, as one component within process innovations that involve purposive reconfiguration of different providers' roles.

Finally, we utilize this case study to draw attention to the roles played by RIBA and ARB: the professional bodies representing architects in the UK. Whilst these professional bodies have maintained control over architects' training and education, we have shown that the division of professional membership between the two bodies constitutes a significant weakness in the face of technological change and the increased marketization of UK construction during the 1970s and 1980s. It remains to be seen whether this situation will change and, through a more unified body, UK architects will be able to regain control over the agenda.

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Chapter 7

Preserving the Epistemic Authority of Science in World Politics



Peter M. Haas

World Politics rests on science and expertise for maintaining a functioning multilateral system of governance. The liberal world order rests on numerous foundations, including the recognition of the authority of expertise and science (Ezrahi, 1990; Stokes, 1997; Zürn, 2018). Without the regular provision of objective and impartial advice (or at least the confidence in the warrants behind technical advice) the governance of highly technical issues such as climate change, finance, and public health, among others, would fail and the international system would lose legitimacy in the eyes of those who value the effective delivery of public goods and the enhancement of social welfare. Indeed, until recently the reliance on science as a source of technical advice had become an institutionalized social fact. Scientists and politicians speak of the need for scientific governance for making sound policy decisions (Gore, 1996; Holdgate, 1982; Jasanoff, 2011; Leemans, 2008; OECD, 2015; Scientific Advisory Board, 2016; Sebek, 1983; Stafford-Smith et al., 2017; Watson, 2005).

Because science is imparted to global environmental governance by international science panels, I consider here the various legitimacy criteria which states apply to international science panels. While science serves multiple purposes, including such indirect functional effects as generating publicity and concern by mass publics, here I focus on its direct legitimacy in the eyes of states, as states are the primary constituency which convenes and funds international science panels. It relies on

I am thankful to Johannes Glückler for his deft editorial hand in improving the quality of this chapter.

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Fritz Scharpf's distinction between input, output and outcome criteria to identify scientific practices which enhance the legitimacy of scientific influence (Scharpf, 2009). This chapter builds on an earlier conceptual piece I published on the legitimacy of science panels (Haas, 2017).

This chapter begins with a review of the history of reliance on science and expertise by the modern nation-state. It then discusses the nature of scientific influence, and how experts exert power in world politics. It then proceeds to look at the array of legitimacy criteria in the literature and concludes with some suggestions about how to restore the legitimacy of science in world politics. Like Marx's understanding of history—"Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past" (Marx, 1852/1971, p. 243)—scientists' legitimacy is bounded to the interpretive frames of social circles in which they operate. Thus, scientists' ability to project their expertise and influence rests on the social criteria of the system in which they must operate. My goal here is to explore how this boundedness can be bridged to improve global governance.

Science Is an Institution

Science is an institution which confers a source of governance in opposition to rule by force or theology or plutocracy derived from dynasties, monarchies, or organized religion (De Solla Price, 1975; Drori, Meyer, Ramirez, & Schofer, 2003; Ezrahi, 1990; Hirschman, 2013; Knorr-Cetina, 1999; Lasswell, 1965; Sagan, 1996; Ziman, 2000). Scientists are accorded authority because of the benefits they are believed to provide. In practice scientists are recruited by states to serve as national advisors and to serve on international science panels.

In the environmental realm, 140 global environmental assessments have been conducted since 1977, (Jabbour & Flachland, 2017; Kowarsch et al., 2016) and over 32 international science advisory panels operate (Haas & Stevens, 2011, 2017). It has become an almost a taken for granted assumption in diplomatic circles that regimes would be designed with formal science advisory components, or what is now called the science policy interface. National environmental ministries have become ubiquitous, as has offices of science advisors (Drori et al., 2003; Golden, 1991; Holdgate, 1982; Meyer, Frank, Hironaka, Schofer, & Brandon Tuma, 1997; Skolnikoff, 1994; Smith, 1990, 1992).

Science and expertise contributed to many of the major multilateral achievements of the post World War II global order, such as: reductions in infant mortality, improvements in life expectancy, macroeconomic coordination and sustained economic growth, nuclear nonproliferation, advances in public health, and environmental protection.

And yet the authority of science to meaningfully contribute to global governance/world politics is now contested to an unprecedented degree since the Dark Ages. This challenge is but one new front in a war of interests in world politics,

where science is being threatened by populists in conjunction with corporate interests who have been threatened by the policy implications of scientific findings, an argument which is elaborated in section “[Assaults on scientific legitimacy](#)” (Oreskes & Conway, 2010). There is an affinity between populist questioning of elitist expertise and the fossil fuel industry’s efforts to undermine the legitimacy of those providing policy advice counter to their interests, leading to climate gate in England and the harassment of climate scientists by Congress in the USA (Bradley, 2011; Mann, 2014). But the effects may be more pernicious than just undermining the technical foundations of effective global governance. As Hannah Arendt wrote:

The result of a consistent and total substitution of lies for factual truth is not that the lie will now be accepted as truth, and truth be defamed as lie, but that the sense by which we take our bearings in the real world is being destroyed. (Arendt, 1967, p. 15)

Still, science enjoys authority in global governance because of science’s social reputation for usable expertise. Its power rests on its ability to exercise influence over states. But it does not enjoy uniform influence. Its influence—or power—depends upon the extent of legitimacy which scientific institutions command in the eyes of the relevant audiences. While science operates within a political space, (Jasanoff, 2004; Jasanoff & Martello, 2004; Le Prestre, 2017) there are clearly identifiable criteria by which political actors accord science and scientists with authority and legitimacy, and choose to defer to scientific advice. Science’s legitimacy can be defended through rigorous contestation based on the roots which have supported its authority over the years.

The Nature of Scientific Influence: When Knowledge Is Power

Knowledge is power (Foucault, 1972; Haas, 1990). Through persuasion and learning, it leads other actors to recognize, and often pursue, new goals and policies by updating understandings of how the world works and how actors are affected by conditions in the world (Haas, 2015). Concretely, science influences governance by shaping frames and discourses, setting agendas, privileging policies, shaping the determination of who is entitled to representation in deliberations about technical and environmental issues, privileging reasoned discourse over emotional or purely interested discourses, and contributing to social learning. But it is a fragile power, which rests on the social foundations of Weberian deference. But because the reasons for deference to it rest on social beliefs, its influence may be rehabilitated by reasserting those foundational beliefs.

Science exercises power because it leads to behavior which would not have occurred in its absence. Science has a demonstrable influence on governance and exercises multiple forms of power in the sense of inducing actors to do things they would not otherwise have done. But this power is not exercised through direct influence over the choices of other parties. Rather it occurs by shaping beliefs and expectations, and understandings about how the world works and how national interests are affecting by conditions in the world (Guzzini, 2017; Lukes, 1974). Science helps

frame choices and collective understandings through path dependent lock-in social mechanisms as the resources commanded by the formal institution's scientists get deployed based on scientific understanding. Science also tends to accumulate more authority through such institutions, as the institutions amplify the respect for the informal institutions of science. Barnett and Duvall call these influences the institutional and productive forms of power (Barnett & Duvall, 2005). The social mechanisms by which such authority yields collective outcomes involve persuasion, learning, and institutionalized socialization of actors through new incentives and constraints deployed on behalf of the authoritative beliefs exercised by institutions which were themselves affected by the authority and legitimacy of the science. Steven Lukes was hesitant to call such influence power (Lukes, 1974), as it seemingly rests on consensus and there is no public evidence of manipulation. Yet the effects are powerful, because they lead to outcomes which would not have occurred otherwise and may be counter to state's *ex ante* preferences.

While most of these social mechanisms are permissive or enabling, scientists' ideas can be causal in the necessary sense. For instance, without the ideas actors would not have a plausible understanding of what to do, or of the map of available options and policy destinations. Ideas, be they warranted or not, can cause outcomes. Consider stock market scares and runs on banks which are triggered by rumors, or various Cold War scenarios, where an idea generates behavioral effects. Or consider alarms about global warming—something which cannot be confirmed by individual observation—where once accepted the ideas give rise to actions.

Scientific authority also has constitutive effects (Allan, 2017; Shackley & Wynne, 1996). By privileging the expertise of science at the expense of other possible claimants, and thus contributing to forms of social stratification, as well as privileging presumptive policies through the frames which experts help instill. Relying on science promotes reasoned and scientific deliberation. Relying on scientific institutions reinforces the legitimacy of the institutions of science, and vice versa. This latter constitutive effect appears to be well understood by the Conservative anti-science movement in the USA and UK, which have systematically launched attacks at science after the IPCC was awarded the 1998 Nobel Prize to undermine the legitimacy and authority of the IPCC.

Because reliance on science is voluntary, adherence to its dictates operate in the absence of any explicit coercion, and the nature of scientific power or influence rests on its authority and legitimacy. Without any material capabilities to influence decisions, or direct responsibility for making decisions, experts' influence is indirect. It rests ultimately on their social authority and the willingness of states to voluntarily defer to the advice of experts and to be persuaded by it.

Thus scientific power rests on scientists' authority, and the willingness of principals—be they states, IOs or firms—to willingly defer to their claims. Steven Bernstein writes that “legitimacy is the glue that links authority and power” (Bernstein, 2011, p. 20). Scientists enjoy privileged agency. Weberian *legal rational* authority comes with its own inherent logic (Weber, 1946/1958). It enjoins willing compliance with scientific or bureaucratic dictates because of the perceived impartiality and reason of the source.

Scientific Legitimacy

Legitimacy is thus a social construct that relates a group of presumptive experts to an audience willing to accede to their expertise. Ian Hurd writes that “legitimacy is the belief by an actor that a rule or institution ought to be obeyed” (Hurd, 2008). Allen Buchanan and Robert Keohane speak of “the right to rule” (Buchanan & Keohane, 2006, p. 405). Michael Zürn uses the more nuanced language “believed to have the right to rule” (Zürn, 2005, p. 136).

This notion of legitimacy combines the traditional distinction between *normative* and *empirical* legitimacy. The distinction is a false dichotomy (Flathman, 1980; Zaum, 2013). Zaum writes:

It is problematic to neatly distinguish between ... the normative dimension (the right to rule) and the sociological dimension of legitimacy (a widely held belief in the right to rule). However, one cannot just assert universal criteria against which legitimacy claims can be judged, as these criteria are depending on the particular audience making a normative judgement on an institution’s legitimacy. They are the consequence of social processes of argumentation, persuasion and socialization, and subject ... to social change. Similarly, judgements on an institution’s sociological legitimacy, ascribed as the result of the congruence of the institutions’ objectives and practices with the beliefs, values and expectations that provide a justification for its power, are made on the basis of certain normative suppositions. Thus, in practice both the normative and sociological dimensions of legitimacy are closely interlinked. (Zaum, 2013, p. 10)

Legitimacy in practice is the consequence of the normative expectations embraced by diverse audiences (Zürn, 2005). Their authority ultimately rests on a social relationship with the presumptive audience (Avant, Finnemore, & Sell, 2010; Zaum, 2013, 2016). The question, addressed in the following section, is what expectations of legitimacy are held in practice by states about science’s role in global environmental governance specifically, because states still make the decisions about delegating and deferring to science panels. The legitimacy criteria are generalizable to other areas of technical policy making.

The general concept of legitimacy is contested by scholars (Hurrell, 2005), but there is broad consensus on a variety of components that contribute to legitimacy. While it is unknown if these components are widely endorsed by audiences, and to what extent different audiences hold different criteria of legitimacy satisfying more criteria is better than fewer, legitimacy is a social fact, created by the actors who confer legitimacy on others (Bernstein, 2011). Indeed Steven Bernstein writes that “there are no universally shared criteria of legitimacy in global governance” (Bernstein, 2011, p. 22). There is very limited empirical work on the legitimacy of science, or general criteria of legitimacy at the global level (Börzel & Risse, 2005; Kanie, Andresen, & Haas, 2014; Rittberger & Schroeder, 2016; Zürn, Binder, & Ecker-Ehrhardt, 2012).

It is not just a matter of what is legitimate, but it is also a matter of who is legitimate to whom (McNamara, 2010). The granting of legitimacy depends on a social audience: “although legitimacy is mediated by the perceptions and behaviors of individuals (and one might add corporate entities) it is fundamentally a collective process” (Johnson, Dowd, & Ridgeway, 2006, p. 57). Such a question of audience

is particularly important given the increasing number of multi actor networks involved in global governance where actors' legitimacy may not be the same in the eyes of every other actor (Avant et al., 2010; Kahler, 2009; Kanie et al., 2014).

Many criteria for legitimacy are invoked—many from democratic theory and normative theory. Legitimacy has been most widely studied in the EU and, more generally applied to global governance by David Held and Koenig-Archibugi's edited work on global governance more generally (Ebbin, 2012; Held & Koenig-Archibugi, 2005). The terms *authority* and *legitimacy* tend to be used interchangeably. Below I distinguish between input, process, output, and outcome criteria of legitimacy. This taxonomy is informed by Fritz Sharpf's study of the legitimacy of the EU (Scharpf, 1999, 2009) and of climate change governance (Karlsson-Vinkhuyzen & McGee, 2013). Alternative formulations weight input, output and substantive legitimacy (Nasiritousi, Hjerpe, & Bäckstrand, 2016). Some of the categories are a bit arbitrary, as fairness can be considered a process or an output. Despite slightly different taxonomies, the intents are similar.

These definitions also span a variety of a number of different but overlapping sources of legitimacy criteria which are commonly identified by different theoretical traditions. Essentialist or rationalist criteria involve inputs having to do with respect for expertise and generative norms, which Constructivists regard as social facts (Ruggie, 1983, 1993) and which more essentialists treat in terms of their functional utility. In terms of process, theoretical traditions interpret the same variable in different ways (McCarthy & Fluck, 2017). Rationalist analysis looks at transparency and accountability in terms of their functional contribution to solving public action problems, whereas Constructivists tend to treat them in terms of signaling and expressing the performative competence of experts (Adler & Pouliot, 2011) and their discursive practices. Regardless of the differences in social mechanisms associated with these factors, cross tradition consensus exists about the validity of the factors in the eyes of states.

Practitioners and high-profile science panel architects have reflected about the legitimacy needs for scientific institutions, reflecting an awareness of many of the features of legitimacy expressed in the academic literature, and elaborated below (Bolin, 2007; Stafford-Smith et al., 2017; Kowarsch et al., 2016; Kullenberg, 1995; Leemans, 2008; Reid & Mooney, 2016; Tuinstra, Hordijk, & Kroeze, 2006; Watson, 2005). They stress the value of science in mitigating uncertainty and providing a range of policy options for states to choose between.

The institutional designers and members of the science policy community are acutely aware of the need to maintain and preserve the legitimacy of their institutions, and design them accordingly (Watson, 2005). Attention to legitimacy has informed the design of international science panels. They emphasize the need for recruiting scientists based on their professional reputations, as well as on geographic distribution.

For instance, the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) has been consciously designed in order to enhance its legitimacy, including inviting multiple stakeholders through two legitimate institutions (International Council of Scientific Unions (ICSU) and the International Union for

the Conservation of Nature (IUCN)) to contribute to IPBES deliberations (Esguerra, Beck, & Lidskog, 2017; Intergovernmental Panel on Biodiversity and Ecosystem Services, 2016). At the Fourth Session of the IPBES the USA and Switzerland emphasized the needs for science to conform to IPBES' principles of usable knowledge, focusing on scientific independence, credibility and timeliness (Earth Negotiations Bulletin, 2016).

Assaults on Scientific Legitimacy

Targeted assaults on truth and reason in the USA and UK on the legitimacy of science have challenged the legitimacy and authority of scientific institutions (Gauchat, 2012; Mooney, 2005; Oreskes & Conway, 2010). Organized anti-science campaigns targeted the IPCC after it was awarded the Nobel Peace Prize in 1998, as well as individual climate scientists and climate science more generally, and more recently the role of just about all experts in the US government and in particular those working on a wide array of environmental issues covering species protection, climate change, and air pollution.

Such threats arise from two sources. Deliberate attacks on its legitimacy come from the fossil fuel industry and from conservative republicans who wish to discredit the justifications for environmental regulation. A populist epistemology across societies which values individual experience over professional expertise is a deeper force (Drezner, 2017; Mead, 2011; Nichols, 2017).

Such challenges run the risk of blurring the social domains of science and thus undermining its presumptive authority. Science critics try to supplant hybrid facts which are the domain of expertise and scientific communities with social facts, which are subject to normative and interest based arguments by a wider array of actors. By moving political debate to the realm of social facts, critics seek to undermine science's privileged position.

Legitimacy Criteria for Defending the Legitimacy of Science

Since legitimacy is itself contested, and there are many plausible criteria for legitimacy, I here provide several of them which states are likely to apply to measure the legitimacy of scientific institutions. In practice, institutions are likely to be regarded as legitimate if they conform to multiple criteria (Bernstein, 2011; Fung, 2006). Usable knowledge (Ebbin, 2012; Haas, 2004; Haas & Stevens, 2011; Mitchell, Clark, Cash, & Dickson, 2006; Cash et al., 2003)—knowledge which is credible, legitimate¹ and salient—is an example of multiple legitimacy criteria. The greater

¹ Legitimacy in this context refers to input criteria.

the legitimacy the more influence and the broader the deference by states to scientific advice and likelihood of converting advice to policy and governance.

The World Values Survey in Figure 7.1 reveals significant heterogeneity between countries in terms of public confidence in expertise from 2010 to 2014. While the questionnaire did not ask directly about legitimacy or confidence in science, expertise provides a good proxy for scientific legitimacy.

These findings should be taken with a grain of salt. It is unclear what the survey is truly measuring. Faith in expertise could merely reflect diminished faith in the state rather than a positive endorsement of the legitimacy of scientific expertise.

The World Values Survey findings are confirmed by the International Social Survey Program, which indicates that less than 50% of respondents worldwide believe the modern science will solve our environmental problems with little change to our way of life (Pammett, 2015) with fairly consistent responses occurring from 1993 to 2010, although 70–80% of respondents believe that science does more good than harm (Pammett, 2015). In the USA, highly differentiated responses to science and its claims to legitimacy are based on political orientation (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Howe, 2013).

Citizens vary regarding their confidence in institutions, and in different scientific institutions as well. According to Gallup polls, Americans express a great deal or quite a lot confidence in the military, well above that of the medical system, and other social institutions (Gallup, n.d.). Confidence in scientific research as a foundation for public policy varies widely by country, although most countries believe that they are better off from the use of science and technology (National Science Board, 2016).

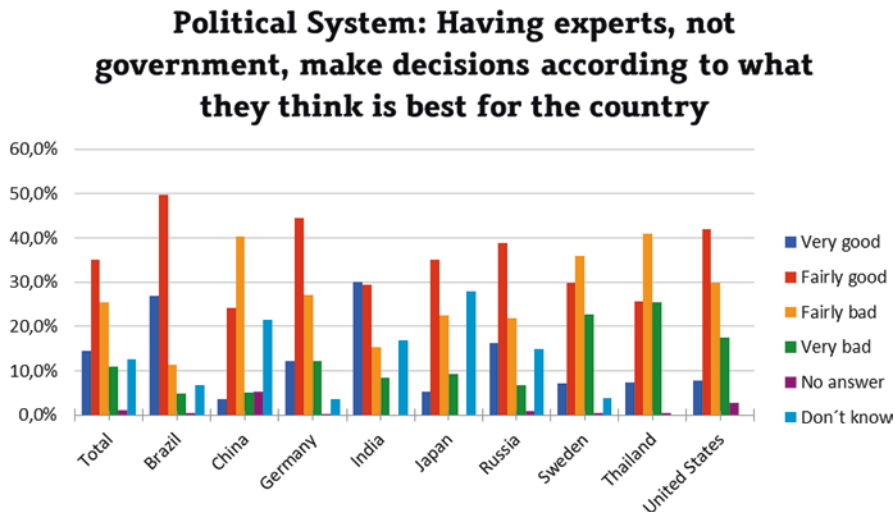


Fig. 7.1 Confidence in expertise by country. Source: Design by Author. Adapted from World Values Survey: Round Six, by Inglehart et al. (Eds.) (2014, pp. 279–280). Madrid: JD Systems Institute. Retrieved from <https://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp>. Copyright 2014 by the JD Systems Institute. Reprinted with permission

The Pew Research Center suggests that 76% of Americans express a great deal (21%) or a fair amount (55%) of confidence in scientists. Medical scientists claimed slightly more confidence (24% a great deal, 60% a fair amount) (Pew Research Center, 2016). Scientists—medical and nonmedical—were second in social institutions trusted by Americans, with the military at the top and elected officials at the bottom.

On what is the legitimacy of science based? Scharpf provides the standard taxonomy for legitimacy criteria, distinguishing between input, process and output/outcome criteria of legitimacy (Scharpf, 2009).

Inputs

Input legitimacy relates to the background beliefs which other actors apply to the role of science in modern governance and societal relations. Input criteria are typically expressed as functional roles, as broader sociological social facts, and through their affinity with broader generative norms and principles. Inputs include such factors as the social belief in the value of science for governance, the social prestige enjoyed by scientists, the general norm of meritocracy in modern democracies, and the consensual foundation of scientific advice. Processes include a sense of fairness in the universal application of scientific inputs, the transparency of expert selection, the transparency of how scientific advice is provided to deliberative bodies, and the discursive practices of the experts which rest on the narratives of world politics. Outputs and outcomes involve whether the result of the application of expert scientific advice provides public goods and valued outcomes.

Functional Inputs

Historically science has enjoyed a social reputation for providing useful information to the state and decision makers. Science performs many functional roles in modern governance. Sociologists of science argue that science helps ameliorate risk and uncertainty, while also establishing categories to be governed and consolidating the social authority of scientists (Barnes, Bloor, & Henry, 1996; Gieryn, 1999; Nowotny, 2016). Economic historians attribute its legitimacy to the instrumental value that science provides for promoting capitalist power and wealth accumulation (Mokyr, 2017; Mowery & Rosenberg, 1989; North, 2005). Sociologists of knowledge attribute it to the power science grants to the state for controlling its society (Hacking, 1990; Porter, 1986). Moreover, scientists *cum* scientists have been socially recognized as possessing valuable skills in public administration and governance which politicians in the modern regulatory state regard as essential (Drori et al., 2003; Ezrahi, 1990; Lentsch & Weingart, 2011; Lindblom & Cohen, 1979; Shanahan & Khagram, 2006). Science, along with other bodies of expertise that are

overtly nonpolitical allow politicians to resolve debates without “overt expressions of interests and threats of violence” (Kennedy, 2016, p. 48).

Reputation

Science’s legitimacy is a social fact, in so far as the social prestige and authority of science enjoys a taken for granted aspect. Its reputation for expertise underlies its legitimacy (Dunlop, 2000; National Academies of Science, Engineering, and Medicine, 2017), just as scientists role as experts rest on their legitimacy. Yet, just as they are experts because they enjoy perceived legitimacy, they are also legitimate because they are seen to be experts in a given domain (Sending, 2015).

Scientists’ legitimacy rests on their social credibility, which in rests on the presumptive competence and expertise of actors. Dan Bodansky argues that scientific expertise enjoys legitimacy in international deliberations because it confers trust in the warranted foundations of collective decisions. Scientists professional pedigrees and reputation for mastery of technical material confers legitimacy (Bodansky, 1999).

The usable knowledge literature focused attention on the credibility of scientists’ expertise, based on their reputation, accuracy, track record, and presumptive impartiality (Clark, 1990; Haas, 2004). Reputation, as well as confidence derives from publications in highly regarded peer reviewed journals, positions at prestigious institutions, and advanced degrees and experience in relevant disciplines. Individuals need not be prominent in their fields, though (Anderegg, Prall, Harold, & Schneider, 2010) impartiality is measured by independence from state sponsors.

However, expertise alone appears to be insufficient for commanding authority. Intuitively, experts must command specialized knowledge in the domain in which they are providing policy advice, as reputation is highly issue specific. Consider the numerous letters to the editor by Nobel Laureates on a broad array of issues of global politics, with little impact. Or the failed campaign by Linus Pauling claiming the benefits of vitamin C, which was well beyond the scope of his professional recognition. When scientists claim authority their claims must reflect competence, which is related to their areas of expertise and experience.

Social Norms, Values and Principles

Science’s affinity with broader social norms, values and principles are likely to enhance its legitimacy to the extent that it explicitly articulates universal goals, or helps member states achieve those goals (Aggarwal, 1998; Reus-Smit, 1997). A number of broad principles have been identified in the IR literature, including multilateralism (Cox, 1992; Keohane, 1990; Ruggie, 1993); embedded liberalism (Bernstein, 2001; Ruggie, 1982); state sovereignty (Biersteker & Weber, 1996); liberal multilateralism (Deudney & Ikenberry, 1999; Ikenberry, 2011) and possibly as an emergent norm, sustainable development.

Mike Hulme, borrowing from the STS literature, argues that science is inherently political and normative—because of its distributional consequences and the ways that it is used in practice by decision makers to advance their prior goals – so that the best science is that which is explicitly linked to shared norms (Hulme, 2012). The legitimacy of science thus hinges on its application to socially shared ends (Turnhout, Dewulf, & Hulme, 2016). In a complementary manner scientific institutions must resonate with domestic norms and goals as well (Cortell & Davis, 1996).

Consensus

One of the major foundations for scientific legitimacy is its ability to project consensus about understanding technical problems. A common front underscore the authority of scientific knowledge and expertise, as well as providing a rhetorical firewall against challenges.

Process

A number of arguments have been presented about social processes which confer legitimacy on institutions and actors.

Fairness—Respecting Alternative Viewpoints

Robert Keohane (Buchanan & Keohane, 2006; Keohane, 2001), Thomas Franck (Franck, 1990), and Oran Young (Young, 1991) speak of the need for fairness as a criterion of the legitimacy of international institutions in the eyes of states, and also presumably civil society. Fairness often has two senses. One is the common usage applied to outcomes, that everyone gets something.

For science, the focus must be applied to the deliberative process by which confident formulations are generated. The process itself must be regarded as legitimate, often by providing for voicing alternative viewpoints, as well as not being biased towards privileged actors. For science panels to enjoy legitimacy they must express consensus while also providing for the expression of a variety of viewpoints.

Transparency of Expert Selection and Expert Consensus

A transparent process by which observers may understand how decisions were reached, and how experts were selected will enhance the legitimacy of a scientific institution. Inclusiveness and participation are particularly valued legitimizing criteria for groups with little ability to promote input based legitimacy, and with limited ability to appraise political processes, such as developing countries, and not state

actors including NGOs and the private sector (Kahler, 2005; Scholte, 2005). Geographic distribution of experts is a widely invoked form of procedural legitimacy.

Transparency of the Deliberative Process

The transparency of deliberation and contestation are valued processes for science in international affairs (Stevenson & Dryzek, 2014). Such public revelations confirm the ways in which expertise is performed and conclusive findings are warranted. Beyond immediate transparency, such arrangements also contribute to reflexivity, and thus more effective policy and politically relevant knowledge as second order objectives, which states value (Dryzek & Pickering, 2017; Stevenson, 2016).

Discursive Practices

Agreement on discursive practices may also serve as a key source of legitimacy for scientific expertise (Adler & Bernstein, 2005; Adler & Pouliot, 2011; Börzel & Risse, 2005; Green, Ward, & McConnachie, 2007; Helgadóttir, 2016; Risse, 2003; Steffek, 2003). Discursive practice delimit the parameters of permissible deliberations and the legitimate forms of communication by establishing competent performance. The vocabulary which is used confers legitimacy, such as legality democracy, social justice, progress (Stephen, 2015) and even sustainability. Thus, in UN venues scientific experts must speak the arcane language of UN precedents as well as that of science.

Outputs and Outcomes

Institutions may enjoy legitimacy if they provide valuable outcomes for their constituencies, particularly the provision of global public goods (Hurd, 1999). While one could consider the variety of indirect second order and possibly sinister outcomes which states may desire, such as delaying decisions, creating or breaking up coalition, and simply moving the goalposts of policy deliberations, such choices are beyond the simpler first order outputs and outcomes valued by states. Under such circumstances, such as with central banks, illegitimate processes may be overlooked if the effects of the institutions are believed to work (Vibert, 2007). Functional bodies such as science panels are likely to be valued for their direct contributions more than their indirect political functions (Steffek, 2015).

Tensions Between Legitimacy Criteria

Not all criteria may be obtained simultaneously. For instance, there are tensions and even contradictions between satisfying input criteria for disciplinary expertise and inclusive process criteria favoring multiple stakeholders, when some civil society stakeholders enjoy less legitimacy than scientists in the eyes of most states. Similarly, equity concerns with inclusive geographic distribution may run up against notions of competence and expertise unless great care is taken in the selection process. Deliberative transparency may contradict expert authority. By being honest about the degree of consensus and contestation within the scientific community, they may run the risk of undermining their reputation for authoritative understanding. Scientific independence may be at odds with states’ desires for maintaining sovereignty and a range of political control over domestic policy.

Restoring Scientific Legitimacy

Strikingly, efforts to undermine the legitimacy of science have relied on a relatively small number of critiques of climate scientists: questioning the consensus within the scientific community, the accuracy of their predictions, and their impartiality. Given the wider array of social legitimacy criteria, defenders of scientific legitimacy can organize more compelling responses by invoking multiple justifications for scientific legitimacy. Ten criteria for legitimacy were cited in the legitimacy literature in IR, associated with input, process and output/outcome measures. The following Table 7.1 summarizes these legitimacy criteria.

Defenders of science can offer a discourse which stresses multiple benefits from structured scientific environmental advice, including the record of its association with more effective environmental treaties, the high degree of consensus amongst

Table 7.1 Legitimacy criteria for organized science in world politics

Category	Criteria for legitimacy
Input	Reputation/prestige/competence
	Impartiality/independence of scientists
	Ameliorate risk/uncertainty
	Promote wealth accumulation
	Analysis resonates with broader social norms/values/principles
	Consensus
Process	Legitimacy must be held by domestic populations as well as states
	Respect for multiple viewpoints
	Transparent selection
	Transparent deliberation
	Egalitarian inclusiveness
Outcome/output	Discursive practices
	Associated with effective governance of global public goods

Note. Source: Design by author

peer reviewed published climate change research, the excruciating detail and process of IPCC reviews, the growing geographic equity of scientists involved in science panels, and the underlying norms of modern public policy resting on expertise.

Scientists should focus on two audiences for such campaigns: government elites, and mass publics. For dealing with government elites, scientists should provide clarity on the process of developing consensus and advice, explaining clearly why they believe what they do in nontechnical terms. For dealing with mass publics that are experiential in their epistemology, scientists should tell stories and offer clear examples (Weiler, Keller, & Olex, 2012).

Conclusion

In a post truth era where expertise is under siege, what are the prospects for the future of science diplomacy and of deference to international science panels? Science's role in world politics is challenged, but not irreversibly. Critics have principally focused on the input criteria of accuracy and reputation. The extent to which these challenges may fully undermine science and science panels' legitimacy may be exaggerated, given the much wider number of legitimacy criteria which science panels continue to reflect than the narrow ones on which they are attacked.

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Chapter 8

Mobilizing Intangibles under the Acceluction Regime



Ahmed Bounfour

Intangibles, including hard intangibles such as intellectual property rights (IPRs), are important sources of growth and innovation in any context (Bounfour, 2003; Bounfour & Miyagawa, 2005; OECD, 2013; The World Bank, 2006). Intangibles represent the main components of performance for firms and ecosystems: R & D, innovation, competences, data, processes, brands, reputation, trust, brands, patents, copyrights, among others. They are important ingredients in transactions and socio-economizing, for example, in the way production and innovation systems are organized. In the business sphere, the epistemic view has been—and is still—built on an organizational setting that is relatively stable in space and time (the firm). But new challenges and new production systems are emerging; in these new systems, society is no longer a target, but is more a resource and a key player for innovation. In the specific case of IPRs, we need to understand their role, contribution, and evolution under emerging production regimes.

Several arguments underline this point. Analyses of value creation are fundamentally based on traditional spaces, consisting of firms operating in transactional markets (the transaction regime). But, since at least the mid-1980s, firms, especially larger ones, have been the subject of a deep transformation, and new modalities and value creation spaces have appeared. Outsourcing (since the 1989 Kodak contract),

This chapter draws upon content from my book *Digital Futures, Digital Transformation, from Lean Production to Acceluction*, published by Springer (notably Chapters 4 and 5). It also builds on my discussions with participants at the Knowledge and Space International Symposium on Professions and Proficiency, organized by Professor Johannes Glückler, Heidelberg University, Klaus Tschira Foundation, Villa Bosch, Heidelberg on July 26–28, 2019. I am very grateful to Professor Glückler for his invitation, and the opportunity to engage in a stimulating dialogue with leading experts, at such a wonderful venue.

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networking, and now open innovation have become hard facts within such a transformation. In parallel, and thanks to the digital revolution, new value production methods have appeared and, in many cases, the transaction is related to a multitude of links. Therefore, it could be argued that the new production system is fundamentally a production of links, as a complement to the production of transactions.

Digital transformation is deeply challenging how value is created. Close attention must be paid to value spaces, in particular, their organizational topography and dynamics. From this, emerges the need for a deep understanding of its singular nature. We need to examine its fundamentals, especially its generative nature and the way it continuously explores and accelerates the links between existing and new value spaces. These observations led to the development of the concept of *acceluction*—the accelerated production of links. This notion was an outcome of the CIGREF Foundation’s long-term (1970–2020) Information Systems Dynamics (ISD) program and it aims to characterize the fundamental nature of new production systems digitality. As these links are the new drivers for value creation in digital spaces, we need to delineate their nature (transactional, organic, and semi-organic) (Bounfour, 2005). Such a deep change in the way of producing value has key implications for business models, job creation, and the global power of firms, nations, and organizations.

The empirical and analytical work carried out under the wide-ranging ISD program resulted in several publications.¹ The various projects that were supported by the program have revealed, directly or indirectly, that value production has been widely adopted by businesses. No longer limited to the traditional boundaries of the enterprise, it now encompasses many other domains: competitors, complementary resources (such as those of suppliers or relatively unconnected sectors), customers, mobility (as a new production space), data, social spaces and the private time of employees. This expansion suggests a new mode of production in which digitality is a key component, and where the boundaries and guiding principles are yet to be determined. The question of mobilizing intangibles under the accelucted regime is, first and foremost, a question of governing different and emerging value spaces. This leads me to the key research question of the chapter: What are the characteristics of the emerging regime of digitality and the role of intangibles in such a regime? By a regime, I understand the set of organizational disposals that a techno-system calls for firms and ecosystems to adopt. The acceluction regime, which will be characterized later, calls for firms and organizations to accelerate the production of links among numerous value spaces. Such an acceleration is the key organizational disposal that is needed to adopt in order to succeed and benefit from the potential of such a regime.

¹Bounfour, A. (2011). *Acceluction in Action*, CIGREF Foundation; Bounfour, A. (2013). *ISD international research program: An overview of wave B projects*; Bounfour, A. (2014). *An overview of wave C projects*, <https://www.cigref.fr/archives/fondation-cigref/>

The Space-Time Dimension as a Starting Point

Let us consider the question of space-time as a starting point. As Krugman (1998) underlined, space is the final frontier of economic analysis, and digital has very firmly put it back in the limelight. More specifically, the articulation between space and time is becoming a core element in the emerging mode of production, mainly due to the digital revolution. The analysis of propositions that were put forward under the ISD program indicates that one of the underlying dimensions of the emerging enterprise is the acceleration of links between different spaces and, thus, a space-time contraction.

Acceleration was the subject of Hartmut Rosa's post-doctoral thesis (Rosa, 2005/2010). I echo some of his arguments here, extending them to the digital domain. Rosa distinguishes between three periods of production: premodern (before the industrial revolution), modern (corresponding roughly to twentieth century industrialization), and postmodern (late twentieth, early twenty-first century). These three periods of human development (at least in the West) are characterized by rules that govern social relations, including the management of productive time. In this respect, the modern period is characterized by a clear differentiation between work time and free time, with particular attention paid to productive time. The postmodern period is characterized by the emergence of a fusion of times (productive and personal) and, in the process, the diminishing relevance of time controls. This is only made possible by digital acceleration: Its ubiquitous and instantaneous nature induce a considerable expansion of the production space, making attempts to control it, a very hard exercise.

Time and Space in Digital Worlds

Territoriality has been defined in terms of control (Sack, 1986). Digitality fundamentally challenges such a concept, or at least invites us to consider its main components, and the way they are articulated, jointly or sequentially. For organizations (firms), these issues have become part of daily life, but changes can also be observed at the more macroscopic level. Territoriality and space are a question of time, for example of relationships between spaces. The ubiquity of digitality has an important impact on the space-time relationship in the new production mode. As Le Goff (1977) demonstrated, in the medieval age, merchants organized time and space around clock time; productive space-time was aligned with their priorities, and not those of the church. In the context of value creation—and therefore capital circulation—time was organized by technological instruments, clocks (Harvey, 1989, pp. 170–171). In later work, Harvey (2005) builds on Lefebvre's work on space (Lefebvre, 2000), distinguished between absolute space (walls, bridges, etc.), relative space (e.g., circulation, time-space compression), and relational space (vision, emotions). These three distinctions are being challenged by the emergence of

digitality. In a similar vein, Hassan (2003) develops the concept of the chronoscopic society, which sees the conjunction of neoliberal globalization and information technology as a way to impact the way knowledge is disseminated in advanced societies. This nexus leads to an information ecology that affects individuals, culture, and society. Hassan goes on to argue that we are rapidly moving from a chronological temporality of clock time, to a digitality-compressed real time, which he, after Paul Virilio, names chronoscopic time (Hassan, 2003, p. 5).

Time is a central notion in our working and personal life. Clock time constitutes the central point of reference in daily life. Work time is the point of reference for individuals, organizations, and societies. Mumford (1934/1967, quoted in Hassan, 2003) argued that, in many respects, the clock was the central arm of the industrial revolution; but, more than the railway or the steam engine, the ICT revolution compresses both space and time. Taylor's application of the principles of scientific management illustrates the importance of clock time in modern societies: Workers actions are controlled by clocks, and they may even need to beat the clock to survive. Most people suffer from a chronic lack of time. As Hassan (2003, p. 133) notes, "Being increasingly suspended in the real time of chronoscopic temporality means a lack of time to read, to study, to reflect, to consider, to concentrate, to debate and discuss, to care, to empathize, to analyze, to interpret, to scrutinize and to sympathize—and more". In post-modern societies, time has become a scarce resource, a point that is underlined by Eriksen (2001), who refers to the "tyranny of the moment". The acceleration of everything has led to a scarcity of resources, including the attention of others. This, naturally, has an impact on the status of knowledge.

The Acceleration of Everything

The notion of space is also altered by digital. Individual space is impacted by the ubiquity of digital artefacts. The contractual space is also challenged by digitality, since contracts are traditionally defined by reference to geographical space (Simone, 2012, p. 25). Following Rosa (2005/2010), among others, we can posit the hypothesis that the space-time of collective action is contracting, which poses a serious problem for organizations that, until now, have been governed by vertical hierarchies and control (bureaucratic organizations, or authoritarian governments). Adopting a broad-brush anthropological perspective, we may be witnessing the emergence of a new kind of behavior (and a new kind of human being), linked to the ubiquity of digital and the accompanying acceleration.

Digital objects and systems appear less like elements of infrastructure, and more like boundary objects in the transformation of business and society, and associated modes of innovation and control. Many studies highlight the experience dimension. Experience, the dictionary tells us, is all to do with *perception* and *sensation*, and is the etymological cousin of *experiment*. In the modern world, it is a very important dimension of the emerging production mode. Digital is a continuous space of

experience both for individuals (or customers), and businesses and their strategies. The latter are conceived less and less in linear terms—to gain competitive advantage—and more and more in terms of engagement and experiment, this continuous process of trial and error ending with the implementation of ideas that work.² We can see similarities with the shrinkage of space-time: the ever shorter space-time of collective action, with unstable roles and blurred organizational boundaries. In this context, acceleration emerges as an essential transformational phenomenon, with impacts and implications that are not yet fully understood. The acceleration of spatiotemporal links, in particular, calls for a fundamental reflection on its nature, its future, and the associated risks.

The historian, Jacques Le Goff (1977) argues that as early as the Middle Ages in Europe, industrial mode of production isolated productive time. This had become controllable following the invention of ad hoc measurement instruments: clocks, timing machines, and the associated concept of *hours worked*. Modernity is, above all, about controlling predefined spaces (the enterprise). It is now clearly established that, in the current phase of late modernity, the boundaries between these spaces are being eroded; not only is this a source of tension, but it also represents a fundamental change in the way things are produced. This does not, of course, in any way herald the disappearance of factories, or the modes of production that are traditionally associated with them. But it does herald the ubiquity of productive time, correlated with the ubiquity of digital. This question and, in particular, the issue of the equivalence of norms, can also be considered in the long term, from a sociological angle.

The Postmodern Condition and Digitality

Liotard (1979) provides an elegant analysis of the emergence of the postmodern condition and the role of knowledge. The postmodern condition is contrasted with the modern condition, for example the existence of a metadiscourse: “I will use the term *modern* to designate any science that legitimates itself with reference to a metadiscourse of this kind making an explicit appeal to some grand narrative we decided to call modern ‘the science that refers to it to legitimize itself’” (Liotard, 1979, p. 7). From this angle, digital technologies can be seen as a source of a grand narrative of societies. It could even be said that they are “the coup de grâce unless we interpret ‘digiworld’ itself as the latest great narrative?” (Malecki & Moriset, 2008, p. 222). Digitality can, then, be considered as both a source, and the matrix, for a hyper postmodern society.

The postmodern condition and digitality can also be related to the issue of learning modalities and, therefore, intelligence. What approaches do postmodern

²Cf. McGrath, R. G. (2013). *The end of competitive advantage: How to keep your strategy moving as fast as your business*. Boston, MA: Harvard Business Review Press.

societies take to learning modalities? Simone (2012, pp. 32–37) argues that we are in the “third phase” of the history of knowledge, that is, how ideas and information are created. The first phase coincided with the invention of writing, which made it possible to present information on a stable support. The second began with the invention of printing, which allowed the large-scale production of knowledge via an *ad hoc* instrument: the book. These two phases are similar in the sense that they are both mental operations targeting texts. The third phase is mainly driven by videos and computers.

The invention of writing has had a huge impact on human beings, “it led to an immense increase in the importance of vision compared to hearing”, and the emergence of a specific mode of perception: *alphabetic vision* (Simone, 2012, p. 55). This has had an impact on the development of cognitive capabilities in modern humans. With the advent of digital technology, we are moving from alphabetic vision (based on sequences) to nonalphabetic nonvision (based on simultaneity). Hence simultaneous learning and, therefore, *simultaneous intelligence* has risen in importance (compared to sequential equivalents). This form of intelligence may be associated with a new type of human, the *Homo Videns* described by Sartori (1998, quoted in Simone, 2012), in his analysis of the transformation of societies through the media artifact of television. People (especially children) lose their ability for abstraction and, therefore, their ability to position themselves in space and time.

Digitality is, at a minimum, a factor that is accelerating the emergence of a post-modern mankind—and, therefore, a postmodern enterprise, in which space and time are greatly compressed. As a result, relationships between people, and aspects of organizations, are becoming more fluid. The questions that arise are: If we follow the norms argument, to what extent does this instability call for a new form of governance and institutions? And, what new equilibria are needed between different organizational design principles and frameworks?

Five Key Dimensions of Digitality

A thematic analysis of the propositions formulated by the ISD program points to five key dimensions in the digital transformation of the enterprise: (1) The expansion and plurality of spaces; (2) The articulation between transactional and organic links; (3) The spatiotemporal structure; (4) Organizational plasticity; and, finally, the central element of the analysis (5) The acceleration of links (see Fig. 8.1).

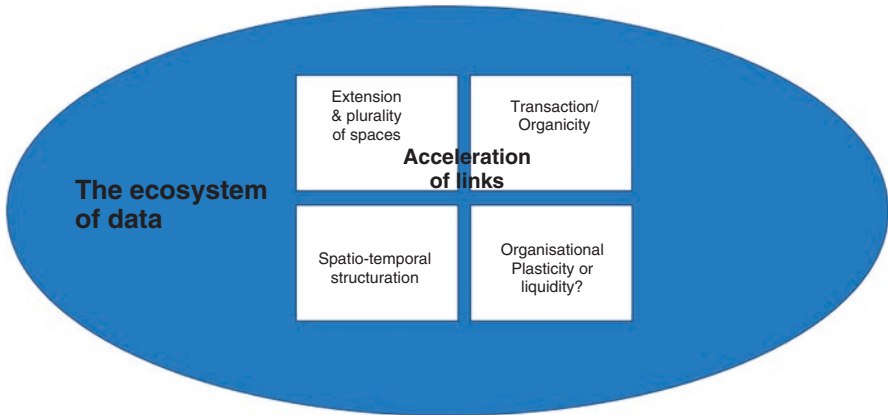


Fig. 8.1 The acceleration of links, at the core of digital transformation. Reprinted from *Digital futures, digital transformation: From lean production to acceleration* (p. 70), by A. Bounfour, 2016, Cham: Springer. Copyright 2016 by Springer. Reprinted with permission

The Expansion and Plurality of Value Creation Spaces and the Transformation of Modes of Value Production

Value creation spaces have mushroomed with the advent of digital. The borders of the enterprise have become fuzzy, and products and services are being developed in multiple spaces. Along with customers, suppliers, and internal resources—the traditional points of reference for business decisions—we must now consider complementors, mobility (customers and employees), the private time of company personnel, and the immense data space.

Meanwhile, value production modes are changing fundamentally. Traditionally, value is perceived (including in economic theory) as a process of consumption—and, therefore, literally the destruction—of an output (of tangible goods in particular). In the digital economy, as in the digital society, value is created and deployed by multiple channels, including experiential (notably that of the customer experience). Value is created by an individual and collective experience. This experiential process reinforces the indirectly transactional character of value creation modes. In digital spaces, the transaction is not directly linked to the underlying processes. The Google user, for example, is a resource rather than an object of the transaction, but this attention resource is mobilized for a transactional purpose, namely advertising. The Nike+ shoes that were analyzed by one of the ISD projects (El Sawy & Pereira, 2013) were designed as part of an experiential system, in which the end purpose is transactional. However, here the customer relationship is more complex. The product-service transaction takes place in the context of a global production system in which the experience of the information flow (behavior, benchmarking of individual users, belonging and contributing to a community of users) is a key part of the transaction. The plurality of spaces has been compounded by the complexity of production systems.

The Articulation of Transactional and Organic Links

From Ronald Coase onward, economists have theorized about the existence of the firm as a resource that is more-or-less organic, rather than by recourse to the market. Williamson developed the arguments that are essential to understanding the dynamics of resource organization, between the market and the hierarchy. The theory of organizations, which builds on the work of Chandler, justifies the singularity of the firm and develops a historical perspective for analyzing its modes of configuration over time. Digitality, associated with the long-term deployment of new managerial practices (outsourcing, networking of activities, etc.) leads us to revisit the question of the relation between transactionality and organicity.

Transactions, in other words, market relations are deployed on a massive scale within the enterprise, making it an organized market. However, this deployment is limited by cost and inefficiency, notably with respect to empowering innovation. Innovation requires a minimum level of organic relations between individuals in order to spread fully throughout the company's internal space. Symmetrically, the market—and therefore the transaction process—once again becomes a key lever for organizing digital, including one of the most complex activities: innovation. Nowadays, people with varying degrees of expertise can collaborate on an innovation, without any prior contact. In other words, digital, and its associated platforms, enables innovation to be organized around purely transactional links. If we extend the spectrum to all forms of social interaction, we find that organicity does not necessarily predominate; there is often a degree of hybridization between the two modes or regimes. Generally, in the work sphere, interactions now combine transactional modes of governance with more-or-less organic modes (dominated by recognition-based relations).

The Management of Space–Time

Control over space-time is a vital dimension of business management. It is often seriously undermined by digital, which can clash with traditional mechanisms. Several ISD projects examined how companies have revisited their way of doing things, especially in areas that touch on product design, in geographically distributed contexts, with broad functional implications. The KBO 2020 project, for example, illustrates the need for R&D-intensive enterprises to develop instruments to control spatial and temporal *alignment tensions* when developing products with tight time constraints. The Desvaldo project showed how a global software development firm was obliged to invest heavily in developing the skills of its Chinese partner, drawing on agile methods, in order to cope with geographical constraints (one of the two sites was located in the United Kingdom, the other was in China).

Organizational Liquidity

Here, *liquidity* refers to the plastic (malleable) character of the enterprise, its boundaries, and its activities. Liquidity is greatly facilitated by virtuality: “the virtual is by no means the opposite of the real. On the contrary, it is a fecund and powerful mode of being that expands the process of creation, opens up the future, injects a core of meaning beneath the platitude of immediate physical presence” (Lévy, 1998, p. 16). Plasticity is significantly facilitated and amplified by digitality, not to mention the generative nature of digital technology. The development of cloud applications, crowdsourcing, and open innovation solutions are just a few illustrations of the huge move towards organizational liquidity, which will have a determining effect on the future enterprise.

The Acceleration of Links

The preceding elements prefigure an open production system that is dominated by accelerated links between a plethora of value creation spaces that are internal and external to the enterprise. Internally, this is illustrated by the wholesale deployment of mechanisms that shrink functional, disciplinary and geographical distances. Externally, the massive use of market mechanisms to develop ideas and innovation programs also attests to the importance of links between the different value creation spaces.

Accelution: The Mode of Production of Emerging Digital Uses

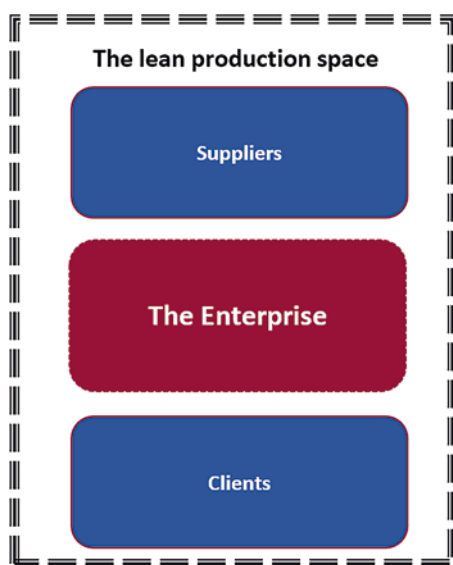
Given the above considerations, is it time to recognize the emergence of a new, digitally-driven, mode of production and, thus, of business organization? If so, what are its key characteristics, and what are the implications for companies? The answer to the former question seems to be yes, for reasons that are developed below. The characterization of the emergent mode of production is a key step in the design of the 2020 enterprise. Drawing on work conducted by ISD partners and, more generally, the literature on the transformation of socioeconomic systems and their modes of governance, in the following we characterize—in both structural and conceptual terms—the emergent mode of production. First, however, we present a brief review of some of the concepts related to dominant modes of production, putting them in historical perspective. At the conceptual level, the dominant modes of production in the automotive industry were, until recently, dominant. Here, indeed, the concept of *lean production* has dominated over the past 30 years, along with its managerial variants (*lean management*, etc.).

The Lean Production as a Starting Point

Let us pause for a moment and look specifically at the space–time dimension of lean production. The concept grew out of a major MIT program in 1985 on the future of the automobile industry, and was mooted by John Krafcik (Krafcik, 1988). Lean refers to a system put in place by Toyota in the late 1950s, following organizational innovations introduced by Taiichi Ohno. In the early 1960s, a centralized system for the streamlined production of a material good (in this case, cars) was introduced by optimizing end-to-end flows: from supply chain, to production, to customer relations (Womack, Jones, & Ross, 1991). Lean focuses on controlling material flows between industrial operators (suppliers and large manufacturers). The production space is relatively circumscribed and is limited to enterprises in the sector (including the distribution network), although customer needs can also be integrated (lean being a substitute for mass production). Lean production followed observations of the dominant production system—the Toyota system. Worldwide, carmakers, especially American producers in the 1980s, sought to understand the system and replicate it. Lean is more advanced than mass production, in so far as it optimizes material and information flows, including those that relate to demand. It does so in a relatively confined and controlled system (see Fig. 8.2), consisting of suppliers, the enterprise itself, and its customers (distributors).

The flow space is pre-identified and, in some ways, relatively controlled. Even in a so-called “extended” enterprise, the core enterprise controls and manages the production system, albeit with an important adjustment relative to mass production: the need to integrate downstream information flows (from customers). Despite the

Fig. 8.2 The lean production space. Adapted from by A. Bounfour (2016, p. 76). Copyright 2016 by Springer. Adapted with permission



extension of the productive space, the system remains relatively closed and, above all, stable. Toyota pioneered the introduction of standards in the 1950s and it was only much later, in the 1980s, that the practice spread to Europe, notably with the establishment of electronic data interchange and the emergence of standardization bodies (Galia in France, and its European counterpart Odette). As Table 8.1 shows, lean production is very much a production system governed by flow optimization.

The concept of lean production is defined in Womack et al. (1991) (see Table 8.1). Their book contrasts the mass producer (e.g., the Western producer) with the lean producer (e.g., the Toyota producer). They say, “The mass-producer uses narrowly skilled professionals to design products made by unskilled or semiskilled workers tending expensive, single-purpose machines” (Womack et al., 1991, p. 13), whereas “the lean producer, by contrast, combines the advantages of craft and mass production, while avoiding the high cost of the former and the rigidity of the latter. Towards this end, lean producers employ teams of multiskilled workers at all levels of the organization and use highly flexible, increasingly automated machines to produce volumes of products in enormous variety” (Womack et al., 1991, p. 13).

So, lean production is distinguished from mass production not only by the skills’ profiles of workers and resource use, but also, and more importantly, by the continuous search for optimization. As the authors stress: “Perhaps the most striking difference between mass production and lean production lies in their ultimate objectives. Mass producers set a limited goal for themselves—‘good enough’. This translates into an acceptable number of defects, a maximum acceptable level of inventory, a narrow range of standardized products. To do better, they argue, would cost too much or exceed human capabilities” (Womack et al., 1991, p. 13); “Lean producers, on the other hand, set their sights explicitly on perfection: continually declining cost, zero defects, zero inventories, and endless product variety” (Womack et al., 1991, pp. 13–14). If we adopt the ISD program language, lean production is fundamentally a system of optimization of (mostly) physical flux within production spaces in the

Table 8.1 Lean production: Key characteristics

Lean production (relative to mass production)
The principles of lean production include:
Teamwork
A focus on communication
Efficient use of resources and elimination of waste
Continuous improvement
Compared to mass production, lean production means:
½ the human effort in the factory
½ the manufacturing space
½ the investment in tools
½ the engineering time (hours)
½ the new product development time

Note. Adapted from Womack et al. (1991), p. I. Copyright 1991 by Harper Perennial. Adapted with permission

automotive industry (suppliers, original equipment manufacturers and, to a lesser extent, customers). Such a system naturally focuses on specific business functions: factories, design, suppliers, and dealerships.

However, digitality, bolstered by the internet, has radically transformed the economic, managerial, and social dimensions of the production space. As we noted earlier, it has become both broad and unstable. There is a degree of indeterminacy in its boundaries and in the identity of its participants. This phenomenon is amplified, at the sociological level, by the advent of postmodernity. One of the characteristics of the latter is a lesser willingness to heed rational, structured discourse and, consequently, a tendency to pay less attention to the forms of organizational order linked to mass production. Although there is no causality between postmodernity and digitality (the former preceded the latter chronologically), digitality has clearly amplified certain behavioral traits consistent with late modernity, such as individualism, volatility, and skepticism (notably about the existence of stable structures). At the symbolic level, value creation has moved toward immaterial objects and signifiers, of which, one digital variant relates to exposure in digital spaces.

*The End of Materialism, the Beginning of Immateriality*³

Another way to conceive of the structure of the world, and of human existence, is to consider the question from the viewpoint of the transition of technological systems along two axes: a materials-energy axis, which dominated the world in the nineteenth and twentieth centuries, and a man-biosphere relationship-structure of time axis, dating from the beginning of the twenty-first century. The first axis is what Thierry Gaudin (Gaudin, 2013) has called the *axis of materialism* and the second, the *axis of immaterialism*. Following Simondon, among others, Gaudin points to the decline of materialistic values such as domination, conquest, and performance, and the emergence of immaterial values such as individuation, empathy, and resilience.

In this context, the questions—both theoretical and practical—that we must answer are twofold: (1) What are the arguments that justify the design of a new mode of production? And, subsequently, (2) What are its main constituents? These two points are addressed in the following, which is restricted, for the most part, to ISD's field of expertise: socioeconomic aspects of the enterprise.

³These observations are inspired by Thierry Gaudin's excellent presentation to the IC9 conference at the World Bank (Gaudin, 2013).

Accelution: The Central Concept That Characterizes the New Mode of Production

Schematically, if we take a retrospective look at the question of modes of production, we can distinguish between three successive modes, each characterized by a struggle to take control of a particular resource:

- Agricultural: characterized by the importance of controlling the land;
- Industrial: one of the key resources is the workforce, which needs to be controlled;
- Accelution: an emergent mode, founded on digital, in which the key resource is fundamentally immaterial. It consists of increasingly accelerating links, which economic operators seek to control, and is centered on the accelerated production of links. The concept signals the expansion of value creation spaces, and, more importantly, recognizes that value is being created by a rapid expansion of transactional or organic links (Bounfour, 2005, 2006), and their subsequent acceleration.

Adopting a sociological perspective, and following Touraine (1973), a production system is determined not only by technology, but also by various power relationships and, thus, by the behavior of potentially organized actors (see Fig. 8.3).

Digital links may, or may not, be organic: A link established with others on a social network is, in principle, organic; a sale on eBay is not.

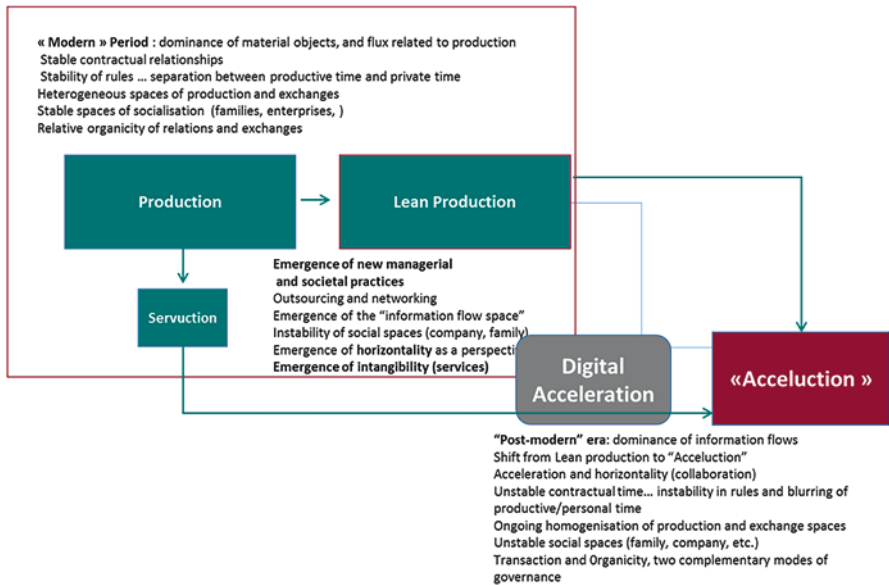


Fig. 8.3 Mass production, lean production and *accelution*. Reprinted from A. Bounfour (2016, p. 80). Copyright 2016 by Springer. Reprinted with permission

The Topography of Acceluction

If acceluction is the emergent guiding principle for (digital) enterprise governance, then we must establish its topography. Simply put, acceluction aims to characterize the importance of mobilizing digital resources. It articulates (transactional and organic) links with an extremely wide-ranging set of value production spaces, as it encompasses markets (not just customers), organic (and less organic) communities, hybrid organizational forms, and society at large.

Acceluction and Digital Generativity

Generativity refers to a technology's capacity to produce sudden change, driven by a large number of diverse and uncoordinated participants (Zittrain, 2006, cited in Yoo, Kulathinal, & Wattal, 2014). It is contrasted with modularity, which tends to define problems in terms of predefined subsystems that can be controlled from a central point (such as a large company). The analysis of the spread of digital technology in recent work by Yoo et al. (2014), sponsored by the ISD program, points to the generative nature of digital technology, along with its transformational and, in some ways, unplannable character, observed in APIs and mash-ups on digital platforms. This demonstration dovetails, at another level, with the importance of links between actors and technological building blocks in specified digital spaces. The spatio-temporal analysis of generativity demonstrates the value of developing a dynamic, outward-looking vision of digital innovation: what Yoo et al. (2014) call "the generative digital platform". This topography reflects the immense scope of action for the enterprise (and its chief information officer), in mobilizing its digital resources. Hence the importance of the equivalence of norms between the enterprise's space of governance *stricto sensu*, and the spaces where links are generated.

Transactional Links

Transactional links refer to links that are established either in a market, or in the context of an enterprise, but governed by market logic. Examples of the former include bids for patents, open innovation (e.g., Innocentive in the United States, or Hypios in France), or the development of a market for exchanges within the company. Transactional links are not exclusive to collaborative forms of production.

Organic Links

Organic links refer to spaces (generally community, or *Gemeinschaft* in the sense of Tönnies, 1977), in which relations are governed, to varying degrees, by recognition (see Fig. 8.4). This principle often governs communities of researchers, communities of open-source developers, or natural communities such as regions, towns, or villages. Organicity has emerged from the crisis in implicit order, which is understood to mean the nature of the contract between individuals in large organizations.

Acceluction Regime, the New Competences and the Professions

The acceluction regime calls for the development of new competences and new professions. At the strategic level, continuous design of new business models is certainly a competence that will be needed to develop. Other competences, especially related to artificial intelligence are also to be considered (Bounfour, 2022), especially those related to the management of the platformization of ecosystems. At the operational level, the real-time management is a competence already in action (Rydén & El Sawy, 2022). At the individual level, cognitive, emotional and social competences are also to be considered for development, in this perspective. In relationship to the ethical dimension of the use of digital, citizenship—critical competences are also called for.

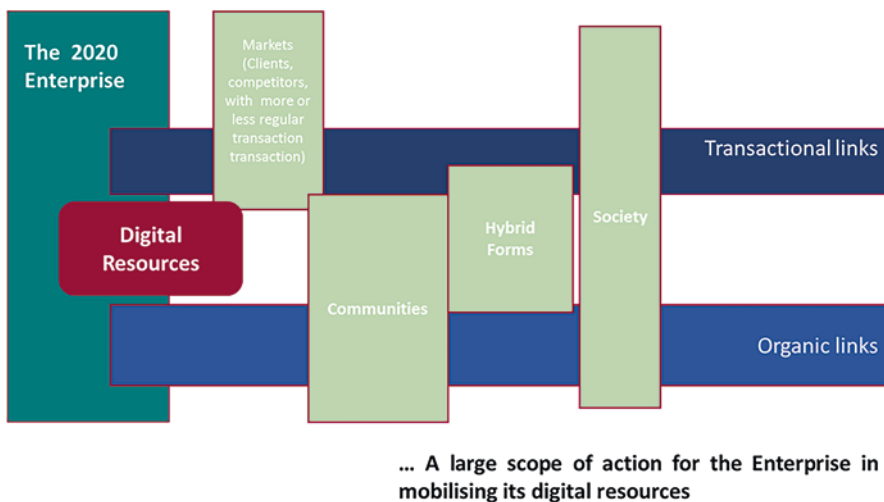


Fig. 8.4 The topography of acceluction. Reprinted from A. Bounfour (2016, p. 81). Copyright 2016 by Springer. Reprinted with permission

The Emerging Enterprise: Its Underlying Tensions

The future enterprise will be—and is already, to a great extent—an accelerated enterprise. Business models and overall governance will be centered on the management and accelerated production of multiple links that are constantly renewed. There can be no doubt that digital resources are already essential levers in this process (Bounfour, 2016). The acceleration regime is characterized by a tension between two conflicting dimensions of organizing: the solidity of organizations and their liquidity.

The *solidity of organizations* is the paradigm around which most managerial discourse—particularly with regard to large companies—has been constructed over the past century, especially since the emergence of the modern enterprise. It is characterized by: the organicity of interactions, the fixity of resources (including personnel), the community regime, long timespans/(vertical) spaces to build, and the specialization of resources. But, as we have seen in several contexts (and this is not the least of digital's impacts), the solidity as a discourse—and, with it, the *solid enterprise*—is fundamentally subverted by the liquidity as a practice.

The *liquidity of organizations*—and, consequently, the *liquid enterprise*—is characterized *a contrario* by another set of rules: transactional principles, mobile resources (including personnel) and unstable roles, short timespans and finite space, and market or platform resources. The acceleration regime reflects the tension between these two (sub-)regimes.

Experiments conducted under the ISD program clearly illustrate this tension: Solutions that have been trialed or rolled out by companies are sometimes liquid in character, sometimes noted, however, that the emergent mode of production, acceleration, does not indicate that digital enterprises will necessarily be liquid enterprises; what it does indicate is the importance of this liquidity. The above observations make it clear that the management of the future enterprise will be based on permanent trade-offs between contradictory options. The ubiquity of digital makes the behavior of actors and, therefore, that of enterprises, highly unstable and very open. Several of the ISD projects provide concrete examples of enterprises that are governed by a regime of tension (between partnerships, functions, geographies, timescales, etc.). With the multiplication of value creation spaces and potential positions, there is no longer any one best way that all enterprises should aim for. There are only separate, unique paths. This evaluation criterion puts decision-makers in a far more uncomfortable position than before, due to the open nature of the game, the uncertainty, and the risk attendant on any position they choose.

The Liquid Enterprise: Its Key Characteristics

Bauman (2007) proposed the concept of liquid modernity/the liquid society to characterize current societies. Liquidity can also be a source of a strong surveillance (Bauman & Lyon, 2013). Similarly, enterprises, supported by digital resources, are developing various degrees and forms of liquidity. Here, we investigate the concept of the liquid enterprise through an examination of its different dimensions—time, space, coordination, resource planning, contracts, and so forth, and how this concept is consistent with that of the liquid society. The focus is on the importance of the consonance of norms and behaviors. As most of the digital transformation is beyond the control of firms, it is important for them, and their managers, to build their approaches and tools upon societal rules and norms.

According to the principle of the equivalence of norms, liquidity in social interactions is also observed at the firm level, although it is difficult to identify its origins. At the societal level, postmodern behaviors are often dated to the mid-1970s. At the firm level, restructuring, especially in the West, became widespread in the 1980s. The extensive restructuring that has taken place over the past three decades, and the associated impacts on employees' "mental space" has contributed to increasing the distance between workers and the strategic and organizational discourse of management. The emergence of outsourcing, together with the networked enterprise (where Cisco is the emblematic example) are other sources of the liquefaction of enterprises. Liquidity in this case, is not only—or even primarily—linked to digitality; instead, it is closely related to managerial practices, which have progressively increased the liquidity of firms and, therefore, the liquidity of social contracts.

Generation Y as an Illustration

Liquidity is illustrated by the results of a series of workshops that were organized during preparations for the ISD program, with the so-called Generation Y. Twenty participants were asked about various topics: their fundamental personal values, their relationship to their employer's strategy, working relationships, how they saw their career developing, their views on digital objects, how they spent their time (both at work and elsewhere) and, finally, how they saw the future of their employer. These discussions revealed that their relationship to their employer appeared to be almost transactional, that is, governed by purely rational calculations. In most cases, these young people behave according to a win-win principle, illustrated by the way they spend their time. If responding to an email sent by their boss in the evening takes three minutes, they will spend the same three minutes on social media during working hours.

This illustration of liquidity is consistent with the general principles defined by Bauman for society. Furthermore, when it comes to career development, Generation Y applies the principle of the impairment test, similar to International Financial

Reporting Standards for specific intangibles. They continuously test the value of their skills in the job market, even if they are not looking for a job. Naturally, digital artifacts facilitate this behavior. The results of our workshops suggest that while such behavior is indeed facilitated by digital artifacts and systems, it also finds its origin (at least for some participants) in the waves of restructuring that their parents had to face. These events established the roots for liquidity that are now being translated into specific interaction behaviors within and around firms.

The Liquid Enterprise and Digitality

In their book on the economic history of industrial revolutions, Freeman and Louçã (2001) describe the components of the most recent Kondratiev wave: the ICT revolution. Its main ingredients are computers, telecommunications, institutional (regulatory) settings, and a new organizational design based on the networked enterprise. If we consider these ingredients to be the major components of the new production system, liquidity and digitality are key aspects, and are closely related to the ongoing transformation of our economies and societies. We can then state that the liquid enterprise and digitality are closely-related phenomenon, without necessarily establishing a causal relationship between them. Here, the liquid enterprise refers to plasticity in both its modes of governance, and its boundaries and resources. Digitality is a great enabler of such plasticity: It contracts the time-space of the firm, and facilitates the accumulation of resources without boundaries, or even significant investment. Consequently, it is a serious challenge to the social contract found in modern organizations, particularly the so-called “salarial” (traditional) contract.

The Liquid Enterprise and Liquid Management

The liquid enterprise calls for liquid management. This raises the issue of aligning managerial practices with liquidity requirements. From this perspective, business strategy should be thought of as a succession of decisions that are adjusted to market and local conditions. As for investment, decision-making is a continuous trade-off between external and internal resources that are permanently under pressure. With respect to collaboration and coordination, incentive systems must take greater account of the intrinsic nature and behavior of people, especially the fundamental nature of the social contracting process, which is increasingly governed by liquid relationships.

The Liquid Enterprise and Organizational Design

The liquid enterprise, and liquidity in general, are interesting concepts related to the future design of enterprises and societies. However, it can be argued that, theoretically, as far as the design of organizations is concerned, there are limits to liquidity and a form of solidity is needed for collective action. Exchanged artifacts may lead to specific behaviors where speed and acceleration are the major drivers for performance. In this case, especially in organizational contexts that are dominated by intangibility, liquidity may represent an advantage for organizing.

Intangibles Under the Accelution Regime

The foregoing arguments suggest that mobilizing intangibles under the accelution regime raises various analytical, policy, and societal issues.

At the analytical level, several issues are relevant. They include:

- *The unit of analysis.* This is not a new issue, since the literature on networks, ecosystems and company boundaries has already revealed the need to go beyond the traditional firm as the unit of analysis. Taking a geographical perspective should help to address this issue, as we need to delineate the value space and the way boundaries are articulated.
- *The type of intangibles.* If we take this starting point, there is a need to align intangible taxonomies with those of the identified value spaces. At this point in time, taxonomies are either microeconomic (e.g., firm) oriented, or macroeconomic (e.g., national account) oriented. If we consider that value is now created within, in between and around a variety of value spaces, then we need to align these taxonomies and, going further, harmonize accounting instruments and measurements of the type of activities and transactions that are linked to these assets.

Liquidity is an illustrative example in this respect. Here, the issue is: Does the liquid enterprise necessarily lead to liquid intangible assets? Which, in practice, means fundamentally individual assets. The issue of building and leveraging individual assets is also relevant in a context where individual-centric firms and freelancization are emerging as significant forms of organizing activities.

Another major issue relates to data as a digital asset. In a context where platformization is becoming a dominant way to organize activities, there is a need to better-document the functioning of data as digital spaces, and the way value is created, organized and controlled, especially by major platforms. In this regard, the hybridization of intangibles (IPRs, data, advertising) by major platforms is an important issue that needs to be better understood.

Finally, there is the issue of the territorialization of intangibles. Territories, in a geographical sense, are governed by digitality, knowledge flow and hybridization, together with trust and social capital building.

- *The question of time/space* Time and space are two facets of the same problem: the organization of activities. To a certain extent, time is just a succession of spaces. The acceluction paradigm brings to the fore—more than ever—the question of the close links between these two fundamental dimensions of human action.
- *Transactions/organic links*—along with the issues of value measurement and wealth. Economists measure wealth in terms of monetary transactions. But we know that societal relationships are governed by many other factors, notably, what Marcel Hénaff called the “non-price” (*hors-prix*) space. Hénaff drew upon the debate between Socrates and the Sophists to address the issue of the impossibility of valuing knowledge (Hénaff, 2002). In other words, monetization is only one dimension of social interaction and value creation. At the same time, the multiplicity of value spaces de-multiplies the variety of exchange channels, both transactional (in most cases, monetary) and non-transactional (especially organic).

At the policy level, the main issues relate to the instruments that are in place. To what extent does the acceluction regime need to be considered in more detail? At least three types of instruments are relevant: those related to innovation and sustainability; those related to competition policy; and, finally, those that target societal cohesion.

- *Supporting innovation and sustainability in the context of the accelucted regime.* Here, two issues should be considered: To what extent are existing policy instruments aligned with emerging taxonomies of intangibles and their leveraging under the accelucted regime? And, to what extent is acceluction itself, as a systemic phenomenon, taken into account? These questions underline the need for policy instruments to integrate the full range of value spaces (beyond firms and nations). They also highlight the issue of generativity as a key characteristic of digital transformation, and the dynamics of the new formative power in digital spaces (e.g., major platforms).
- *Revisiting competition policy.* Here, the main issue concerns the way major platforms shape economic systems, and build real, formative power. The question is of particular relevance in the European context. Major platforms deeply leverage acceluction by taking advantage of the multiplicity of value spaces. In doing so, they control critical resources that drive economic performance. If we refer to the two-sided market approach, it is clear that these organizations control two, critical resources: consumer attention and related data, on the one hand, and advertising, on the other. These are, of course, very critical intangible resources. But there is another—the control of IPRs, especially for emerging technologies such as artificial intelligence. In this context, competition policy should be urgently adapted to take into account these three layers: data and attention, advertising, and IPRs.

At the societal level, the main challenge relates to the implications of the generalization of *homo videns* behavior and, therefore, the amplification of liquidity due to the acceluction regime. The COVID-19 crisis, however, tends to suggest that such an amplification is not inevitable since, in exceptional circumstances, the Hobbesian sphere (e.g., state power) once again gains legitimacy with respect to collective action. But, more generally, since acceluction is fundamentally a regime of uncertainty, it becomes very relevant to define, experiment with, and implement new approaches to the design of the future. In one sense, we could say that the issue concerns the future as an (intangible) asset. By adopting this approach, policymakers, and society in general, can revisit and regenerate collective action. This will clearly necessitate revisiting recognition mechanisms in societies, as discussed by Ricœur (2004) and Honneth (2000), and how collective action might lead to the generation of new intangibles.

Conclusion

In this chapter, I tried to characterize the foundation of what I call the accelucted regime as the dominant mode of value creation in digital spaces. Taking this as a starting point, it is clear that intangibles—as the main source of value creation—will also be affected by such a regime. In other terms, the way socio-economic systems will be organized will naturally impact the types of intangibles to be mobilized (individual assets, community assets, platform assets). At the end, the control of such assets, will certainly impact the distribution of power in the near future.

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Part III
Proficiency and Professions in Place

Chapter 9

The Beginnings of Psychologist Profession in Argentina: Science, Institutional Context and Society



Hugo Klappenbach

Initial Considerations

Argentina is a country located at the southern tip of South America. It gained independence from Spain in 1816 and since then has subordinated much of its culture and economy to other European nations, particularly France (in the cultural domain) and England (in the economic domain). After World War II, as British interests in the country declined, North American interests increased.

Considering these initial characteristics, this chapter analyses the rise and demise of certain types of knowledge in the field of psychology between approximately 1940 and 1970. First, the chapter describes the reception in Argentina of the so called *new psychology*, originated in European countries, mainly in France, Germany and England at the very beginning of twentieth century. Second, it explains the changes in the field of psychology around 1940, when appeared for the first time in the country undergraduate university programs related to psychology, most of them called programs in *psychotechnics and professional guidance*. Then, the chapter advances in the analysis of the intimate connections between these psycho-technical university programs and the needs of the federal administration for interventions and practices in the field of psychotechnics and professional guidance. Finally, the chapter analyzes the decline of psychotechnics and professional guidance, which coincides historically with the emergence of a new profession in Argentina: that of the *psychologist*. Once again, the chapter describes the deep connections that existed between the rise of the psychology profession in the 1960s and the political, cultural and economic situation in Argentina in those years. In this context, the decline of

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J. Glückler et al. (eds.), *Professions and Proficiency*, Knowledge and Space 18,
https://doi.org/10.1007/978-3-031-24910-5_9

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psychotechnics and the professional orientation and the appropriation of psychoanalysis as one of the central characteristics of the psychologist's profession is analyzed. One of the central issues of the chapter is the verification of the real gap that existed between the *psychotechnician* of the 1940s and the *psychologist* of the 1960s.

The *new psychology* appeared in Argentina at the end of the nineteenth century and beginning of twentieth century. There were two reasons for its emergence. On the one hand, the consolidation since the 1880s of positivist ideas and the organization of the nation. The territory we know today as Argentina emerged from the dismemberment of the former Viceroyalty of the Rio de la Plata and the process of independence that had begun with the installation of the first government independent from the Spanish crown in 1810 and the declaration of independence in 1816 (Brown, 2010). What became known as the United Provinces of the Río de la Plata emerged, even though numerous *caudillos* in the different provinces proclaimed their relative autonomy with respect to the central policies of the Buenos Aires government. From 1820 the United Provinces “split between *Unitarios*, who supported the dominance of Buenos Aires, and *Federalists*, who preferred a more open and decentralized national government” (Lewis, 2001, p. 41, emphasis added). Only in 1862 all the provinces, including the powerful Province of Buenos Aires, agreed to a new national unification, and Bartolomé Mitre, precisely from Buenos Aires, became the first President of the country (Hedges, 2011). Adriana Puiggrós pointed out that the presidencies of Mitre (1862–1868), Sarmiento (1868–1874) and Avellaneda (1874–1880) had to deal with the “organization of the nation and the provinces, the economy, communications, transport, the organization of the national army, public health and the educational system” (Puiggrós, 1996, p. 55). For his part, José Babini added that “parallel to the national organization, science was also organized” (Babini, 1949, p. 63).

In that context of the construction of the national administration, positivist ideas became almost an official ideology. August Comte had been eloquent in this respect: “Les besoins essentiels de l'école positive concourent directement avec les devoirs naturels des gouvernements” [The basic needs of the positivist school coincide directly with the intrinsic duties of the governments] (Comte, 1844, p. 96). Thus, it has been pointed out that the political consensus of the late nineteenth century was sustained because of “set of philosophic and social ideas that proclaimed the triumph of science in Latin America” (Hale, 1986, p. 382). Such set of ideas “is commonly referred to as *positivism* [emphasis added], though there is no accepted definition of the term” (Hale, 1986, p. 383). So, positivism became an authentic *philosophy for action* in several Latin American countries, mainly Argentina, Brazil and Chile.

It is not surprising, therefore, that psychology emerged in Argentina within the framework of these ideas. On the other hand, it should be noted that in the reception of the new European psychology, the French filter that characterized the dominant sectors of culture and academia in the country was fundamental. We have pointed out that the *new psychology* began to circulate in the country through at least five main channels (Klappenbach, 2006; Klappenbach & Fierro, 2021).

1. In the first place, from the original work of authors from France. Among them, of course, Théodule-Armand Ribot, whose importance was highlighted for South America as a whole (Filho, 1939). But also Joseph Grasset, another central personality in Argentina, as we will immediately develop, up to Pierre Janet, Binet, Piéron, Charcot, and Georges Dumas, who “had an outstanding influence not only in France but also in Latin America”, especially in Brazil (Eisenbruch & Eisenbruch, 2000, p. 392).
2. The journals published in France, especially the *Revue Philosophique* founded in 1876 by Théodule-Armand Ribot, the *Journal de Psychologie Normal et Pathologique*, published from 1903 by Pierre Janet and George Dumas and, to a lesser extent, the *Bulletin de l'Institut Général Psychologique*.
3. The texts that I classified as *divulgarion* written by French authors, mainly the two famous books by Théodule-Armand Ribot. The first one, the *Psychologie anglaise contemporaine* (Ribot, 1870) and the second one, the *Psychologie allemande contemporaine* (Ribot, 1879).
4. The French translations of books and works from authors from other languages, mainly German but also English. The situation was similar to that analyzed in the case of Spain, where between 1876 and 1907, German psychology entered through the translations by Félix Alcan publishing house in Paris (Carpintero, 2000).
5. The translations into Spanish of books and works from other languages. It has been analyzed the importance of translations within the modernizing project of Spanish psychology before the Civil War. Some of the well-known publisher houses in the field of psychology were Daniel Jorro, la España Moderna, Librería de Fernando Ré, all of them in Madrid, as well as Sempere y Cía in Valencia (Quintana, Rosa, Huertas, & Blanco, 1997).

The dominance of the French bias explained above in the reception of the *new psychology*, was reinforced by the introduction of the French historiographical perspective. For example, Alfred Binet had reconstructed the origin of the *new psychology* in the following terms:

Depuis une quinzaine d'années la psychologie est entré dans une ère nouvelle. Cette ère date approximativement de 1878, époque doublement importante pour la psychologie, puisque c'est elle où, en Allemagne, M. Wundt a ouvert le premier laboratoire de psychologie expérimentale, celle aussi où en France M. Charcot a inauguré ses recherches sur l'hypnotisme chez les hystériques. A peu près à la même époque, M. Ribot fondait la *Revue Philosophique*, et donnait une vive impulsion aux études de la psychologie expérimentale en France. [For about fifteen years psychology has entered into a new era. This era dates from about 1878, a time that is doubly important for psychology, since it was there when, in Germany, Mr. Wundt established the first Laboratory of Experimental Psychology, and when in France, Mr. Charcot inaugurated his research on hypnotism in hysterics. At about the same time, Mr. Ribot founded the *Revue Philosophique*, and gave a lively impulse for the studies of experimental psychology in France.] (Binet, 1894, p. 1)

A few years later, Horacio Piñero, a physician who founded the first Laboratory of Experimental Psychology in Argentina in 1899 and taught psychology courses at

the University of Buenos Aires since 1902 and at the Normal School for Professors since 1904, employed almost the same words:

Dos hechos de importancia primordial señalan definitivamente sus rumbos en 1878: Charcot y sus estudios sobre la histeria y el hipnotismo, y Wundt fundando en Leipzig el primer Laboratorio de Psicología experimental. Si a estos hechos agregamos que Ribot funda la *Revue Philosophique* en esa misma época, podemos decir que de este trío surge: la observación clínica, la investigación experimental y la divulgación científica. [Two facts of primary importance definitively point to his directions in 1878: Charcot and his studies on hysteria and hypnotism, and Wundt founding in Leipzig the first Laboratory of Experimental Psychology. If we add to these facts that Ribot founded the *Revue Philosophique* in that same period, we can say that from this triad emerges: clinical observation, experimental research and scientific popularization.] (Piñero, 1902, p. 117)

So, Argentine's reception of the so-called *new psychology*, followed French Psychology tradition and was in fact very different both from German Psychology and North American Psychology. Piñero's words, emphasized the 3 main characteristics and the 3 referential authors guiding the European *new psychology*: (1) Clinical observation (guided by Charcot); (2) Experimental research (guided by Wundt); and (3) Scientific divulgation (linked to Ribot). However, considering that in Argentina physicians, lawyers and personalities from the field of culture and education rarely read German and, instead, read French fluently, what truly was introduced within Argentine Psychology, was French Psychology, mainly Clinical Psychology related to what we entitled *disaggregation of personality* (Klappenbach, 2006).

The Rise of Psychotechnics and Professional Guidance in the Field of Psychology

However, in those early years psychology's courses was part of the teaching in programs related to education, law or medicine. Psychology programs did not exist at either the undergraduate or graduate level. This situation began to change towards the 1920s, in this case in settings outside the university. And it increased in the 1940s, by then already in university settings. However, it is necessary to point out that in both cases, those programs in the field of psychology, so to speak, were not called *psychology programs*, but rather programs in *psychotechnics and professional guidance*.

The development of psychotechnics and professional guidance in Argentina was based on two complementary processes (Klappenbach, 2005). On the one hand, the advances in the field of *applied psychology* and psychotechnics in relation to the knowledge of aptitudes and personality traits that made possible the reciprocal adaptation of man to work, as well as in relation to the techniques or personality scales necessary to successfully establish the individual diagnosis, leveling and reorientation that those problems involved. The early work of Münsterberg in the United States and that of Stern in Germany or Claparède and Bovet in Switzerland, had matured in the organization of the International Conferences on Psychotechnics,

the first of them organized precisely by Claparède in Geneva 100 years ago (Carpintero, 2020a, 2020b; Trombetta, 1998). In his autobiography, Claparède explained some of the objectives of that conference: “The aptitude of a subject varies from one day to another. What is the ‘real measure’ of the aptitude of an individual? ... Another closely connected problem ... is that of the possibility of modifying original aptitudes through practice” (Carpintero, 2020b, p. 33).

In Argentina as well as in other Spanish-speaking countries, two of Münsterberg’s books had been circulating since 1911, *La psicología y la vida* [*Psychology and Life*], and *La psicología y el maestro* [*Psychology and the Teacher*], both of them translated into Spanish by Domingo Barnés, a promoter of applied psychology in the field of education, and introducer of Claparède’s ideas in Spain (Quintana et al., 1997). Münsterberg’s daughter pointed out that *Psychology and Life* was the first book Münsterberg published in English. In turn, *Psychology and the Teacher* was written between April and June 1909 and was one of Münsterberg’s most popular books. (Münsterberg, 1922). In Argentina, in his classical study on fatigue, Alfredo Palacios demonstrated a broad knowledge of Münsterberg’s work on the psychology applied to industry, which had been translated into Spanish by Santos Rubiano.

Alfredo Palacios questioned such work because, in his consideration, it remained within the Taylorist tradition (Palacios, 1944). Frederick Taylor (1856–1915), an engineer by profession, had argued that inefficiency at work could be solved by *systematic management*: “the fundamental principles of scientific management are applicable to all kinds of human activities, from our simplest individual acts to the work of our great corporations” (Taylor, 1911, p. 7). Taylor stated that scientific management was able “to obtaining the maximum output for each man and each machine” (Taylor, 1911, p. 27). Taylor discussed what he called the *management of initiative and incentive* because under such philosophy “practically the whole problem is ‘up to the workman’, while under scientific management fully one-half of the problem is ‘up to the management’” (Taylor, 1911, p. 39). Alfredo Palacios criticized Taylorism because its aim was to increase production and because the worker was considered just another machine. From his socialist perspective, the application of psychology to industry was aimed at preventing fatigue and improving the working conditions of the worker, the real axis of the economy.

Karl Jesinghaus, for his part, considered that Münsterberg had coined the term *psychotechnics* and emphasized the importance of knowing the personal aptitude of the worker in order to select the most suitable for each job (Jesinghaus, 1921). Jesinghaus had received his doctorate with Wundt in Leipzig and resided in Argentina between 1913 and 1935 and then between 1945 and 1948, when he died in the city of Tucumán (Geuter & León, 1990; Klappenbach, 2007; Lescano, 2019).

At the same time as the work of Münsterberg and Claparède, once again the French tradition in psychotechnics, especially the work of Henri Piéron and Guy Palmade, circulated in Argentina. Piéron stated that psychotechnics is the discipline that governs *the application of the data of psychophysiology to human problems*, through the use of a set of rigorously scientific methods and mainly of psychometric methods (Piéron, 1949, p. 7). In any case, the psychotechnician was not necessarily an applied psychologist. The knowledge and mastery of the psychometric

techniques, of the mental functions that they were evaluating, and of the conditions that affected their validity and reliability, all of this did not necessarily imply the application of those techniques in a certain area. That is, the epistemological foundation of psychotechnics was a scientific and technical one; instead, the epistemological foundation of applied psychology, is a social validation.

In the case of *professional guidance*, Henri Piéron defined it as follows:

Tâche sociale destinée à guider les individus dans le choix de la profession, de telle manière qu'ils soient capables de l'exercer et qu'ils s'entrouvent satisfaits, en assurant aussi, par la repartition de ces choix, la satisfaction des besoins professionnels de la collectivité. [Social task intended to guide individuals in their choice of profession, in such a way that they are able to practice it and they find themselves satisfied with it, while also ensuring, through the distribution of these choices, the satisfaction of the professional needs of the community.] (Piéron, 1951, p. 199)

In any case, in Argentina, the professional guidance was biased by what we could call the *Catalan perspective*. In 1927 the Institut Psicotècnic de la Generalitat was reorganized, under the direction of Emilio Mira y Lopez, who, in his South American exile, published in Buenos Aires the well-known *Manual de Orientación Profesional* [Handbook of Professional Guidance] (Mira y López, 1947). A diverse group of political exiles worked at the Catalan institute, among them Werner Wolff, Alfred Strauss, Sandor Eiminder and Alexandre Chleusebaigue (Moreu Calvo, 2007). Chleusebaigue headed one of the Sections of the Institute, the Section of Commercial and Industrial Psychotechnics, in which he taught a Seminar on Marketing (Benavent Oltra, 2008; Sáiz & Sáiz, 2007). Alexandre Chleusebaigue, of Belgian origin, was an engineer from the Polytechnic School of Berlin, who moved to Barcelona in the early thirties and there published three significant books on professional guidance in one of the most well-known publishing houses from Barcelona, Editorial Labor: *Orientación Profesional I. Fundamentos y Teoría* (Chleusbaigue, 1934a), *Orientación Profesional II. Procedimientos Prácticos* (Chleusbaigue, 1934b), and *Psicología del trabajo profesional* (Chleusbaigue, 1934c). It has been pointed out that Chleusebaigue's objective was "to harmonize the psychological characteristics of the workers with the economic needs of the country through the study of the professionography, ergology and psychometry" (Cercós i Raichs, 2009, p. 21), an objective that would also be central in Argentina, as we will analyze later on. In that sense, the curriculum of the degree in Psychotechnics and Professional Guidance organized by the National University of Tucumán in 1950, which we will analyze below, "was inspired by similar models of Cataluña and Mira y Lopez in Brazil" (Casali de Babot, Ventura, Jorrat, & Lupiañez, 2006, p. 27).

There are several reasons for the importance of Catalan psychotechnics in Argentina. First, Mira y Lopez's time in Argentina before settling permanently in Brazil. It is interesting to note that Mira y Lopez published important works in Argentina, among them his famous *Manual de Orientación Profesional*. Secondly, the books of the publishing house from Barcelona Labor, which were widely circulated in Argentina. Finally, the importance of the psychotechnics biased by the socialist and Christian humanist traditions, both distanced from the Taylorist psychotechnics.

On the other hand, psychotechnics and professional guidance in Argentina, was also based in the economic and social conditions that had transformed the political scenario in the country since the late 1930s. The Second World War had favored an incipient industrial process originally aimed to import substitution (Kosacoff & Azpiazu, 1989). This process was to be accelerated after the military coup of 1943, which instituted the National Post-War Council. In this context, in 1945 the National Commission for Apprenticeship and Professional Guidance was organized (Pronko, 2003), within the framework of the transformation of technical education at different levels (Wiñar, 1970).

Peronism, the party that administered Argentina from the 1946 elections until it was ousted by a military revolution in 1955, consolidated this industrialist tendency. The accurate characterization of Peronism has generated conflicting interpretations in Argentine historiography (Acha & Quiroga, 2012; Rein, 2009). At the extremes, it could be conceptualized both as a kind of fascism (Germani, 1961, 1968; Halperín Donghi, 2006; Romero, 1965) and as a national liberation movement close to left-wing ideas (Hernández Arregui, 1973; Portantiero, 1973; Ramos, 1968). Considering that the main objective of Peronism was the welfare of the workers, it can be also characterized as a labor party. The two Five-Year Plans promoted by the Peronist regime, in 1947 and 1953, sought at the same time, to generate greater production and to overcome the distribution crisis (Halperín Donghi, 1983; Waldmann, 1981). In fact, according to data collected by Lewis, from 59,765 industrial establishments in 1943, the figure rose to 148,371 in 1954. In the same way, the number of workers increased from 820,470 in 1943 to 1,217,844 in 1954 (Lewis, 1990). In short, between 1930–35 and 1945–49, Argentine industrial production doubled as a result of the promotion of credit, control over the exchange rate and tariff protection (James, 1990). Peron's administration promoted an "alliance with small and medium-sized industrial entrepreneurs linked to the domestic market and the worker's unions emerging from the process of industrial modernization in a virtuous circle of consumption and production" (Fair, 2009, p. 519). That is, the transformations produced during Peron's administration, consolidated a new urban working class, which required a quick labor reconversion. In this context, professional guidance was incorporated as a new right in the Constitutional Reform of 1949, within the rights of the worker, the family, the elderly, the education and culture:

La orientación profesional de los jóvenes, concebida como un complemento de la acción de instruir y educar, es una función social que el Estado ampara y fomenta mediante instituciones que guíen a los jóvenes hacia las actividades para las que posean naturales aptitudes y capacidad, con el fin de que la adecuada elección profesional redunde en beneficio suyo y de la sociedad. [Professional guidance for young people, conceived as a complementary to the action of instructing and educating, it is a function social services that the State protects and promotes through to guide young people to the activities for which have natural aptitudes and capacity, so that the professional choice is in your best interest and in the best interest of society.] (Constitución de la Nación Argentina, 1949, p. 23)

Perón's Administration reinforced this direction in the Second Five-Year Plan. One of the special objectives of the Plan was that the National Employment Service would carry out "studies, censuses and research that would make it possible to

determine occupation levels that would provide elements of judgment to channel learning and professional orientation” (Presidencia de la Nación, 1953, p. 57). The plan also expected that the state, in accordance with the rights of workers, would ensure greater efficiency and productivity of work in industry (Presidencia de la Nación, 1953, p. 282). This objective would be achieved on the basis of three axes: (a) the improvement of technical working conditions; (b) the improvement of environmental conditions that would preserve the health and safety of workers and (c) workers’ training to raise the skills and quality of the workforce through specialized state institutions, learning and training centers organized by professional associations and industrial establishments in coordination with the actions of the state (Presidencia de la Nación, 1953, p. 282).

According to the above mentioned *Manual de Orientación Profesional* by Emilio Mira y López from Barcelona, the concept of professional guidance meant a “complex and persistent scientific action, with the aim of achieving that each people fit the type of professional work in which, with less effort, he can obtain greater performance, profit and satisfaction for themselves and for the society” (Mira y López, 1947, p. 1). Mira y López distinguished between *individual* professional guidance and *collective* professional guidance. While the individual professional guidance was a psycho-social process, *collective* professional guidance involved public policies, both in the field of socio-economic development in general and, in particular, in the field of the labor market, the training of human resources and in the demographic policies. As we mentioned earlier, due to the impact of the Catalan perspective, in Argentina, at least during Perón’s administration, the type of professional guidance was mainly collective professional. However, it also made possible the development of individual career guidance, which in reality would be consolidated only later in the 1960s (Klappenbach, 2018).

Within this framework, three national universities proposed new university programs in the *field* of psychology, although clearly related to the teaching and training in psychotechnics and professional guidance. From a legal point of view, national universities in Argentina are autonomous. However, they are financially dependent on the federal public administration. In this direction, it is not surprising that certain needs of the national state had an impact on the organization of new undergraduate or graduate programs in universities. The National University of Tucumán organized the Degree (Licenciatura) in Psychotechnics and Professional Orientation in 1950, directed by Benjamín Aybar (Klappenbach, 1995; Rossi, 1997). Sometimes, *licenciatura* is translated as a bachelor’s degree. However, *licenciatura* in Argentina classically last between 4 and 6 years, involve the approval of no less than 30 courses, and qualify for practically all professional practices in the disciplinary field in question. For this reason, they are more comparable to a master’s degree. The National University of Rosario organized the Psychotechnical Assistant program in 1953 in the city of Rosario directed by Arminda Benítez de Lambruschini (Gentile, 2003). And the National University of Cuyo, organized the same year the Specialization’s Degree in Psychology in the city of San Luis directed by Plácido Horas (Klappenbach, 1995).

The three universities had elements in common. Firstly, they were the most recent universities in the country. The Universidad Nacional del Litoral had been organised in 1919 and the Universidad Nacional de Tucumán in 1921, both on the basis of provincial universities. The National University of Cuyo in 1939. On the other hand, the National University of Tucumán and the National University of Cuyo were the only ones in which the Confederación General Universitaria, a student centre which was close to the Peronist administration, was represented. On the other hand, in the older and more traditional universities, such as those of Buenos Aires, La Plata and Córdoba, the predominant student union was the Federación Universitaria Argentina, which was strongly reformist and strongly opposed to the Peronist administration (Pis Diez, 2012). Finally, in the three universities, studies centred on psychotechnics and professional orientation were organized at the beginning of the 1950s, and later, from the middle of the decade, undergraduate programs in psychology.

The most important undergraduate program was the one implemented by the National University of Tucuman. His director, Benjamin Aybar was a philosophy professor, who considered that the problems of greater production could be translated into psychological terms: “adaptation of the tools to the worker and the worker to the tools; skills and qualifications more consistent with the various crafts, appropriate works places, motivation, incentives, etc.” (Aybar, 1954, p. 26). According to those premises, Aybar had organized in 1948, the Institute of Psychotechnics and Professional Guidance (UNT), whose objective were the development of the *human factor* and the study of workers’ work. Benjamin Aybar has been studied mainly for his contributions to philosophy (Caturelli, 1973; Rego, 1983). It has been pointed out the way in which, in an original way, he approached the problem of *transcendence*, from a position which, although it was basically Thomistic, at the same time it approached Augustinian positions, insofar as he proposed a preintellectual access to this transcendence. This preintellectual instance, the primordial truth of the person, was called by Aybar *esseidad*. Later, it is constructed the self, a matter which, in his opinion, had not been appreciated by modern thought. His position also distanced himself from existentialist approaches, insofar as he did not consider the man to be thrown into the world, but, on the contrary, he was harmoniously placed in the world. In any case, his philosophical, ontological and anthropological positions were closely related to his interest in psychology, psychotechnics and professional guidance. Along his most well-known book, *The Intuitive Realism* (Aybar, 1954), he introduced ideas of Janet and Dumas and demonstrated his interest in the psychological aspects of the personality. He considered that education’s process should be based on that preintellectual tendency, that is, on that *esseidad*, as the best way to respect the “diversity of aptitudes,” among different individuals (Aybar, 1954, p. 26). Aybar was referring to the educational process, but, at the same time, it is clear that he was referring to the objective of the professional guidance process, that is, to find the best occupation for personal fulfillment.

In Tucumán, professional guidance was based on two foundations. The first was purely economic and recognized the importance of work science. The second had an anthropological-philosophical-psychological character, based on the search for

personal fulfillment or personal realization. On this basis, the potential development of each individual's aptitudes could correspond, on a psychophysical level, to the development of his or her own *esseidad*. In 1954, the Psychotechnics and Professional Guidance Institute at National University of Tucuman was preparing the organization of the First Psychotechnics Week of Northern Argentina. In one of the newsletters related to such preparations, the topic of work was conceptualized. It was pointed out that in the last years it had been insisted on "the hierarchy of man, turning him into the vital center of economic activity and the point of reference from which all the other elements that make up an industry are organized" (Anónimo, 1954c, p. 570). In this direction, even though the idea of the adjustment of man to work did not disappear completely, the center of the question had changed significantly (Klappenbach, 2002).

The program's curriculum was organized by course's groups. The required courses of the psychological group were Experimental Psychology, Developmental Psychology, Social Psychology, Psychotechnics and Professional Orientation. Another group of required courses had to be approved at the School of Law: Political Economy, Sociography, Labour Legislation, among others. Finally, a third group of required courses had to be completed in the Biochemistry Department such as Anatomy and Physiology, Mental and Industrial Hygiene (Rossi, 1997). The Degree in Psychotechnics and Professional Guidance was opened until 1958. The transformation of such program into an undergraduate program in Psychology was a suggestion made by the First Argentine Congress of Psychology, which took place in 1954, precisely in the city of Tucumán. In one of the sections of the Congress it was recommended the organization of undergraduate programs for *professional psychologist*. In the case of Tucumán, the recommendation of the organization of an undergraduate program in psychology, specified that it was to be organized in the Department of Philosophy and Humanities, and was to be based on the studies for the degree in Psychotechnics and Professional Guidance (Anónimo, 1954b, p. 509).

The case of the program of Psychotechnical Assistant at the Universidad Nacional del Litoral, in the city of Rosario was short-lived. The program began in April 1953, with more than two hundred students enrolled. A precedent had been the organization in December 1951 of the Cabinet of Psychotechnics in the city of Paraná. The objective of the cabinet was to determine physical and intellectual aptitudes as a professional orientation (Ascolani, 1988). The program of Psychotechnical Assistant, on the other hand, was developed over two years. In the first year it was required to approve the following courses: Introduction to Philosophy, Psychology (theoretical), Logic and Sociology. And in the second year, Psychology II, Child Psychiatry (which was offered at the School of Medicine), Psychostatistics (which was offered at the Department of Economic Sciences). One year later, the recommendations of the First Argentine Congress of Psychology led to the creation, at the end of 1954, of the undergraduate Psychologist Program, which emphasized the professional role rather than the scientific discipline (Ascolani, 1988; Gentile, 1989, 2003). In May 1954, the Institute of Psychology was organized, which "could propose the creation of the Psychologist Program in its various specializations and on the basis of minor technical programs such as that of Psychotechnical Assistant"

(Ascolani, 1988, p. 46). Less than a year later, the displacement of the sectors related to Peronism from the university postponed the implementation of the new program until 1956, when new intellectual actors took over almost identically the previous study curriculum and organized the first psychology program in a national university. The program of Psychotechnical Assistant began to languish after the psychologist program was created, and students of the former were offered the possibility of continuing their studies in the new undergraduate program. And those who finally successfully completed the auxiliary program and approved all the courses, never received the corresponding diploma. The university only gave them a certificate, as a minor symbol of an experience that needed to be forgotten (O. Menin, personal communication, May 13, 1999).

The case of the program organized at the National University of Cuyo had some similarities with the previous ones, but also some differences. In the first place, it was organized in the small city of San Luis, where the human and social sciences studies of that university were developed. Secondly, it was the only one in those years before the First Argentine Congress of Psychology, which included the term *psychology* and not psychotechnics or professional guidance. However, one of the objectives of the program were the training of the personnel of the Department of Educational Psychology and Professional Guidance. The National University of Cuyo organized, in 1952, in San Luis, the Department of Educational Psychology and Professional Guidance, which depended jointly on the University and the Government of the Province of San Luis. Its director was Plácido Alberto Horas and among its purposes were the following: counseling in the teaching of underprivileged children; diagnosis and psycho-pedagogical assistance of the wards dependent on the Direction of Minors; examinations and advices related to professional guidance and training both in the study of aptitudes as well as in the adjustment of the personality to work; psychotechnical examination of the applicants for scholarships offered by the Provincial Administration; to provide training to technical personnel specialized in the above mentioned tasks (Universidad Nacional de Cuyo & Provincia de San Luis. Dirección de Psicología Educativa y Orientación Profesional, 1952, p. 273).

Plácido Horas considered professional guidance to be a meeting point between individual aspirations and conditions—personality and aptitude—on one hand and social needs on the other. Professional guidance “aims to ensure that the occupations and professions chosen in a way that was congruent with one’s own personality, aptitudes and social environment” (Horas, 1951, p. 131). In that sense, Horas argued that professional choice depended directly on the type of social structure and the possibilities of technical means of a society. In this vein, he emphasized the lack of a technical economic-social structure in the city of San Luis: “if we compare it with a U.S. city similar to ours, we will see the quantitative and qualitative differences in the professional preferences” (Horas, 1951, p. 132). Plácido Horas had already pointed out the importance of professional guidance at an early stage. One of the purposes of the Institute of Pedagogical Research (Instituto de Investigaciones Pedagógicas), organized also by Horas at the Department of Educational Sciences of the National University of Cuyo, was precisely, “to consider the problems of

professional guidance through its different aspects and according to the needs of the Cuyo environment” (Facultad de Ciencias de la Educación, 1948, p. 23). That is to say that, unlike the situation in Tucumán, in San Luis professional guidance appeared less related to the field of work and more to that of education, even though both fields may have been related.

The professional guidance activities described above, plus all those contemplated by the Department of Educational Psychology and Professional Guidance, posed the problem of training specialized technical personnel. To this end, Plácido Horas himself promoted the creation of an undergraduate program entitled *Specialization in Psychology*, based in three complementary aspects. On the one hand, the background of similar programs in Spain, France, and the USA. Second, the development of psychology in Argentina. Finally, “the relationship between training in psychology and the objectives of the 2nd Five-Year Plan” (Klappenbach, 1995, p. 242).

The Demise of Psychotechnics and Professional Guidance and the Emergence of a New Professional Role in the Field of Psychology: The Psychologist

A fundamental change for what we have been analyzing is that in 1954 the First Argentine Congress of Psychology was organized in Tucumán, with strong support from the Federal Administration (Dagfal, 2009). There, in a Commission in which participated, among others, Plácido Horas, Oscar Oñativia, Ricardo Moreno, the creation of psychology or psychologist programs in national universities was recommended. Undergraduate Psychology Programs were conceived and planned in Argentina in the context of a planning Federal Administration. Not only the old Programs in Psychotechnics and Professional Guidance, but also the new program in psychology recommended during the First Argentine Congress of Psychology, held in Tucumán. An interesting question is that the congress recommended not a program in Psychology, but a university program for *professional psychologist* (Anónimo, 1954a, p. 122). In other words, the application of psychological knowledge by a professional psychologist was emphasized more than psychological knowledge in itself.

Under the invocation of that congress, between 1954 and 1964, the first 14 undergraduate psychology programs were organized in the country: six in national universities, six in private universities and two in provincial institutions (Klappenbach, 2018) (see Table 9.1).

However, the social and political context had changed substantially. It is not simple to synthesize all the changes that followed the fall of the Peronist administration in September 1955. But at least it is possible to point out those changes that had a direct or indirect impact on the undergraduate psychology programs that were beginning to be organized.

Table 9.1 First undergraduate Programs in Psychology at Argentine universities (1954–1964)

Foundation date	City	University
1955 (April)	Rosario	National University of Litoral. After 1955 coup d'état it was reorganized in 1956
1956 (March)	Buenos Aires	University del Salvador (originally a Jesuit university)
1956 (April)	Córdoba	National University of Córdoba. Although the initial degree was intended to be Professor and Doctor on Psychology and Pedagogy, the resolution of April 1957 enabled the degree of Graduate (<i>Licenciado</i>) in Psychology and Pedagogy. In December 1958 the two programs were separate
1957 (March)	Buenos Aires	University of Buenos Aires
1958 (February)	San Luis	National University of Cuyo
1958 (November)	La Plata	National University of La Plata
1959 (August)	Tucumán	National University of Tucumán
1959 (August)	Córdoba	Catholic University of Córdoba (Jesuit university). It was closed in 1976 during the military dictatorship and reopened in 2005
1960 (May)	Mar del Plata	National University of Mar del Plata. In 1960 it began as a program of the Institute of Educational Sciences. In 1966 it was incorporated to the Provincial University of Mar del Plata. It was closed in 1976 during the military dictatorship and reopened in 1985 within the National University
1961 (March)	Buenos Aires	Pontifical Catholic University of Argentina. From 1961 to 1969 it was part of the Free Faculty of Psychology, institution annexed to the University
1962 (March)	Buenos Aires	University from the Argentine Social Museum
1963 (March)	Tucumán	Saint Thomas Aquinas University of the North
1963 (Agosto)	Mendoza	Faculty of School Anthropology. It depended on the General Administration of Schools at the Province of Mendoza and had the scope of a provincial university. It was definitively closed in 1977
1964 (March)	Buenos Aires	John F. Kennedy University of Argentina

Note. Source: Adapted from H. Klappenbach (2008, p. 21) with minor modifications in H. Klappenbach & C. Fierro (2021, p. 117) and new minor modifications by the author in this table. Adapted with permission

In the last 20 years one of the topics analyzed in the new social historiography in Argentina is related to Peronism from 1946 to 1955. While up to the 1990s, historiographic interpretations of Peronism reproduced political positions, in the last years a more precise analysis of the primary sources was privileged, and Peronism was incorporated into the topics of academic historiography (Acha & Quiroga, 2012). At the intersection of a social and institutional history of psychology, on the one hand, and that of a history of planification during the Peronist administration, it

is possible to analyze with a different light the emergence of the first undergraduate programs in the field of psychology in Argentina. And, of course, the fall of those programs after the fall of Peronism.

The first military President after the *coup d'état* in September 1955, known as *Revolución Libertadora* (Liberating Revolution), was the General Eduardo Lonardi. But in November 1955 he was replaced by General Aramburu, who began the so-called *desperonización* (i.e., de-Peronization) of society and public administration:

There was no single way of understanding the *desperonization* of politics, society, and culture (Spinelli, 2005). The one that predominated from Aramburu's government proscribed the Peronist party, which began with the Decree 3855 of November 24, 1955 (República Argentina, 1955b), but concluded with the well-known Decree 4161 of March 5, 1956, that came to prohibit the different elements and symbols related to the "deposed regime." Article 1 of the above mentioned decree prohibited throughout the country the use "for the purpose of Peronist ideological affirmation ... of images, symbols, signs, significant expressions, doctrines, articles and artistic works, which claim such character" (República Argentina, 1956b, p. 1). Other expressions of the *desperonization* can be seen in the prohibition of union activity, the revocation of the 1949 constitution, and the creation of multiple investigative commissions at the national, provincial, and even municipal levels. (Klappenbach & Fierro, 2021, p. 118)

It is necessary to observe that such investigating commissions, were absolutely outside of the ordinary justice system and the courts (Ferreira, 2016). Within national universities, the Decree 478 of October 14th, 1955 declared in Commission all the university personnel with the objective "to choose professors in the most responsible and fair manner" (Decreto 478, 1955). So, professors who obtained an appointment during Peronist administration were laid off. Previously, all national universities were intervened. In most cases the interventions were justified with arguments on "university disorganization, lack of academic freedom, and suppression of university autonomy" (Klappenbach & Fierro, 2021, p. 118).

In connection with industrial and labor changes, important modifications took place after 1955. One of them, was the increase in the average size of industrial companies. Companies with more than 200 workers, representing 29% in 1954, reached 40% in 1964 (Lewis, 1990). For its part, it was emphasized what became known as "dynamic industries," that is, industries with a lot of technological development in the iron, steel, petrochemical, rubber, mechanical and car sectors instead of the "traditional industries": food, textiles, tobacco, etc. And another key point, was that most of the industrial and laboral changes were the result of foreign investments and multinational corporations. In 1958 the new foreign investments were of 3 million dollars; in 1959 of 36 million; in 1960 of 106 million and in 1961 of 188 million dollars (Lewis, 1990, p. 298). These data are relevant, not because it is intended to sustain an exclusively economic causation of historical processes, but because they help us to understand the consequences of these changes and to analyze their repercussions, not always direct, on the issues of our interest, in this case, the transformation of the graduation profile in the first programs in the field of psychology. It has been analyzed that the greater dependence on foreign investment in peripheral or dependent countries implies a greater dependence on the international economy and this necessarily weakens the power of the nation state, even when the

state continues to intervene in the economy (Faletto, 2014). In the particular case of the so called Liberating Revolution and its continuation and subsequent transformation in the so called developmentalist model, there was a “change within the accumulation model that would modify the bases of social supports that characterized the market-internist model” (Fair, 2009, p. 525). In a classic text, Celso Furtado analyzed the changes in cultural and consumption patterns in peripheral or underdeveloped societies produced by *modernization*:

Unlike the developed economies, in which the dynamic factor is a coordinated process of new consumption patterns (private or public) and technological innovations, these two primary factors interacting with regard to conditions in the system as a whole, in the underdeveloped economy it is the imposition of consumption patterns from outside that constitutes the main dynamic factor ... In the situation of underdevelopment this process is only fully carried out with respect to the population group which is integrated in the “modern” sector ... It is appropriate, therefore, to conclude that the introduction of new consumption patterns among the rich groups constitutes the real primary factor (besides State action) in the “development” of the so called underdeveloped economies. (Furtado, 1971, p. 11)

In Argentina, Portantiero asked about the changes promoted by a “modern industry strongly integrated with foreign capital at the centre not only of economic life but also of new cultural values” (Portantiero, 1989, p. 20). Juan Carlos Portantiero also highlighted the role of the young middle classes. From his point of view, around 1960 an “industrial culture” had been installed in Argentina, together with the expansion of art and culture in which “*psychoanalysis* burst on the scene like an avalanche” (Portantiero, 1989, p. 21; emphasis added).

The economic transformations and the new culture of modernity not only promoted the irruption of psychoanalysis as an avalanche. Other profound transformations occurred at the level of everyday life. The Uruguayan historian Isabella Cosse defined several of these changes with the concept of *discrete revolution* (Cosse, 2010). Such a revolution included the expansion of psychotherapy that implied a reorientation of subjectivity and intimacy, the circulation of the “psychoanalytic vulgate” as Pujol called it (Pujol, 2007, p. 298), family planning and the split between sexuality and procreation favored by the wide diffusion of the pill (Felitti, 2012; Pujol, 2007).

In that context, psychotechnics and professional guidance remained on the side of a tradition that had to replace. The rhetoric of modernity demanded a reorientation also in psychology, something that the new undergraduate programs in psychology were going to carry out, propped up by that *avalanche of psychoanalysis* described by Portantiero (Klappenbach, 2018).

In such a climate of ideas, it is necessary to underline some modifications that occurred directly in the field of psychology.

First, the displacement from *professional guidance*, especially collective to the model of *vocational guidance*, individually and from a clinical and mainly psychoanalytical approach. The perspective of *vocational guidance* that began to take place in the 1960s and 1970s in Argentina was based on a radical differentiation between two possible approaches of vocational guidance: the *actuarial* modality and the *clinical* modality. Such distinction implied an explicit questioning of

psychotechnics, which, in Bohoslavsky's opinion, was close to the "*Examen de Ingenios*" that Huarte de San Juan wrote in 1575: "This [actuarial] modality is related to North American psychotechnics and the differential psychology of the beginning of the century" (Bohoslavsky, 1979, p. 15).

Second, directly related to the above, the shift from *psychotechnics*, considered as a whole as a Taylorist expression, and its replacement by the *psychodiagnostic process*, centered on the individual and psychoanalytically oriented. A well-known text edited by Siquier de Ocampo, García Arzeno and collaborators began, once again, with a veiled questioning to psychotechnics:

La concepción del proceso psicodiagnóstico, tal como lo postulamos en esta obra, es relativamente nueva. Tradicionalmente se lo ha considerado "desde afuera" como una situación en la que el psicólogo le toma un test a alguien y en esos términos de formula la derivación. ... De este modo el psicólogo ha funcionado como alguien que aprendió lo mejor que pudo a administrar un test [The conception of the psychodiagnostic process, as we postulate in this work, is relatively new. Traditionally it has been considered "from the outside" as a situation in which the psychologist takes a test from someone and in those terms formulates the derivation In this way the psychologist has functioned as someone who learned as best to administer a test.] (Siquier de Ocampo, García Arzeno, & Grassano de Pícollo, 1976, p. 13)

Third, the abandonment of the French psychological matrix, centered on the study of observable and operationalizable behavior, the perspective that Dagfal (2002) called *conduite à la française*, different in turn from American behaviorism, and its replacement by the *psychoanalytic matrix*, centered on making the unconscious conscious, which is ultimately only contrastable in the individual psychoanalytic experience.

It could be argued that the decisive change between psychotechnics and professional guidance, and even between the recommendations of that psychology congress held in Tucumán, on the one hand, and on the other, the new undergraduate programs in psychology that began to be implemented after the fall of the peronist administration, was given by a graduate profile that had the clinical as his or her central objective and psychoanalysis as the basis of his or her practice. However, *clinic* was not understood as a branch of psychology. On the contrary, the clinic was the foundation of all the field of psychology. Psychology, then, left its place in the world of the federal or provincial administration planning and found its best development as a liberal profession, at the service of the subjectivity of the individuals.

A renowned psychoanalyst and professor of the undergraduate psychology program at the University of Buenos Aires, José Bleger, explained the scope of this clinical perspective:

La psicología clínica es siempre el campo y el método más directo y apropiado de acceso a la conducta de los seres humanos y a su personalidad. Hasta ahora, la psicología experimental le es tributaria. Cuando la psicología experimental se "libera" de la actitud clínica y del método clínico, ocurre que el psicólogo deja de estudiar seres humanos para estudiar la técnica que emplea. Esto es muy frecuente, especialmente con los *psicotécnicos* que terminan estudiando el test y para ello se sirven de seres humanos, en lugar de servirse del test para estudiar los seres humanos. [Clinical psychology is always the field and the most direct and appropriate method of access to the behavior of human beings and their personality. So

far, experimental psychology is tributary to it. When experimental psychology “liberates” itself from the clinical attitude and the clinical method, it happens that the psychologist stops studying human beings in order to study the technique he or she employs. This is very frequent, *especially with psychotechnicians* who end up studying the test and for this purpose use human beings, instead of using the test to study human beings.] (Bleger, 1964, p. 179; emphasis added)

Bleger not only emphasized the clinical perspective for the whole of psychology but also pointed out that psychoanalysis coincided with the total field of psychology. In that sense, students in psychology programs did not need to study other schools or systems or perspectives of psychology. He also stated that psychology was merely a trade (Bleger, 1962). As a trade then, psychology was no longer a science and for that reason required that the knowledge of psychology be provided by psychoanalysis.

From Bleger’s foundation, the scope of psychoanalysis coincides with that of general psychology. That is, psychoanalysis can be applied to all human phenomena. From the moment psychoanalysis became the referential schema of psychology, the overlap between psychology and psychoanalysis became complete. It is true that Bleger also questioned psychology conceived as a liberal profession based on the individual practice of psychoanalysis. He even considered that if undergraduate programs in psychology were centered on the training of psychotherapists, they would be a failure from the social point of view. In his view, the psychologist’s main role was in *psychohygiene* (Bleger, 1966). Nevertheless, Bleger centrally contributed to the rise of psychoanalysis in psychology and to the demise of psychotechnics and professional guidance in Argentina.

Moreover, the appropriation of psychoanalysis is one of the central keys to the identity of the Argentine psychologist throughout its vast geography. The profession of the psychologist has grown in a remarkable way since the 1960s. The latest available survey indicated that in 2015 there were 101,217 psychologists in Argentina. Of these, almost half (48,000) were in the city of Buenos Aires, the country’s capital, with a population of 3,054,267 inhabitants. In other words, in the city of Buenos Aires, there is one psychologist for every 64 inhabitants (Alonso & Klinar, 2016). According to World Health Organization, with 222 psychologists per 100,000 inhabitants, Argentina has the highest rate in the whole world, above the Netherlands (123 psychologists per 100,000 inhabitants), Finland (109), Israel (88), Norway (73), Germany (50), Canada (49), France (49), and the United States (30) (World Health Organization, 2019).

In summary, it is necessary to underline, once again, that this extraordinary growth of the profession of psychologist in Argentina, which began around 1960, was only possible after a sharp break with the knowledge and practices in the field of psychotechnics that had been characteristic of the 1940s. It is possible to state that the profession of psychologist in Argentina was not the result of the evolution of the practice of psychotechnics and professional guidance. On the contrary, the psychologist’s profession originated in the ignorance and, in fact, the *rejection* of the psychotechnical practices of the previous years. In both cases, there was an intimate interweaving between professional practices and cultural and political conditions. Just as psychotechnics required its own special knowledge and skills, the

new profession of the psychologist required new knowledge, which was mainly provided by psychoanalysis, whether Freudian, Kleinian or Lacanian.

So, psychoanalysis largely biased psychologist profession in the last half century, may be in a manner that it is not easy to find in other parts of the world. This is all the more surprising considering that German has not been a widely spoken language in Argentina. On the contrary, Freud's work has been known basically in Spanish translations and in a few cases in the English translation of the *Standard Edition of the Complete Psychological Works of Sigmund Freud*, edited in 24 volumes by James Strachey. And since the 1970s, the work of Jacques Lacan significantly biased the psychoanalysis appropriated by Argentine psychologists. And even though French has been a frequent language in the cultural elites of Argentina, the massiveness of Lacan's work has also circulated in Spanish translations.

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Chapter 10

William Siemens: An Engineer and Industrialist in Germany and England



Wolfgang König

Physical, Cultural, and Technological Spaces in Germany and England

Space and time are foundations of technological development. Technology advances over time as the result of innovative work by engineers and scientists, the accumulation of knowledge and material devices, and as humans make choices between alternatives. Technology differs in physical and cultural spaces. In this article, I will be discussing three types of space: physical, cultural, and technological (cf. Löw, Steets, & Stoetzer, 2008; Schlögel, 2006; Soja, 1989).

There is no strict separation between cultural and physical space because human beings have considerably transformed the physical conditions on this earth today. Nevertheless, under physical space one can subsume natural conditions like the place of states on the earth, resources, the climate, and landscape's surface. Cultural space covers a broad range of phenomena like society and politics, the economy, values, research and development, and education and training, which I emphasize in this article. Technological space could be interpreted as a part of cultural space, but it is also influenced by nature. It consists of the structure and function of artifacts and their contexts, which are their cultural and social origins and impacts (König, 2009; Ropohl, 1999).

First, I would like to briefly mention that physical spaces play an important role in technological development. Sometimes distance alone influences technology. After the Second World War, the Japanese consumer electronic industry went abroad. Its goal was to place its products on the American and Western European markets, which were the largest markets in the world. To reduce transportation costs, Japanese companies concentrated on small, lightweight products like portable radios, the Walkman, and the Discman (cf. Ouchi, 1984).

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The natural resources found in specific spaces are also important for technological development. English industrialization was based on coal and iron ore; the Nordic countries built a significant paper industry because of their forests; and Saudi Arabia has profited from its rich oil deposits. With respect to the Federal Republic of Germany, you will often read that its lack of natural resources has been offset by skills and knowledge. Climate, too, influences technology. Textile industries and papermaking are at their best in warm and humid environments. Today, companies in these industries can generate this kind of favorable climate artificially.

The central thesis of my article is that England and Germany were two different physical, cultural, and technological spaces (cf. König, 1999, 2003). To give some examples: England's island status proved favorable for laying submarine telegraph cables, which was the Siemens companies' main business (physical space). Laying cables from Germany was much more expensive. England was also the first industrialized country, whereas Germany was a latecomer to industrialization (cultural space). German technology was more theoretical than the English. English engineers received a broad empirical training on the job, whereas German engineers often were educated at least parttime in schools (technological space). In my article, I deal with Germany and England as cultural spaces with respect to the Siemens brother William (1823–1883) and the German Siemens company and its English branch (Feldenkirchen, 2003). William Siemens received his engineering education in both countries, where he also worked. Therefore, the company and William are good examples for researching what different physical, cultural, and technological spaces could mean in history.

Document Analysis

I have based this article on numerous sources from a wide variety of collections (König, 2020). Two of these, however, are of particular importance. The first key group is William's letters to family members, held in the Corporate Archives of the Siemens Historical Institute. Among others, these include 2236 letters between William and Werner Siemens (cf. Bähr, 2016), and 580 between William and his younger brother Friedrich, who worked with William for a number of years and logged his own achievement in the energy-saving fabrication of glass (Bähr, 2016, p. 154). As a general rule, William's letters are terser than his brothers'. And in many cases, they deal with details of technical innovations. A bundle of letters the English Electric Company acquired in 1953 from a cousin of William's wife Anne and then edited (Nelson, 1953) is a valuable supplement to this collection of sources. This collection of letters is in no particular order; it appears to have come about more or less by chance. Various English, German, and Swiss archives and libraries possess a limited number of other letters from William.

The second important resource is William's own publications. By far the majority of his English-language publications is available in an exemplary edition

prepared by his private secretary, Bamber (1889). A number of works were translated into German; some articles appeared in German only. I should also mention that I investigated William's work with technical and scientific associations in part through those associations' historical descriptions and in part from their journals. In William's letters, in his technical and scientific publications, and in the association journals, his innovations occupy much space. By contrast, the portrayal of William as a businessman and private person is afforded less attention.

The Siemens Company in Germany and England

The Telegraphen-Bauanstalt Siemens & Halske was founded in 1847 in Berlin by Werner Siemens (1816–1892) and Johann Georg Halske (1814–1890). In the beginning, it built telegraph lines for the Prussian state. When state orders declined, it looked for new opportunities in other countries. In 1850, the company initiated entrepreneurial activities in England (von Weiher, 1990) and in 1853 in Russia. Werner Siemens conceived his company as a family firm and tried to position his brothers in important roles. Brother Wilhelm, who changed his name to William, was responsible for the English business and brother Carl (Lutz, 2013) for the Russian enterprise. In 1857, the English company Siemens & Halske was founded, and in 1865 it was renamed Siemens Brothers (Scott, 1958). William Siemens was the head of both companies until his death in 1883.

The German and the English Siemens companies and Werner and William worked in different cultural spaces. In England, industrialization was at its peak. In several important industries like textile, iron, and coal mining, Great Britain produced more goods than the rest of the world. Germany, on the other hand, was just at the beginning of its industrialization and was hard at work imitating its British counterpart. These differences resulted in tension and conflict between the Siemens companies and brothers.

The English company was established to market the telegraph products that were being manufactured in Berlin. This arrangement, however, turned out to be problematic. William believed that the German equipment was too expensive and that it could be manufactured more cheaply in England. Werner insisted that the English company should contribute to returning the German investment in research and development.

One of the brothers' successful innovations was a water meter. Water companies wanted to be able to measure the exact volume of water delivered to their various clients, but the challenge was designing meters with a long lifespan. William designed his meters in England and sent the drawings and descriptions to Berlin, where the workshop manufactured them. The distance between England and Germany alone and the deficient postal services were sources of ongoing misunderstandings. William also complained that Halske's workshop needed too much time to manufacture the prototypes: In Germany it would take months, whereas in England he could get the meters in weeks. We can assume that these differences

were the result of the unequal state of industrialization in the two countries. Some English companies had begun mass production, whereas Siemens & Halske still built its products in the German craft tradition. Ultimately, the German and the English companies each manufactured different meters that were marketed separately.

An important discussion among the brothers was how Siemens should approach global telegraphy (Müller, 2016). Siemens & Halske had started by building continental telegraph lines, and now other entrepreneurs were planning to link the continents. Most of these initiatives came from Great Britain, which sported the necessary concentration of capital and which wanted to improve communication with its colonies. The investment, however, was huge, as were the risks. Indeed, several of the first intercontinental cables were lost or did not work. William wanted to fight for market leadership: Siemens should manufacture, lay, and operate cables for the big projects that crossed the Atlantic and ran under the Red Sea to India. Werner and Carl hesitated because of the attendant risks. Siemens ended up concentrating on manufacturing and laying specific cables, and the company also controlled cables electrically that were laid by other companies. Siemens made a substantial profit, but was far from being a market leader.

In Werner's conception of the family firm, William should run the English company. William, on the other hand, wanted to also work as an independent engineer and industrialist. He was fascinated by the technological developments in England and wanted to contribute. Eventually, Werner had no alternative but to comply with William's wishes.

These were the most significant conflicts between the Siemens brothers, and they were sparked primarily by the different cultural, economic, and technological spaces where they worked, not by personal differences. Werner and William collaborated in a very fruitful way in much of their joint innovative work, and they were always able to find a compromise when they disagreed.

William Siemens' Career in Germany and England

William Siemens (pictured in Fig. 10.1) was born in Mecklenburg-Strelitz, one of the small German states. He attended secondary schools ("Realschulen") in Lübeck and Magdeburg until 1841. In hindsight, he said that his early education was very poor. Nevertheless, in 1841 and 1842 his brother-in-law's chemistry teaching post enabled him to sit in on science lectures at Göttingen University. This brief sojourn at Göttingen did not make William a physicist or chemist, but it did provide him with an introduction to scientific methods and thinking. William later profited from this education when he published articles on the thermodynamics of the sun (Siemens, 1885). After leaving Göttingen, William trained as a mechanical engineer in a respected machine-building company that designed and manufactured steam engines and other products. In other words, he was trained on the job at a company and not at a technical school. Until the 1870s, this was how most industrial

Fig. 10.1 William Siemens. Source: Picture by Siemens Historical Institute. Reprinted with permission



engineers in Germany were trained (König, 1998): Only a minority attended trade schools (“Gewerbeschulen” or “Polytechnische Schulen”).

William went to England in 1844 and decided to stay and become an Englishman. In the early years, he worked in very different industrial fields such as textile manufacturing, railway engineering, and iron and steel. This gave him the broad technological exposure that later made him a successful mechanical and civil engineer. His first biographer, William Pole, a brother engineer and member of the Royal Society, wrote: “He was probably one of the best and most accomplished mechanics that ever lived” (Pole, 1888, p. 393).

After moving to England, William made great strides towards becoming a professional engineer. Starting in 1851, he joined many scholarly and professional societies. In 1859, he married a woman from a respected Scottish family and became an English subject. We can assume that he benefited from his wife in terms of learning British customs and the English language, and he became proficient at lecturing and publishing in English. After his death, an obituary described his achievements thus (Institution of Mechanical Engineers, 1884, p. 71): “His linguistic attainments were very remarkable; accent apart, he spoke purer and more correct English, and with far greater facility of expression, than most Englishmen by birth.” And in another journal (British Association for the Advancement of Science, 1885, p. 4): He was a master “of the art of lucid statement in his adopted tongue.”

William did not reveal much about why he decided to spend his life in England. There was probably a combination of motives: In England, the opportunities for an engineer and industrialist were much greater than in Germany. He received a friendly welcome in British scholarly associations and was accepted by his brother engineers. And finally, he by far preferred the English political system to the German. William was a liberal and a republican who attacked the Prussian kings and Prussian politics in particular with harsh words.

William knew that in English society, science and engineering societies (Fig. 10.2) and clubs played an important role. In these learned professional societies, engineers, industrialists, and scientists met to discuss technological problems, inventions, and innovations (Buchanan, 1989). Societies and clubs were also social institutions where the elite exchanged their views and met new people, and William succeeded in making influential friends. We can assume that the Siemens company also profited from William’s professional contacts. Some societies focused on hashing out opinions on scientific and technological problems like patenting, standardizing, and representing British technology internationally, which were then conferred to the English government or Parliament.

Becoming a member of scholarly and professional societies meant that one was a highly esteemed scientist or engineer. William’s technological interests were very broad, so he acquired memberships in numerous associations. He became a member of the Institution of Mechanical Engineers, the Institution of Civil Engineers, the Institution of Naval Architects, the Royal Society, the Chemical Society, and the Society of Telegraph Engineers. He also joined associations aimed at promoting

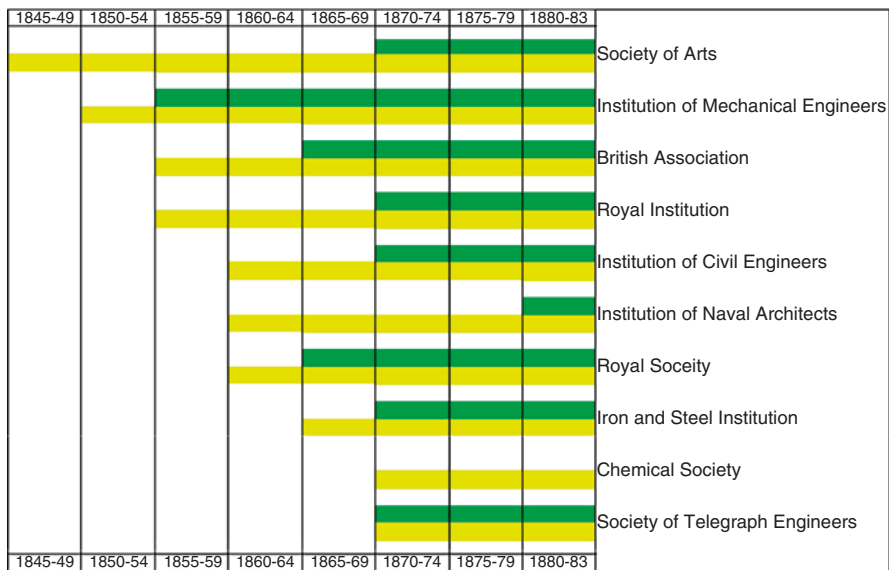


Fig. 10.2 William Siemens’ engagement in learned and professional societies. Membership (yellow) and positions of responsibility (green) in decades. Source: Design by author

science, like the Society of Arts, the British Association for the Advancement of Science, and the Royal Institute. He became a member of industrial associations like the Iron and Steel Institute and was elected as member of clubs like the Whitehall Club and the Athenaeum Club (Cowell, 1975), whose members included prime ministers, industrialists, artists, and scientists.

William joined these societies in the 1850s and early 1860s or at their founding in later years. In the 1860s and 1870s, he held responsible positions like president, member of the board, and chairman of a section. After his death, he was honored with a window in the Westminster Abbey, which was and is the Pantheon of British society.

William was also active in the societies' scholarly work (Fig. 10.3). He published articles in their journals (Siemens, 1889), participated in their meetings, and contributed to the discussions. He published in very different fields, including mechanical engineering, metallurgy, power technology, electrical engineering, and telegraphy. He published articles about telegraphy, the Siemens company's business area, throughout his life. Mechanical engineering articles appeared in his early publishing career, and later in life he shifted his focus to metallurgy, in particular steelmaking.

William worked diligently as an inventor and innovator (Fig. 10.4). He received at least 133 patents and was responsible for several product and process innovations. In the 1840s and early 1850s, when he began his career as an independent engineer in England, he developed several technologies that worked but were not successful on the market. These included anastatic printing, a process for copying old prints.

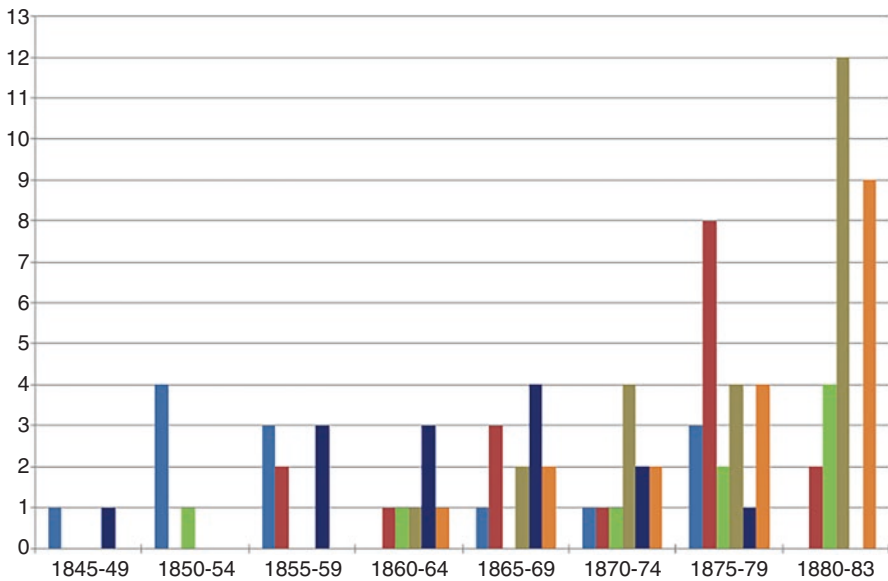


Fig. 10.3 William Siemens' articles in engineering science journals, presented by topic (light blue mechanical engineering, dark blue telegraphy, light green power technology, dark green electrical engineering, dark brown metallurgy, light brown others. Source: Design by author

Fig. 10.4 William Siemens' innovations (selection). Source: Design by author

Failed Innovations

Anastatic printing
 Steam engine regulators
 Regenerative steam engine
 Regenerative hot-air engine
 Direct process of steelmaking
 Telegraph cables

Successful Innovations

Watermeters
 Regenerative Furnaces
 Siemens-Martin process of steelmaking

Unfortunately, lithography rendered anastatic printing obsolete. William improved James Watt's regulator for steam engines, and his was more precise but was too expensive. He invented a regenerative steam engine that utilized the engine's waste heat. The engine, however, did not work well. In his early years in England, William had a hard time earning a living.

William and his brother Werner developed several of these innovations together. The failures caused Werner to withdraw from this broader field of invention and to concentrate on telegraphy. William, however, continued working on inventions. Success came in the 1850s with his water meters and regenerative furnaces that used waste energy. What had failed with steam engines worked in furnaces. The furnaces were employed in a variety of fields, including glass and steelmaking. William also received earnings from the Siemens companies that were finding success in the telegraph business. By 1860, he was a millionaire.

When one considers the complete list of William's innovations, one sees that the number of failures is greater than those of the successes. This should not be a surprise: In technological development, failures always outnumber successes (Bauer, 2006; König, 2018). In fact, technological success cannot be achieved without many failures. William's greatest success—and failure—was in steelmaking. His regenerative furnace laid the foundation for a new process that made steel of a higher quality. William was very close to inventing this process himself, but he decided to focus on a different process. Instead, the new process was perfected by the French iron dynasty of the Martins (Laurant, 2013). It was named after the two innovators, the Siemens-Martin process, and the steel was called Siemens-Martin steel. Over a period of one century, the Siemens-Martin process became the world's most important steelmaking process (Riedel, 1994).

Instead of working further on the Siemens-Martin process, William became engaged in another innovation, the direct process of steelmaking. Steelmaking is a

two-step process: First, pig iron is produced from iron ores in a blast furnace. Next, steel is produced from the pig iron. “Direct process” means making steel directly from the iron ores, and William was convinced that he had solved this problem. In 1870, he founded an iron works in southern Wales, the Landore Siemens Steel Company, that was to produce steel using the direct process. The company hired between 1000 and 2000 workers. In the 1880s, the Landore company and the direct process had proved to be a failure, and William and his investors lost several 100,000 pounds. Nevertheless, William remained a rich man. It should be noted that the direct process has yet to be realized.

William Siemens’ Education and Training

William Siemens was born and educated in Germany. He completed secondary school in 1841, then moved to the University of Göttingen. He registered for a diverse potpourri of subjects, emphasizing sciences but enriched through mathematics, physical geography, and technology. During this short time in Göttingen, William probably acquired a broad, though superficial, understanding of the fundamentals of science. The next step on William’s path to becoming an engineer was an apprenticeship at a machine factory. He found a place at the Stollberg’sche Maschinenfabrik in Magdeburg, which was a well-known company making products such as steam engines—what might be called the supreme specialty in mechanical engineering in those days. After two years at Stollberg, one could say that William had completed his training as a mechanical engineer.

In Germany, William’s training sufficed for a beginner in mechanical engineering—in England, this was not the case. When William moved to England in the mid-1840s, he was not successful with his inventions made in Germany. He had to learn to invent for the British competitive market. Products had to be not only good, but also cheap and in demand.

In England, William could call himself a mechanic, but not an engineer. He lacked, firstly, some years of practical work and, secondly, the recognition of professional societies. During the next years, William worked for railway companies, in printing, textile, and machine factories, and at a telegraph construction company. He initiated connections with a couple of machine-building industrialists.

One may view these activities of William in various English industries and at various English companies—some of the well-known—as the journeyman’s stage in the education of a mechanical engineer. Developing and refining entirely different machines for entirely different purposes gave him a broad knowledge of mechanical engineering and a highly evolved capacity for solving problems. By around 1850, he was rightfully entitled to call himself a professional engineer—even by rigorous British criteria.

From the beginning of his career in England, William tried to become a member in engineering societies, as membership would certify his belonging to the group of professional engineers (Buchanan, 1989). In 1851, he became elected as a member

of the Institution of Mechanical Engineers (Parsons, 1947; Pullin, 1997; Rolt, 1967). He was a member of the Institution of Civil Engineers (Watson, 1989) from 1854 onwards, and of the Royal Society from 1862 onwards. From that point, one could rightfully call him a highly distinguished professional engineer.

For a long time, the ingrained belief in England was that practical activity was the best way to become an engineer. There were two ways to do this: (1) An aspiring engineer either went into training (“pupilage”) with an experienced civil engineer, or (2) he would train at an industrial company (“apprenticeship”). He could additionally acquire a better theoretical knowledge by attending brief courses at a school. Finally, to become a true engineer, he had to serve for several years in positions of responsibility. This training system had proved its worth in the past and had helped England move into a role of industrial leadership in the world. But as the nineteenth century progressed, criticism mounted that the system was outmoded or inadequate. Critics pointed to the industrial rise of countries on the European continent, and the relative decline of English industry. Among other factors, they especially credited the rising countries’ technical schools for those nations’ success.

William Siemens was among the fundamental advocates of a system of technical schools, and also one of the critics of the practical system of training engineers in England (Scott, 1958, pp. 257–258). The German Polytechnic Schools, however, had less credit with him. He gave preference to the universities—on the grounds that he preferred a strict separation of theory and practice. Schools, he felt, should provide a training in mathematics and science, whereas engineers should gain their practical knowledge in the workshop, the office, or out in the field. Schools should provide no lessons at all in actual workshop activities. The problem in Germany, he said, was that the polytechnic schools and their professors claimed to teach practical knowledge—about which they understood nothing. They lacked the “commercial element, that is of due regard to cost of production, of which the teacher himself must be comparatively ignorant, as otherwise we should probably find him employed at the factory or the engineer’s office, instead of in the schoolroom” (Siemens, 1889, p. 274). School instructors, he claimed, should preferably teach long-established information. That might be useful for work in government administration, but it was inimical to innovation.

For England, William did allow that practitioners had sparked industrialization. But he felt their time was past (Divall, 1990; Guagnini, 1993). He concurred with the industrialists and engineers who demanded and supported the foundation of technical schools in England as well. In contrast to the continent—said William—English technical schools had arisen from private initiatives; the government had not played much of a role. He found that schools of this type had developed quite well in past years.

Concluding Remarks

In this article, I have dealt particularly with the differences between the English and the German cultural space that influenced technological development in the two countries in the nineteenth century. England was the first industrialized country, whereas Germany followed about half a century later. The British Empire comprised much better conditions for laying submarine telegraph cables, which was the main Siemens business from 1850s onwards. Engineers in England possessed much more know-how in empirical electrical engineering than in Germany. German engineers tried to compensate this by more theoretical knowledge. One can discover these differences by considering the technical education and training of William Siemens.

William's career reflected some of the cultural, economic, and technological differences between the two countries. There were several elements in his skill set that contributed to his success. (1) William possessed wide-ranging engineering expertise. This originated in his training in Germany and his engineering practice in several technological fields in England. (2) William combined this expertise with the fundamentals of the natural sciences. He had no scientific education, but he had a solid understanding of science that enabled him to use *ad hoc* scientific methods and get results. (3) German by birth, William became an Englishman. He was at home in two cultures that provided him with strong intercultural skills. (4) When one considers his engagement in many scholarly and professional societies, one gains the impression that he had highly developed social and communication skills.

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Chapter 11

Professions, Knowledge, and Workplace Change: The Case of Canadian Engineers



Tracey L. Adams

Sociologists define professions as occupations distinguished by their advanced education, expertise, and social status (Adams, 2020). Professionals are experts who draw on their knowledge, skill, and experience to provide services to clients, employers, and the public, in a manner that is safe and in the public interest. Professionals' fiduciary responsibilities, especially when embedded in regulatory regimes, distinguish them from other experts (Carr, 1999). In Canada, for instance, regulated professionals are legally required to practice in the public interest, and failure to do so can result in loss of license, suspension, or other disciplinary action. To provide the public with safe and effective services, professionals draw on a body of knowledge that is complex, combining scientific, rigorous and esoteric knowledge of facts, theories and principles, with practical experiential knowledge, or what Schön (1983, pp. 49–54) has called more tacit “knowledge in action.” Where do professionals get their knowledge? Advanced training in universities and other settings provides fundamental principles, and theories, but these may be insufficient to tackle the complexity of real-world problems (Schön, 1983). Other knowledge is obtained through practice and experience, where reflective practitioners develop the knowledge they need to address the challenges that confront them (Eraut, 1994; Schön, 1983; Winch, 2016).

Because the sources of professional knowledge are multiple, many forces and social trends impact it: from technological innovations and new research discoveries, to regulatory change, globalization, cultural influences, political and economic trends, and organizational change (Freidson, 1986; Parding & Abrahamsson, 2010; Schön, 1983; Susskind & Susskind, 2016; see also Chap. 6 by Siebert & Windrum, 2023). These forces shape not only the content and application of professional

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knowledge, but potentially the relationship between professionals and their knowledge, and the acquisition of knowledge. In light of pervasive social change, professionals must be adaptable, applying existing knowledge to new situations, developing new knowledge, and engaging in continuous learning. Increasingly, professionals are subject to reaccreditation and continuing education requirements whereby they must provide proof of learning and skill enhancement to maintain their license or registration required for practice.

Despite this emphasis on continuous learning, insufficient attention has been paid to workplaces as learning environments for professionals. Professional workplaces traditionally supported professional learning, acknowledging benefits to service quality and innovation from employing professional workers with cutting-edge skills (Bucher & Stelling, 1969; Freidson, 1986). Yet, there are signs that this is changing, as the organizations in which professionals work are being transformed. Researchers have identified a confluence of trends in professional workplaces: rationalization including a rising concern for efficiency and lowering costs, larger firms with more hierarchical organizational structures, globalization, closer management of professional workers, and more accountability (Ackroyd, 1996; Cooper, Hinings, Greenwood, & Brown, 1996; Currie, Waring, & Finn, 2008; Muzio & Ackroyd, 2005; Ritzer & Walczak, 1988). The emphasis on efficiency would appear to limit the time and space required for professional learning and reflective practice on the job. These trends have implications for the development of professional knowledge, and the exercise of expertise. These trends also, I will argue, have implications for professionals' ability to meet their public interest obligations.

In this paper, I explore professionals' on-the-job learning activities and knowledge development through a case study of professional engineers in Ontario, Canada. Analyzing data from interviews with 53 professional engineers, I examine engineers' skill and knowledge acquisition, and especially their opportunities for on-the-job learning. I find evidence that professional engineers' learning strategies are shifting. Workplace change is making it more difficult for engineers to learn on the job. As engineers have traditionally acquired much of their knowledge on the job, the lack of opportunities for meaningful skill acquisition at work has potentially negative implications for professional knowledge development. Social change may be altering not only what is learned, but how it is learned, and the depth of knowledge acquired—with implications for engineers' ability to discharge their ethical responsibilities to the public and their profession.

Professions, Knowledge, and Workplace Change

Most workers possess expertise and demonstrate their proficiency on the job. Some sociologists argue, however, that professionals' knowledge can be distinguished from others', because of its application to important social matters like justice and well-being (Hughes, 1958), its status (Collins, 1990), and the way it has been institutionalized and regulated (Freidson, 1986). Social closure limiting access to

professional education and training is a source of professional power and authority (Freidson, 1986; Saks, 2012). Although a growing number of researchers argue that professionals are indistinguishable from other experts in the West today (Evetts, 2006; Larson, 2018), differences in status, institutionalization, and regulation remain. Professionals mobilize their knowledge in service to the public and commit to do no harm in the application of their knowledge and training. For them, it is not enough to be proficient; rather, they should mobilize their proficiency for the well-being of others.

Scholars have argued that a key characteristic of professional knowledge is its blending of esoteric theory and concepts with practical applications (Gidney, 2005; Jamous & Pelloille, 1970; Schön, 1983). Professional work requires the exercise of judgement and the ability to think flexibly and quickly to apply scientific knowledge in often-unique circumstances (Evetts, 2002; Freidson, 1986; Schön, 1983). The development of this knowledge requires time, reflection, and practice (Eraut, 1994; Gidney, 2005; Schön, 1983; Winch, 2014). Without such reflection, knowledge acquired on the job may be ephemeral and not be integrated into broader professional knowledge (Eraut, 1994). The exercise and utilization of knowledge also entails ethical judgments, requiring autonomy and reflection as well (Carr, 1999). Reflection, then, may be particularly important in fulfilling fiduciary roles, and balancing the interests of employers, clients, and others.

Because professional knowledge is complex, professional education has traditionally been broad, taking place in multiple settings (Winch, 2016). In Canada, for at least a century, professional training has combined post-secondary education with some on-the-job training, learning, and development (Gidney, 2005). Not only do most professional schools provide opportunities for practical hands-on learning, but many professions require a period of field experience before candidates can obtain their final registration or license to practice independently. Learning after licensure continues. In this manner, professionals acquire only some of their knowledge through formal education. Much of what they know they learn outside of professional schools—through practical experience on the job, as well as through other avenues.

Learning on the job, however, may be becoming more difficult in light of workplace change. Rationalization and globalization encourage a drive for efficiency that can subordinate professionals' goals and interests to the drive for profit and/or efficiency (Evetts, 2006; Ritzer & Walczak, 1988). In the language of new institutionalism, the logic of capitalist workplaces and public sector workplaces under new public management, with its emphasis on efficiency and cost-cutting, conflicts with the logic of professionalism, with its emphasis on collegiality, quality, and knowledge enhancement (McGivern, Currie, Ferlie, Fitzgerald, & Waring, 2015; Reay & Hinings, 2009). In these new work environments, professionals are more closely managed than before (Ackroyd, 1996; Cooper et al., 1996; Currie et al., 2008; Evetts, 2006), and they may resist or adapt to managerialist norms (Currie et al., 2008; Noordegraaf, 2007, 2015).

"Deteriorated learning conditions" for professional workers may result (Parding & Abrahamsson, 2010, p. 300). Workers have less time for learning on the job, and less time for reflection about what they learn. Moreover, their learning is be guided

less by the profession and more by managers. This can be problematic because managers' goals respecting professionals' knowledge acquisition may differ dramatically from professionals' (Parding & Abrahamsson, 2010). In several sectors, the trend is to promote the development of "learning" organizations in which knowledge sharing and knowledge management become part of the culture (Alvesson & Kärreman, 2001; Currie et al., 2008). However, as Currie et al. (2008) argue, the "learning" in these environments is aimed at meeting managerial goals for efficiency, often by capturing and co-opting elements of professional knowledge, de-contextualized and simplified. In such contexts, the push towards "knowledge management" can manifest as efforts to control knowledge workers, and even separate knowledge from the workers who possess it (Alvesson & Kärreman, 2001). In essence, new managerial practices generate mechanisms of control, whereby managers seek to capture and delimit professional knowledge, expertise, and even professionals' ability to learn (Alvesson & Kärreman, 2001; Currie et al., 2008; Parding & Abrahamsson, 2010). Although such initiatives are contested (Currie et al., 2008; McGivern & Ferlie, 2007), some professionals may be in a better position to resist than others. Managerial efforts to co-opt and alter professional knowledge combine with other trends to exacerbate the commodification of knowledge (Grace, 2014). These trends privilege the advancement of knowledge that enhances profit and efficiency, to the neglect of skill enhancement that benefits professionals or the public but does not raise quarterly returns.

Researchers have seldom explored international differences, but they may be significant in shaping these trends (Adams, 2015). Those studying hybrid professionalism and managerial influences on training are predominantly focused on Europe. Some European centres value investments in worker training. In Canada and the United States, the most striking trend may be the general decline in workplace training investments. Firms once willing to train workers, to invest in them and provide them with learning opportunities, now prefer to hire workers who already possess the needed skills (Hall, 2014). Firms are particularly reluctant to provide "portable" skills—ones that develop workers' capacities and which are applicable in a variety of workplaces, including their competitors'.

In Canada's highly educated labor market, employers may find little incentive to provide workers with training. There is a surplus of educated workers, over a third of whom are structurally underemployed—they have more education, skills, and knowledge than their jobs actually require (Livingstone, Adams, & Sawchuk, 2021). Livingstone (1998) explains that workers respond to a tight labor market and underemployment by seeking more skills on their own—pursuing formal and informal learning opportunities. In light of workers' willingness to obtain training at their own expense, the motivation for employers to invest in training falls (Livingstone, 1998). Employers may be able to get the workers they need without heavy investments in skill training.

The lack of investment in training may also owe much to specifically North American approaches to innovation and profit. Here, efforts to maximize profit and short-term gain discourage investment in long-term training and incremental innovation. American firms emphasize short-term investments for quick returns, unlike

some European counterparts who encourage more incremental gains, and practices of tinkering or bricolage. *Tinkering* is a process wherein employees seek to “improve their product continuously with whatever comes to hand and without checking the clock” (Glückler, Punstein, Wuttke, & Kirchner, 2020, p. 10). *Bricolage* is a term used to capture “resourcefulness and improvisation” among actors and workers (Garud & Karnøe, 2003, p. 278). Tinkering and bricolage involve time and space for innovation and learning by doing. North American work environments, including those employing engineers, appear to hold less space for incremental learning through tinkering (Garud & Karnøe, 2003), which to companies interested in maximizing short-term gains, has little immediate benefit, and hence can be cast as inefficient.

To summarize, previous researchers have argued that professionals are knowledge workers with fiduciary responsibilities and an ongoing commitment to knowledge enhancement and skill upgrading. Although professionals obtain their knowledge in part through formal education, practical experience is essential to knowledge and professional practice. Professionals acquire at least some of their knowledge through working; however effective workplace learning requires time for reflection (Eraut, 1994). As the environments in which North American professionals work change, there is reason to question whether these changes—rationalization, work intensification, increased managerialism—are conducive to professionals’ workplace learning. Increased workloads, managerial scrutiny, and a focus on short-term gains and goals may leave little time for meaningful learning on the job. Given that professionals’ learning and knowledge is intertwined with their ethical commitments to serve the public interest (Carr, 1999), such changes in professional practice and knowledge acquisition could negatively impact professionals’ ability to engage in reflective, ethical practice.

In this paper, I explore the impact of workplace change on professional knowledge and learning through a case study of engineers in Ontario, Canada.¹ Engineers provide an excellent case for analysis for several reasons. Often at the forefront of technological innovation, engineers appear to be knowledge workers for whom ongoing learning is essential. Moreover, engineers are found at multiple organizational levels. Promotion into management is a common career path for engineers; hence, engineers have been “hybrid” workers, straddling management and professional practice, for decades (Brint, 1994; Raelin, 1986). Such traditional career paths could shape learning practices. Additionally, engineers are employed in a variety of different organizations—from large multi-national corporations to smaller professional service firms, and self-employment, in the public and private sector alike. This diversity of organizational settings can help shed light on the significance of organizations and organizational change to professional knowledge and learning. Finally, engineers must adhere to a code of ethics which requires that they place the public interest ahead of employer, professional, or even client wishes.

¹In Canada, professional engineers are regulated at the provincial level, and all branches of engineering are regulated together, governed under one act and one regulatory body (per province).

Failure to adhere to this standard could result in disciplinary action. The overarching research questions are as follows: How have changes within Canadian engineering workplaces impacted professionals' learning practices and opportunities? What are the implications of these changes for professionals' ability to practice in the public interest?

Data and Methods

In my research, I draw on data from a broader study of professions and workplace change in Canada (Livingstone et al., 2021). I have focused this particular case study on professional engineers based in Ontario, Canada, and utilized key informant interviews, an online survey, and follow-up interviews with 53 professional engineers and engineering degree holders. The key data-source for this present analysis is the latter set of interviews, in which I focused on a wide range of issues, but paid particular attention to engineers' working conditions, workplace change, and their skills and knowledge.

I obtained ethics approval from a university ethics board and conducted the online survey between October 2016 and February 2017. Interested survey respondents could volunteer for follow-up interviews; 53 licensed engineers and engineering degree holders did so. Interviews were conducted in person, over the phone or over Skype, in the summer of 2017. The shortest interviews were about 40 min in length, while the longest was 70 min. Interviews were conducted by the author and a research assistant. As engineers are busy people, we conducted many interviews during lunch breaks or daily commutes, after work and on the weekends, or whenever engineers could find an hour or so to talk with us. Effort was made to obtain respondent diversity. We intentionally sought a cross-section of individuals across several dimensions, notably gender (40 men, 13 women) and age, employment status (10 owners or self-employed, 16 managers and 27 employees), and employment sector (41 private sector, 12 public or non-profit). We recorded and transcribed all but two of the Interviews, with participants' permission. I provide a summary of participant characteristics in Table 11.1 below.

We analyzed interview transcripts by hand. We first read the transcripts several times to see what key themes emerged. As knowledge, learning, and workplace

Table 11.1 Profile of interview participants

	Men	Women	Total
Private sector	31	10	41
Public sector	7	3	10
Non-profit	2	0	2
Self-employed	7	3	10
Managers	11	5	16
Employees	22	5	27
Total	40	13	53

Note. Source: Design by author

change emerged as central topics of interest, we undertook more focused coding. We extracted and placed in a separate file those portions of the interviews touching on knowledge, skill, or workplace change, and employed inductive, open coding to identify basic themes and codes within these areas. Subsequently, we undertook categorical coding to link together similar descriptive codes, and identify common themes and subthemes. As experiences varied, we paid attention to both areas of common experience across the range of interviews, and areas in which meaningful differences appeared. An example of the latter was whether a respondent was an employee, manager, or self-employed. What ultimately emerged was a complex story about the value of practical learning to engineers' knowledge, and the impact of workplace change on how and what they learned.

Findings

In interviews, engineers described changes to their learning practices and opportunities: (1) the rise of new organizational logics devaluing investments in on-the-job learning; (2) the impact of these changes on professionals' work and careers; (3) concomitant changes to how engineers learn.

Declining Investments in On-the-Job Learning

Canadian engineers argued that many employers do not invest in on-the-job learning like they did in the past. This is problematic because on-the-job learning is highly valued by Canadian engineers. In interviews, participants explained that their engineering education provided a foundation upon which they could build throughout their careers. Most respondents agreed with Macauley (employee) who explained that his engineering education was heavily theoretical and "provided a basis for critical thinking," and solid foundational skills; however, his practical skills were acquired "on the job." William concurred, stating that much of what he knows was "picked up on the job, through various training courses that companies sent me to, or just like stuff that I learned on my own just because it was interesting." Post-secondary education provides engineers with foundational knowledge, but they acquire much of the knowledge they use at work on the job.

In the past, engineers in Ontario had opportunities for learning through formal and informal apprenticeships. Quinn (self-employed), now in his late 50s, explains his experience on entering the job market:

You started off in a two-year training program, where you would then go around a variety of different businesses inside the corporation ... And then they heavily invested in your training. They would send you on training programs, anything. They'd either move you around, cover all your expenses, and so forth. Then I ended up working in one particular group, and then again, they were very oriented towards developing their professional peo-

ple. So they saw you as their most important asset, and that's the way you were treated. You know, they paid competitive salaries. They trained. It was never a problem. Your boss's job—and this was a stated fact—was to facilitate your working and development.

Other older engineers described similar opportunities for formal apprenticeship programs, if they worked in larger companies, or more informal mentorships in smaller companies. Apprenticeship training ensured that engineers acquired the skills and practical training they needed. According to study participants, these programs have now largely disappeared largely because of new business logics.

Quinn dates the shift to the 1980s, when a series of mergers, take-overs, and corporate restructuring, altered the workplaces in which engineers work. Other engineers who had worked through this period provided similar accounts of small companies merging, and Canadian companies “bought by big U.S. conglomerates or European conglomerates” (Derrick, employee). Several changes affecting engineers' work and learning followed. Most-emphasized were growing specialization, work intensification, and a concomitant decrease in on-the-job professional development. These transitions have altered Canadian engineers' work, and as engineers do much of their learning on the job, they have altered how engineers learn.

For older engineers, perhaps the most striking change was the decline in apprenticeship, mentorship, and training. Established apprenticeship programs disappeared, and opportunities for mentorship dwindled. These programs came to be seen as a waste of money: “The apprenticeship program, it doesn't increase the profit, you know what I mean?” (Derrick, employee). Some companies viewed taking on younger workers and training them up as too expensive, or as an unnecessary expense. Engineer-manager Madelyn explains:

It takes time and money to train somebody and it's ... you know. If you're a very busy company with a heavy workload, you literally cannot afford to bring on a new grad and train them up, because it's actually going to be a distraction for your other people.

Engineer-manager Terence concurred that firms would seek to hire people to fill a specific role in a company, and “you can't hire someone who needs a little bit of mentoring.” Much preferred was someone who had already worked for a few years: “they have a little bit more experience, they're going to work for the same amount of money as an intern, and you know, it's going to be a win-win ... Everyone wins except the new graduate.” As Terence indicates, the situation is particularly challenging for new graduates. Beck, a younger engineer employee, talked about how difficult it was to “find employment when you leave university after four years and you don't have any work experience.” Most other new graduates concurred. Generally, participants agreed that even when engineering firms were searching for junior employees, they preferred those with at least a few years of work experience.

Not only was it difficult for young people to find a job with little experience, but they found it difficult to make that jump to full-time worker and gain the experience and knowledge to round out their training. Beck (employee) confessed that the transition from school was difficult: He felt “out of my league going into a workplace where I didn't know how engineering actually functioned in practice.” Elizabeth (employee) lamented the lack of apprenticeship opportunities to provide her with

“that hands-on experience; you can figure out how to do stuff, you get trained in a technical discipline ... When you graduate, what you don’t know, you don’t know.” Without mentorship and investment, new graduates in particular found it challenging to develop their professional skills and knowledge.

Impact of These Changes on Professional Work and Careers

These trends did not just affect new graduates but shaped the learning opportunities and career trajectories of established engineers as well. In interviews, the latter lamented declining opportunities for on-the-job learning and training. For example, Derrick (employee) explained that previously at his company, “we somehow had training and there was more time for self-education and stuff. Today, no, because you have to charge every hour against the job.” When asked about opportunities for learning on the job, Gabriella (employee) explained that her company was “too busy to spend any time on that ... the work rate was very, very high, and it was really frustrating for me because we never spend time on learning and reading.” Quinn (self-employed) very bluntly said that at the companies he interacts with the “training and development [is] at zero.” Zoe (employee) concurred that “when they look to hire someone, [companies] want that person to have exactly the skillset they’re looking for. They’re not willing to train.” In the past, there were opportunities to learn, engage in trial and error, and even tinker. Nowadays, this is deemed an inefficient use of engineers’ time.

Companies were reluctant to provide in-house training. A few respondents talked about how there was little transfer of institutional knowledge where older workers passed on their acquired wisdom to others. Levi (manager) criticized his industry for a lack of “succession planning,” which he felt was the result of “financial concerns.” Although the benefit of succession planning might be “hard to see on a yearly budget track,” he argued that a decade or two from now, it would be “well worth the investment”. Older employees had “hard, hard, hard-earned knowledge”—he had sought some of this, on his own initiative, from a senior colleague who had taught him some tricks that made his work easier. Without such transfer of institutional knowledge, people would have to learn things “the hard way or the long way”.

Indeed, several participants explained that their firms had a tendency to keep older workers in technical positions rather than promote them to management. Firms were inclined to keep the institutional knowledge where it was useful and promote more junior employees who had fewer technical skills (rather than expand their technical skill set). Consider these comments from Seth (self-employed):

These [older] guys had been around for a very long time. And they were very knowledgeable, they were very competent at their jobs, but for some reason everybody wanted to keep them in their current technical positions. So, they would apply, one guy in particular, every year he applied for a management job and he would never get the job because, you know, he’s basically, they want him in that one role and that was it.

One consequence of this was a lack of technical knowledge and experience among managers who were making key decisions. For Seth, this contributed to poor decision-making: “It’s all part of the financial decisions being made by accountants, and they don’t have an appreciation of technical work and of the technical skills required to do that.” Yet, it may be that appreciation for older workers’ technical skills, combined with an unwillingness to train newer workers in the same skill sets, explains the trends Seth identifies.

On-the-job training was particularly hard to come by, some contended, in large firms where engineers are seen as a cost of production or “a commodity.” Quinn (self-employed) stated this directly: “I found that in these companies—particularly these large engineering companies—people are a commodity; your professional people are just a commodity.” He elaborated:

And that’s the same way they treat people here. Like, you come in, they want someone to, you know, drive a blue car. They’ll say, ‘Get me a couple of blue car drivers.’ Okay, blue car’s done. They’re going to do a red car. Do you train them to do a red car? No way, you just lay them off. Get rid of them. Find a red car guy. So people are viewed as—engineering people are simply viewed as—a commodity.

He continued to say, “A commodity, ‘Hey, I’ll just hire and fire at will,’ because the cost is so little for me to do that and I really don’t care.” Emery (owner) agreed that companies see engineers as replaceable, and that training was not worth their while: “[T]he culture now is much more transactional and much less relationship driven.” The attitude of others in his sector is that there is no point in training employees. He reports one colleague saying to him: “Why would I train somebody who is just going to leave in three years?” Emery provided his reply: “Well, what if they don’t, and they stay?” His counterpart responded by saying, if he needs “a different skill set and they [a specific employee] don’t have it, then I’ll just find someone who does.”

Delilah (self-employed) confirms that many companies “really are reluctant to pay for training.” She indicates that this has been going on in Canada for decades.

Whenever we ran out of resources ... we would just, you know, poach from Europe quite often or wherever ... highly, highly skilled engineers and really hands-on people from all over the world ... We as an industry were too spoiled and instead of training our own people, we would go abroad and hire people from abroad. And so now companies are in the position where they are starting to realize that they have lost human capital.

As Quinn elaborates, “the idea is really, really simple: you hire somebody who already has been trained by somebody else”—whether in North America, Europe, or Asia. Linc (employee) concurs this may be a more typical attitude in a large company: “I just think that as a company gets bigger you tend to lose track of the value of employees because ... every company focuses on profit because that’s how the company stays alive.” Many companies refuse to invest in training, because they believe they can find workers with the skill set they desire elsewhere, and bring them in, when and as needed.

If they cannot import the workers they need, then the other option is to export work to consultants elsewhere. So-called “high-value engineering groups” are low-wage engineering workers based elsewhere in the world (Quinn, self-employed).

The benefit to exporting work is that you do not have the expense of a full-time employee with benefits. Simon (owner) discussed the “reluctance to hire full-time permanent” as companies were trying “to do it as quickly and cheaply as possible, rather than have their own people learn how the thing works.” Although he was critical of this mindset, as an owner, Simon saw the value in hiring someone with specialized expertise to do a task when needed, rather than training someone to obtain a skill that they may not use all the time. Emery (owner) agreed that hiring out was often the most efficient way of getting something done, although he also tried to learn from the experts when he had the opportunity.

Overall, engineer respondents recounted an increased reluctance among engineers’ employers to invest in training. Engineers working as managers, as employees, and those who were self-employed all highlighted this trend. Still, these experiences were not universal. There were at least four respondents whose employers supported on-the-job learning. For example, Len (employee) worked in the public sector and argued his organization supported professional development and “allows us ... to keep up with our knowledge.” Linc (employee) worked at a private sector company where each employee had “a dedicated budget towards professional development; so, the company actually pays for it, and they will give you the time to do it.” This was a marked improvement over his previous company. Moreover, some small firm owners and the self-employed argued that they built training expenses into the cost of their services, so that the expense of acquiring new skills was billed to the client. Such stories were comparatively rare among interviewees.

Changes to Engineers’ Learning Practices

Despite Canadian employers’ reluctance to train, many engineers recognized the need for “continuous training ... whatever field you’re in” (Derrick, employee). Moreover, participants emphasized the need for innovation, “lateral thinking,” “brain mobility,” and “thinking outside of the box” (George, manager; Linc, employee). Much of engineering work involved problem-solving, and new problems created new opportunities to learn. Some engineers had less latitude or autonomy, and hence had less scope for “lateral thinking,” but even they had to learn new things. Where did they get their skills? Increasingly, they were left to acquire new skills on their own time, outside of work.

In interviews, engineers mentioned a variety of strategies to acquire skills and knowledge, some linked with work, and some outside. The most common strategies were experience, testing, and trial and error, followed by doing research (online or otherwise), reading on their own, and attending conferences. Also mentioned were webinars, lunch-and-learn sessions, local association meetings, workshops (especially from vendors selling products or services), as well as more formal courses. Several participants worked for bosses and organizations that actively encouraged professional development, but they were not willing to invest in it. Rather, employees were tasked to learn on their own time. Some were told directly by bosses and

mentors that it was their responsibility to spend time during evenings and weekends developing their skills:

My boss says you should be doing at least a few hours of reading every weekend. (Caelan, employee)

I encourage people to take an active view and an active investment, meaning spending their own time and their own money to build their technical skills, attend technical conferences, build their soft skills, communication skills. (Emery, owner)

Others simply did this work on their own time because there was no time to do it during work hours:

You have to read the [new building] codes, study the code, and you have no time [at work]. You cannot charge it [to the customer] so you have to do it on your own. (Derrick, employee)

Gabriella (employee), who earlier stated that there was no time for learning on the job, also engaged in independent study.

Many found independent learning necessary to get ahead. Marcus (public manager, 46) was experiencing blocked mobility at his firm, so he was upgrading his skills in programming to improve his job opportunities. Milo (employee) worried that he was losing some of his engineering skills because his job was fairly narrow, so he studied in his spare time to keep some skills up-to-date. Margaret (manager) argued strongly that it was engineers' personal responsibility to keep their skills up-to-date. She was critical of those who whined about their companies' refusal to support training:

If they're sitting there and looking and saying, 'Oh my God, I'm a victim, my company isn't investing in me,' well invest in yourself. If they're not spending—like I spent my own money to go to this conference ... and my own vacation time.

She also argued that, through the internet and attending conferences, people could find mentors and role models. The message is clear: Whereas it used to be companies' responsibility to train their workers, mentor them, and develop their skills, it is increasingly workers' responsibility to acquire skills, mentors, and opportunities on their own time, using their evenings, their weekends, and their vacation time.

The implications for work-life balance (or lack thereof) are painfully clear to engineering employees, many of whom resisted (and resented) the fact that there was so little downtime:

Sometimes I don't sleep as well. I mean I wish people would have mentioned this, you know, in school just as a reminder that you're entering a profession. You're not entering like a nine-to-five job where you show up and then you leave and then you don't have any obligation after that. You're always thinking about work. You're always taking work home with you to kind of get a head start on something. (Beck, employee)

Driving home you think about it ... In the shower, you think about it. (Derrick, employee)

The company officially says life-work balance and then the manager says 'what life?' You know, like the president of the company. What life, you know? 'You go home and watch TV, what's that? No, you don't need any life.' (Derrick)

These changes—a lack of investment in training, and the individualization of training, combined with work intensification—have significant implications for

engineers' learning and knowledge. If engineers say that they obtain most of their skills and knowledge on the job, and yet have little time on the job for learning, and few companies are willing to invest in training, what are the consequences? With little time to invest in deep learning, people may be learning haphazardly, under pressure. As Baldwin (employee) argues: "The competitive environment ... encourages people to do as little as possible in order to get the job and carry on." People end up learning in a hurry, and potentially on a more superficial level. Beck (employee) talked about the pressure he was under due to "ridiculous deadlines for projects":

I think the short turnaround time on projects from start to finish is very stressful because you might not have some of the information that might make ... the project turn out well. And when you're trying to turn things around in minimal timeframes it's very stressful because you're trying to cover everything you can and you don't—and you got obligations to your employer, to your client, to your fellow staff that you work with. But I feel as though it isn't a good practice ... and I think that people would agree with that, most people, because that's how things can be missed, crucial details. And I mean that's, you know, where we get into issues [with] lawsuits.

According to Baldwin, Beck and other participants, the rushed learning people do under intense deadlines, is not only stressful—it may not provide the deeper understanding that would enable them to learn something well, and minimize errors. Recall that prioritizing public safety is a legal requirement for Canadian engineers. Work pressures that discourage knowledge building have ethical and safety implications.

Engineers who need to acquire knowledge quickly to meet deadlines or complete a task report turning to Google. When asked how engineers keep their skills up-to-date, Caelan (employee) replied: "They don't. They get pigeonholed and they go into management. They do a lot of reading and a lot of just Googling and personal skills dev[elopment]."

To the same question, Simon (owner) somewhat cynically replied "typically you Google it and for 90% of the time that's enough technical information to make a reasonable judgement in a field that you're not familiar with." Several engineers also talked about using Google Scholar to look up research papers, or explained that although Google searches provided information that was not always useful, engineers' education and prior training allowed them to separate the wheat from the chaff. Nonetheless, several engineers reported learning on-the-fly, trying to solve problems quickly through Google, conversations with others, and whatever they could find online in forums or research studies. These efforts to learn on the fly appear to represent "information management," rather than knowledge building (see Chap. 4 by Alexander, 2023). People acquire the information they need when they need it, without necessarily building a knowledge base.

Nevertheless, there was evidence of considerable learning on the part of engineers. Consistent with the literature (Noordegraaf, 2007, 2015), one area of focus was the acquisition of managerial knowledge. Several participants had returned to school to earn MBAs (Masters in Business Administration) or PMP designations (Project Management Professional) to solidify their progression into management

positions. Some of these participants had jobs that demanded both engineering and managerial knowledge, whereas others were more focused on managerial knowledge. In the public sector, engineers were disproportionately found in managerial positions, as many public sector organizations had outsourced their engineering: firing engineering employees and hiring them and others to do contract work, when needed. Management is a common career path for engineers, and it is hence unsurprising that many would seek to enhance their managerial skills to further their careers.

The other dimension of knowledge change interviewees emphasized was specialization. With specialization and technological change, engineering knowledge is expanding, but the ability of individual practitioners to stay on top of it (especially with less time for training) is decreasing. Veronica (self-employed) described the changes:

I think there is more and more detailed specialties that didn't exist before. And so, I guess there's maybe in some areas more longer training periods to really get to be knowledgeable in that area that you can't, because there's so many of them, you can't possibly learn it, you know, in an engineering program. So, you know, on-the-job learning and continuous development is important.

Such trends are problematic as workers cannot learn all they need to know about specialties in school, but it is not clear that they have the time and opportunity to really acquire these specializations on the job.

Some participants expressed concern that engineers have a more limited grasp on the fundamentals than in the past. Certainly specialization was encouraged, but the changes also made possible 'dangerous crossover' (Palmer, self-employed)—where engineers might be tempted to work or give advice in areas that exceeded their areas of expertise (by drawing on Google or knowledge they were able to pick up on the fly). This increased the risk of “dabbling”—of practicing outside areas where engineers had strong expertise. Consider Simon's (owner) insights:

There is more to know ... Now it's less possible to cover everything and also there are more pre-packaged things that are appropriate to use rather than designing from scratch, there is much less designing from scratch. So you do have less of a broad knowledge, I think, in terms of sort of the deep structure but, on the other hand, what's available to you is larger. So ... more specialized, yes, but in many ways I think it often might even be easier to sort of cross disciplines now.

The latter practice is controversial. Ethically, engineers should only work in those specializations where they possess knowledge, advanced training, and experience. Even though their license to practice is general, Canadian engineers are expected to stay within their area of specialization. Simon and a few others suggest this may become more problematic in the coming years.

Despite these reported trends, it is important to note that several engineers interviewed indicated that they were at the cutting edge of innovation, constructing new knowledge themselves, rather than following the instructions of others. For example, Palmer (self-employed) talked about “having to figure things out on our own, so it's kind of a new frontier.” Not all engineers were experiencing rationalization and

managerialism. Those working with technology and those who were self-employed were particularly likely to report innovation. However, many others were not so fortunate. They reported difficulty in finding time on the job (and off the job) to learn, and potentially, a decline in the acquisition of deep knowledge—that which is concerned with underlying meanings and implications, rather than a superficial understanding of facts. Understanding the implications of one's actions is an important component of safe, ethical practice.

Discussion

Professionals are expected to mobilize their knowledge to serve the public, and practice in the public interest. To meet their fiduciary responsibilities, professionals should regularly upgrade their skills, and keep up with knowledge advancements. Traditionally, professional workplaces have supported professional learning, and even encouraged tinkering—continuous innovation through experimentation and practical work engagement. Recent workplace change in Canada may be altering the relationship between Canadian professionals and professional knowledge. Engineers report they have less time to learn on the job, and when they engage in work-related learning, they increasingly do so quickly and superficially to acquire what they need to know to meet pressing deadlines. They increasingly engage in information management, gathering data to complete a specific task, rather than knowledge building (see Chap. 4 by Alexander, 2023). Companies appear to be encouraging professional employees to use their evenings, weekends, and vacation time for knowledge acquisition. Many do this, but some resent how work demands expand to take up more and more of their time.

Knowledge scholars contend that knowledge acquisition requires time for reflection, and awareness of the implications of professional practice for the wider society. For example, Winch (2014, p. 56) argues that “underpinning systematic knowledge”—which he defines as “a combination of ‘know that’ and ‘know how,’ as well as acknowledging that reflection on elements underpinning knowledge can be a prelude to judgement and action”—underlies successful professional practice. Carr (1999) also explains that the exercise of knowledge requires autonomy and time for reflection on the ethical implications of practical decisions. In this light, one may question whether workers who have little time for reflection, exploration, or deep learning are prepared to exercise the best judgement in the conduct of their work, or develop professional knowledge in a manner that contributes to the public interest. This change could affect the quality of services and products produced, and ultimately have implications for public services and safety.

The concomitant trends of specialization, technological change, work intensification and commodification of engineers' skills are encouraging narrower, more specialist learning, and potentially more superficial learning. Although managers are not necessarily controlling the production and acquisition of professional knowledge, they are increasingly shaping what is learned, how it is learned, and the uses

to which that knowledge is directed. Knowledge acquired should directly contribute to profit or be covered under “billable hours.” Other knowledge acquisition is cast as personal. Engineers, then, may continue to be proficient and acquire new skills, of use to their clients and employers, but without engaging in deep reflection. As a result, their practice may be less reflexive, with implications for public well-being. The ability of professionals, in this context, to fulfill traditional fiduciary responsibilities may be compromised (Grace, 2014).

Acknowledgements I would like to thank D. W. Livingstone and Peter Sawchuk, my collaborators on the research project on which this paper is based. I would also like to thank Awish Aslam, Brendan Watts, and Eugena Kwon for their research assistance, and Johannes Glückler, Anna Mateja Punstein, Leslie Ludwig, Christopher Winch, and other participants at the Professions and Knowledge symposium for their support and feedback.

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Chapter 12

Spielwiesen: Preparing a Research Agenda on Playgrounds and Serious Work in Academia



Ariane Berthoin Antal and Julian Hamann

Introduction to an Intriguing Discrepancy

The path to becoming an academic is relatively clearly laid out. It is one of the paradigmatic professions, requiring extensive formal preparation, and, as Max Weber (1949) warned his students, usually also years of uncertainty and dedication to an intellectual calling. Aspirants must first embark on a long period of study to develop expertise in an area, during which academic institutions assess and document their proficiency through grades and degrees. Scholars are then expected to build on that knowledge base throughout their careers. They earn recognition as members of the professional community by providing evidence of increasing proficiency in the form of research-based publications and conference presentations that are evaluated by peers in their chosen field (Hamann, 2019). Furthermore, they share their expertise with students, who also rate them. Although new policy regimes are challenging professional autonomy (Schimank, 2005) and despite cultural differences between professional standards (Welch, 2005), recruitment and promotion procedures are generally designed to reward streamlined profile development in an intellectual field. Academic obituaries solidify this expectation by representing the trajectory as coherent research profiles that omit biographical hurdles and detours (Hamann, 2016a).

Reflecting on our own ways of working, however, we realized that our paths to proficiency in research and teaching, and to achieving professional recognition as members of academia, did not correspond to the prescribed route. Over the course

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of our academic careers both of us, in different ways, ventured outside our primary area of expertise several times to explore other topics that intrigued us—forays which then altered our professional profile. The discrepancy intrigued us, so we delved a little deeper to prepare this essay. We decided first to take an autoethnographic approach to understanding the various ways in which we had deviated from the standard model. We wanted to reconstruct what we had done, why we had done it, and what effect it had had on our development as proficient members of academia.

By proficiency in academia, we mean being able to identify original research questions, generate insights that we and others feel are worth sharing, and communicate our knowledge effectively to peers, students, and other stakeholders. In our autoethnographic conversations in German, we characterized our approach as venturing out into a *Spielwiese* (literally: playing meadow), where we had playfully explored subjects or activities that were not central to our current research or teaching. We recognized that our various *Spielwiese*-forays had enhanced our proficiency as academics because we had developed additional knowledge and skills, and we had enriched our collegial networks. But we wondered whether we had been peculiarly foolhardy and particularly lucky, or whether other scholars had tried similar approaches in their professional development. We therefore discussed our ideas and experiences with other sociologists and discovered that the notion of *Spielwiese* immediately resonated with all of them. This essay, perhaps a *Spielwiese* itself,¹ is the outcome of our personal reflections and collegial conversations, through which we identified some dynamics between such undisciplined spaces of creativity and curiosity (Meusburger, Funke, & Wunder, 2009; see Chap. 3 by Banfield, 2023) and the core of academic work, which is disciplined in both senses of the word: It is often hedged by the boundaries and traditions of academic disciplines, and streamlined by professional standards and expectations. Stimulated by this tension, we developed propositions for studying and valuing *Spielwiesen* as social and intellectual spaces that allow us to extend our professional profile in a rather playful, curiosity-driven way. Our intention is to use our conversations as a point of departure for laying out a research agenda.

Why Academics Like to Talk About Play But Don't Want to Be Caught Playing Themselves

Introducing the notion of a *Spielwiese* in academia is tricky because the relationship between academics and the topic of play is complicated. Playful behavior is on the agenda of researchers in many disciplines, but they rarely address it in connection

¹We offer our exploratory reflections in this chapter very much in the spirit in which Huizinga introduced his essay on *Homo Ludens*: “In treating of the general problems of culture one is constantly obliged to undertake predatory incursions into provinces not sufficiently explored by the raider himself. To fill in all the gaps in my knowledge beforehand was out of the question for me. I had to write now, or not at all. And I wanted to write.” (1949, p. X)

with their own work. For example, psychologists study children's development; political scientists and economists have created game theories and conducted experiments to examine how actors play with each other's interests in diverse situations; sociologists are intrigued by people of all ages playing computer games and are starting to look at the possibilities for playfulness in citizen science; and urban studies researchers consider spaces for play in the built environment. Jan Huizinga characterizes play in his groundbreaking interdisciplinary work *Homo Ludens*, as "a voluntary activity" (Huizinga, 1949, p. 7) associated with freedom (p. 7), fun (p. 3), and "a stepping out of 'real' life into a temporary sphere of activity with a disposition all of its own" (p. 8). He points out that there is general agreement on the "disinterestedness" (p. 9) of play, but emphasizes that it is "an integral part of life ... a necessity both for the individual—as a life function ... and for society by reason of the meaning it contains" (p. 9).

Why do academics attend to how other people engage in playful behavior, but do not lift the veil on the role of play in their own profession? One reason may stem from the fact that scholars generally see play as a contradiction to seriousness and reputability: It smacks of unprofessionalism (see Chap. 5 by Sela-Sheffy, 2023, on professional ethos). Huizinga (1949, p. 6) takes up this matter when he first states that "play is the direct opposite of seriousness" and then immediately embarks on a challenge: "Examined more closely, however, the contrast between play and seriousness proves to be neither conclusive nor fixed" (see also the third *Metalogue* in Bateson, 1987). One of the few studies on academics and play at work found that academics are indeed quite ambivalent about play in their own context (Nummenmaa et al., 2016). Proponents of a recent line of study have started examining the gamification of research and revealed similar ambivalence (cf. Dippel, 2017; Schouten, van der Spek, Harmsen, & Bartholomeus, 2019). Defined as "the practice of applying game features in non-game contexts," gamification is supposed to involve fun and generate positive outcomes for academics, but it also risks "goal displacement where the aim of doing sound and relevant research is superseded by the effort of gathering more points" (Hammarfelt, de Rijcke, & Rushforth, 2016, Discussion). Bourdieu's sociology is an exception to this skeptical view of the role of play in academia, at least at first sight. He uses the metaphor of games to describe social life, and frequently portrays academia as a game in which scholars, akin to athletes, follow their "sense" for the game and play by a specific set of rules to compete for what is at stake (Bourdieu, 1988). However, even in Bourdieu's imagery, the focus is not on free, undisciplined, and creative exploration, but on competition, strategies, and rules.

The discrepancy between the scholarly interest in studying playful behavior and an apparent reluctance to acknowledge the role of play in academic work is unfortunate, given that play is closely related to curiosity and imagination. The trio sits at the core of human learning processes from earliest childhood (Görlitz & Wohlwill, 1987). Despite the importance of learning and creativity in academia, their relation to play dissolves in representations of how academics continue to learn and develop professional profiles throughout their careers. Scholars treat and weigh the three notions separately. Whereas they consider curiosity an essential point of departure for triggering research questions and motivating the research process (Ball, 2012;

Daston, 1995), and highlight imagination as an important ingredient in some disciplines, such as in C. Wright Mills' slim volume, *The Sociological Imagination* (1959), the value and role of play in academic work remain veiled.

Although one reason for this neglect could be that academics see play as a contradiction to the serious professional ethos, another reason may lie in the encroachment of New Public Management (NPM) into the world of academia (De Boer, Enders, & Schimank, 2007) and the concomitant entrance of academia into the "audit society" (Power, 1997). The logic of NPM is to engage the professional employee to commit to "predefined goals and outcomes and to a continuous process of planning, documentation and self-evaluation, aimed at minimizing the risk that input will not lead to the prescribed outcomes" (Pallesen, 2018, p. 195). Especially when outputs are increasingly measured, decision-makers will likely consider activities or topics outside the immediate focus of productivity as wasteful and an irresponsible use of time and resources. However, it is particularly puzzling for play to be seen as detracting from the pursuit of knowledge creation in academia at a time when academics are encouraging managers in the corporate world to take play seriously as a source of creativity. Statler, Roos, and Victor (2009) explicitly point out that employees who engage in such play "ain't misbehaving." Given Huizinga's (1949) emphatic introduction of *Homo Ludens* on an equal footing in cultural settings with *Homo Faber* and *Homo Sapiens*, this puzzling situation is worth examining. We decided to explore: Might more play be at work in the process of developing professional proficiency in academia than first meets the eye?

Reflecting on Experience Together

The idea for this contribution was sparked off by a phrase Julian used in a speech he gave in German at an academic workshop. He characterized that speech's topic as his *Spielwiese* [literally: playing meadow] rather than his core research area. This word choice intrigued Ariane—as did the actual topic, academic obituaries. The quite logical evolution of the successful academic trajectories described in the obituaries (Hamann, 2016a) left no room for the kind of chance and play that Ariane had experienced in her own life, and it was far removed from the narratives she was collecting in her current research interviews about paths and identities in academia today. Questions bubbled up: How and why do some of us add apparently marginal topics and activities to our often already full research and teaching agendas? In what ways do they help or hinder our ability to become proficient academics and successful in our profession? Does the relationship between the core of our work and the marginal topic change over time, both between cohorts of academics and throughout the course of individual careers?

Rather than "playing meadow," a more established English term for *Spielwiese* would be playground or playing field. However, these words lose the association with tall grass and wildflowers that make meadows so attractive to explore. Playgrounds and playing fields are already structured by others before players enter

them—in this regard, they are similar to the spatial category of “administrative areas,” which are “clearly defined spaces” in which “rules, regulatory frameworks, ... practices, resources or other factors influencing creativity are valid” (Meusburger, 2009, p. 113). With the notion of *Spielwiesen*, we would like to emphasize cases in which the choice of a topic outside of the scholar’s main focus emerges from a curiosity to explore uncharted territory. Therefore, instead of using the less evocative English term “playground,” we opt to use the richly generative image of the German term *Spielwiese* and its plural form *Spielwiesen*.

Illustrating the Dynamics of Spielwiesen

Our methodology for this exploration involved two steps: an autoethnographic exchange between us authors, followed by individual and group conversations with colleagues. We first delved into our own biographies and reflected on the role *Spielwiesen* have played in our careers. The two of us are at different stages of our professional trajectories—Ariane a freshly retired but still active professor, Julian a newly appointed assistant professor (*Juniorprofessor*); and we are currently working in different contexts—Julian at a university, Ariane at a research institute not affiliated with a university. It was all the more intriguing to swap ideas on how and why we found our *Spielwiesen*—or how they found us. To share here about what we have learned from our reflections, we have chosen a rather unconventional, dialogical writing style that strays from the standard format and allows readers to develop a connection with the text upon which they can reflect on their own professional identity (see Meier & Wegener, 2017). We start with a mini-dialogue here as an introductory illustration of our idea, and to spark the reader’s own reflection about how they may have chosen or rejected similar opportunities, before we share insights from our second step.

Ariane: I entered academia as a research assistant in the area of corporate social responsibility. My first *Spielwiese* was women in management, which was totally unconnected to that topic, and non-existent as a research field in Germany at the time (early 1980s). I discovered it through two organizations, one of which was academic and one practitioner-based: At the Academy of Management in the U.S., an interest group of scholars had begun to form around the topic of women in management; and the European Foundation for Management Development initiated a network for women in management in which I became very involved. I connected with the issues in this field intellectually and personally in a way that I was not doing at the time in my primary research area.

Julian: How exactly did you grow into this field?

Ariane: I started presenting at the women in management section of the Academy of Management, which my male colleagues in corporate social responsibility did not attend, and

I felt free to learn and try out new ways of doing things—actually new ways of being an academic—there. The practical engagement in the European network gave me a lot of experience in taking a stand on matters I cared about—which I was not yet doing in my primary area of research. It was through my activities in women in management that I started developing an independent profile and my own voice. Gradually, perspectives on power and exclusion that I learned from the field of women in management wove themselves into my primary research on business and society. So what had started out as a separate Spielwiese ended up becoming embedded in and adding new insights to my main line of inquiry.

Julian: I find it remarkable that your first Spielwiese was so far off your primary research. Both of the Spielwiesen I have developed in my career so far were located in my primary research field sociology of science. After obtaining my PhD in 2014, I was trying out things for different follow-up grants. I think my first Spielwiese (on academic obituaries) was very much shaped by the requirements of grant applications: First, it is easier to apply for grants in fields you are already familiar with. Perhaps that's why, in contrast to your experience, my first Spielwiese was not entirely different from my primary research. Second, I actually wrote a number of proposals in the phase right after my PhD, and for each of them I had to come up with different research topics. I tried to shape the topics so that I could conduct the research in the respective funding period.

Ariane: Okay, now I'm curious to hear how research on academic obituaries can be shaped in terms of grant requirements!

Julian: When I applied for an Alexander von Humboldt scholarship, I needed a small-ish research project that could be conducted within 8 months (which was the duration of the research stays I had in mind). I always loved to read academic obituaries, perhaps out of a voyeuristic interest in narratives about academic lives, but also because I found them sociologically intriguing and underestimated as data. When I had to come up with different ideas for research projects, I thought to myself: Now is the time to go for it, turn your hobby into a research project! My supervisor, although certainly not opposed to Spielwiesen in general, was not too convinced about research on what seemed to be a very narrow topic whose significance was not immediately evident, but I still decided to give it a try.

Ariane: I am so glad you did follow your instinct, Julian! I feel I have been really fortunate in being able to explore Spielwiesen. My supervisor was very supportive of my engagement in women in management, approving the travel funds necessary to attend conferences and serve as vice president and later president of the European Women's Management Development Network. Nevertheless,

it is important to remember that all that work was "on top of" my primary focus. The development of a later *Spielwiese* was very different. The first seeds were planted while I was on leave from my center and working with a business school, where I observed during executive education programs that managers responded differently when engaging with the arts. The question grew in my mind: What happens when the arts enter organizations? When I returned to my center after this leave of absence, this question stayed with me, but there was absolutely no space for it in my normal work.

Julian: I can imagine being inspired by a topic while on leave. But up to this point, it sounds like you had a *Spielwiese* that somehow couldn't materialize. Were you able to actually study this topic in the end?

Ariane: I was—and your passion for your *Spielwiese* really resonates with me! I had a similar fascination about my question. I remember carrying books on the topic on family vacations. The examples in those publications gave me the sense that there was indeed something interesting to study. Several years later, when we were developing a new research program on "Cultural Sources of Newness," the new director asked me what I would like to take on under that umbrella and I remember holding my breath and saying, "well if you really want to know, what I would love to understand is what happens in organizations when the arts come in." Suddenly, my *Spielwiese* became my focus. The shift required delving into fields and methods of research I had not yet used and finding a totally different set of peers. The field of arts and business did not yet exist, and it was exciting to help shape it with empirical studies.

Julian: I share your experience that *Spielwiesen* can turn into serious business pretty quickly. Although I initially planned to study obituaries only for a couple of months, they occupied me for a couple of years. The work with obituaries was so captivating that I kept working on it way into my next project. There was certainly a time when my *Spielwiese* competed with the primary research which I was getting paid for. Luckily, I somehow managed to integrate *Spielwiesen* and primary research into a more coherent, general framework. By the way, you mentioned personal passion for *Spielwiesen*: The second *Spielwiese* I have pursued (on research performance assessment in the UK) has a slightly different story. My PhD supervisor approached me and said, "We are doing this project about research performance assessment at my chair, it would be great if you could complement it with research on performance assessment in the UK." I was convinced by the idea, and perhaps also a bit flattered by the invitation to contribute to his project, and this was how my second *Spielwiese* was born. It was, and still is, a productive topic for me, but it's striking that it

didn't start from a personal intuition or interest in a topic, but from an offer that came from my supervisor.

With our dialogue, we illustrate several key aspects to consider in order to understand how a *Spielwiese* emerges as a social and intellectual space of professional playfulness:

- Proximity to main activities: *Spielwiesen* can be more or less closely connected to academics' primary area of expertise. Ariane entered new fields for both her *Spielwiesen*, requiring her to read a totally different body of literature and to develop completely new networks. Note that these forays into foreign territory imply willingness to be (and be seen as) improficient and weakly embedded in professional networks, even at a late career stage—a risky image to obtain, seeing that productivity and embeddedness in networks are two crucial professional virtues for any academic (to conceptualize these professional virtues, Combes, Linnemer, & Visser, 2008, have coined the phrase “publish or peer-rich”). In Ariane's case, her *Spielwiesen* experience generated greater proficiency and expanded her academic identity, which actually ended up enhancing her professional standing. Julian's first *Spielwiese* (academic obituaries) developed within the field with which he was already familiar.
- Emotional engagement: A similarity between both individual accounts is that throughout the professional trajectory *Spielwiesen* usually develop from a strong personal interest—even an emotional attachment—to the topic. Higher education researchers argue that the differences between members of the academic profession and wage-earners in other sectors have decreased and that the activities academics “must do” are increasing at the cost of what academics “can do” (Musselin, 2007, p. 3). Against this backdrop, academics can be more or less engaged with their primary work focus, and a strong engagement with a topic seems to be a necessary condition for *Spielwiesen* to develop from a passing fancy to a real area of activity.
- Scholarly valorization: The stories illustrate that *Spielwiesen* are not only of personal interest—they also develop scholarly value. Both of us found that our *Spielwiesen* shifted from the margins into the main focus of our work, showing how topics fluctuate and reconfigure throughout academics' careers (see Laudel, 2017 on the development of research lines throughout careers). Activities at the fringes can become so productive and compelling that they turn into a meaningful category for the ways in which academics are perceived by their peers (Angermuller, 2013). They may even become the primary reference for the scholar's professional identity (as happened for Ariane with her work on artistic interventions in organizations). Alternatively, *Spielwiesen* can also fade, as when the academic has satisfied their curiosity, or harvested the potential for cross-fertilization. They may in turn give way to new *Spielwiesen*.
- Professional support: Scholars receive different degrees of support for their *Spielwiesen* from the people around them. Meusburger (2009, p. 138) highlights the enabling role of mentors on the spatial microscale. Whereas Ariane's director supported her engagement in her first *Spielwiese* (women in management),

Julian's supervisor was not convinced about the specific topic of his first *Spielwiese*, but actually sparked the second (research performance assessment in the UK). This aspect relates to research in organizational psychology, whose practitioners emphasize the importance of emotional and informational support for employee creativity (Madjar, 2010).

- Motivational drivers: A comparison of our accounts may also give some first hints about changes throughout individual careers and between cohorts: Ariane's *Spielwiesen* were entirely curiosity-driven; her first excursion away from the core and into a margin was an early career choice (pre-doctorate), whereas the other (into the world of arts) came towards the end of her academic career, when she was already tenured. Julian developed both *Spielwiesen* after his PhD. Significantly, the need to find funding triggered the first, and the type of funding available at the time influenced its scope.

Across these five aspects, we have used our dialogue and its preliminary analysis to illustrate how (repeatedly) adding *Spielwiesen* to one's core area of expertise can be a stimulating way to pursue an academic career, even though it does not correspond to the streamlined model of how one is expected to become a member of the academic profession and develop the requisite competencies. After reflecting on our own curiosity-driven endeavors, our curiosity now turned to wondering whether other academics might have strayed from the beaten path in their own ways. We also wondered whether our experiences had been exceptionally positive. Is the foray into a *Spielwiese* a win-win game, in which individual academics feel fulfilled by having exercised intellectual autonomy in parallel to meeting established commitments, and the academic system reaps the fruits of the multiplied creative work? Might there be aspects to this kind of professional development that we had overlooked in our enthusiastic autoethnographic conversation?

To enhance our preliminary reflections, we each conducted a group discussion and held individual conversations with colleagues. Our informal sample encompasses academics from all career stages, comprising student assistants, PhD students, postdocs, part-time postdocs, newly appointed as well as experienced professors, and project coordinators (18 people altogether). It includes slightly more men than women, and all were social scientists—a particularity we will address later. The diverse perspectives and experiences these discussions brought to light tie in with some of the five aspects we identified in our dialogue above, and they also brought up new issues.

Grasping the Notion of Spielwiesen

A first issue we identified in our autoethnographic reflections is that *Spielwiesen* can be more or less closely connected to an academic's primary area of expertise. Our discussions with colleagues revealed very quickly that the notion of *Spielwiesen* made sense to them; almost all could connect it with their experience. Nevertheless,

we found a somewhat paradoxical situation: It is both immediately clear and yet difficult to specify:

Some colleagues could distinguish clearly between their *Spielwiese* and their primary activities: “I know exactly what you are talking about. Pet projects. Everybody has them! It’s the stuff that emerges on the side” (Sarah, full professor).²

But that does not mean they all agreed where to draw the boundary between *Spielwiesen* and the core of professional work:

All my work has been in *Spielwiesen*! From the very beginning of my career, when I was paid to work on externally funded projects I had not designed myself, I always rutted around until I found an angle that I wanted to explore. So, my *Spielwiese* was never on the margins, I made sure I arranged the work in such a way as to have my *Spielwiese* in the middle, and I took care of the rest of the work on the margin. (Anna, retired senior research fellow)

Others found the boundary less evident because of the nature of the scientific endeavor. One colleague offered an explanation, another formulated the situation in a series of questions:

Spielwiesen are an inherent feature of science. Whenever we interact with other academics, for example, we often come out with new ideas, new potential topics to pursue. It is a natural dynamic of being in the academic community. Without the freedom to have *Spielwiesen*, there would be no science. (Raphael, postdoc)

When does something become a *Spielwiese*? What if I am reading on a topic that is of interest to me? Is it already a *Spielwiese*? Or do you need to produce some kind of output for something to become a *Spielwiese*? (Peter, student assistant)

From these conversations with our colleagues, one can see how academics interpret the notion of *Spielwiesen* as relating to the choice of research topic, and how examples of additional kinds of *Spielwiesen* arose in these conversations. Thus, the insights our discussants shared connect to *Spielwiesen*’s proximity to main activities. They echoed Ariane’s proficiency-building experience with her first *Spielwiese*, in which she developed leadership skills. For example, accepting invitations to give keynote talks offered a colleague (Sarah, a recently appointed full professor) the opportunity to try out new ways of presenting ideas.

Assessing the Value of Spielwiesen

We surmised from our own reflections that *Spielwiesen* can enhance a scholar’s proficiency as an academic and become a source of fresh insights from which the profession can benefit. Engaging in a *Spielwiese* often develops from a strong interest in—and sometimes with an emotional attachment to—a topic. We have identified scholarly valorization as an important aspect of *Spielwiesen*, and this dynamic was also an important issue in the discussions with our colleagues. Our colleagues

²We have given each person a pseudonym, but gender and academic status are real.

were enthusiastic in their descriptions of the positive effects of engaging in *Spielwiesen*, as David, a postdoc, illustrated:

I think this is super! ... *Spielwiesen* projects enable us to jump onto new themes quickly. For example, I was working on xxx three years before the topic was discovered by the mainstream.... The interview requests I get from the radio are actually only for my *Spielwiesen* projects, never for my primary research topic.

Another postdoc, Helena, added: "*Spielwiesen* have always been really important for me. For example, my paper on xxx was the outcome of a *Spielwiese* interest I had, and it was well published."

However, there were also cautionary voices, warning against romanticizing the use of a *Spielwiese* in academia. Almost all our colleagues agreed with David that "everyone works more because *Spielwiesen* projects are "on top of" normal work" (David, postdoc).

The commitment to a project that emanates from a *Spielwiese* can become as heavy and demanding as the work in one's core area of activity, thereby increasing the problem of overloads and disappointments in academia.

Spielwiesen are the stuff that makes your eyes glow. But if you take them seriously—and I take them just as seriously as my other research—they take a lot of time. I have some skeletons in my closet, projects that I never managed to finish. (Sarah, full professor)

Our colleagues' responses also serve as a warning against positioning *Spielwiese* projects as the greater source of creative work than the core projects, reminding us that "there are 'intellectual glamor-moments' in mandatory projects too—and even in teaching!" (Sarah, full professor).

Indeed, it is misleading to pit one field of activity against the other. For some academics, the potential for creativity emerges from the movement back and forth between *Spielwiesen* and the primary field. From our conversations, we learned that *Spielwiesen* hold more than a personal, emotional value for those who pursue them—they also have a scholarly value. For example, engaging in a *Spielwiese* exposes a scholar to a body of literature which can throw fresh light on their current main field of work. The postdoc Helena remarked that "*Spielwiese* projects help me to develop better ideas for my primary project."

From our conversations with colleagues, we concluded that *Spielwiesen* can be a source of creativity and facilitate intellectual engagement with a topic that is experienced as very rewarding. These positive effects can also spill over to the primary research topic. Nevertheless, engaging in *Spielwiesen* does not come without its costs; they can be just as demanding of time and energy as one's primary area of activity. These costs are an aspect that we had not addressed in our own reflections, but when our colleagues mentioned them, we could also identify with their observation.

Institutional and Individual Factors of Spielwiesen

With these caveats in mind, which factors, then, enhance the likelihood of being able to engage in a *Spielwiese*? We have already touched upon the role of institutional and individual support for *Spielwiesen* in our personal accounts and labeled this aspect professional support. Further emphasizing this issue, several colleagues mentioned the importance of funding, given that those activities fall outside the core area of work for which we are officially being paid. Postdoc Helena, who had pursued multiple such projects, noted: “*You can only do smaller projects as a Spielwiese. It gets much more difficult if you need resources for them.*”

The problem of funding is likely to be particularly relevant for research requiring big data sets, instruments, or laboratories, as opposed to those for which books and access to the internet suffice. However, that same colleague pointed out “*you can even receive funding for your Spielwiesen, I managed to do so several times.*”

It can also depend on the overall institutional budget: “*It’s very different here than [where I used to work], where our budget was really tight, and we had to focus only on our projects. Here we definitely have space for Spielwiesen*” (Margit, postdoc).

Some colleagues found it easier than others to carve out or protect their *Spielwiese* in their organizational context. Margit, who had successfully obtained external funding for a large project explained: “*Actually, we defined our research area so broadly from the outset that we have a huge Spielwiese and that is really satisfying; we can choose what interests us in this field.*”

A doctoral student countered: “*I have the feeling I have to protect my Spielwiese [dissertation project], I have to do my best to restrict the demands of my primary job*” (Sofia, doctoral student).

Sofia’s experience is mirrored by what Amelie, a postdoc, reported:

I have worked a couple of years in an environment in which the exploration of *Spielwiesen* was a hindrance to pursuing an academic career—and I still romped about on them! To be honest, I believe this was possible because, in the end, my boss did not really care whether his assistant makes any career progress or not. At the same time, my personal *Spielwiesen* kept my joy in academic work alive and promoted my creativity.

Thus, the organizational context and management style influence the scope academics feel they have to add *Spielwiese* projects to their agenda. Funding is important, but not the sole determining factor. Yet, we wonder whether there are research styles that require specific conditions (like instruments and laboratories) that make the pursuit of *Spielwiesen* less likely than in other fields.

A doctoral student added that academics might also have quite different reasons for not revealing a *Spielwiese*:

What about “secret *Spielwiesen*”—activities that are considered taboo in academia, that one would only mention to very close friends? They can serve as sources of ideas and inspiration without becoming visible. For example, if someone is a hacker, they will have different ideas and knowledge about digitalization that they might bring in to a project without revealing the source of their expertise. (Jonas, doctoral student)

Ariane's story illustrates the use of a *Spielwiese* at both ends of an academic career, under different contractual conditions. When we explored effects of different types of contracts, views diverged significantly. Some colleagues believe that it is harder in certain career stages than in others, but they did not agree on which stage. Student assistant Peter said: "*You need to be at a point where you have your own research topic. I mean, as a master student you don't have your own topic, so you cannot develop a Spielwiese next to it.*"

Reflecting on different status positions, a newly appointed professor claimed: "*In the post-doc stage, you have very clearly defined responsibilities; it is as a professor that you have the freedom to pursue any research you would like to do*" (Sarah).

Doctoral student Jonas added: "*It is easier for doctoral students and professors to engage in Spielwiesen projects than for post-docs, who are dealing with even more pressure and uncertainty in their career phase.*"

However, others disagreed with the proposition that engaging in *Spielwiesen* is a matter of career stage.

Distinguishing between career stages doesn't make much sense to me: I have lots of freedom in my graduate school. Other PhD students in more traditional contexts might have less freedom. It's a question of autonomy over one's time that you can or cannot have at any career stage. (Jim, doctoral student)

Given these contradictory views about structural features of academia that facilitate or hinder a scholar's freedom to use a *Spielwiese*, it is worth considering personal factors. Perhaps some academics are by nature more likely than others to look for and engage in *Spielwiesen*?

In my experience there are also types of people who tend to pursue *Spielwiesen*—I consider myself such a person—and others who work very systematically, straightforward, who never make a step sideways. A very close colleague works like that, and he thinks I am crazy when I tell him about yet another new thing I am doing. (Sarah, full professor)

Playing and Strategizing

The comment this colleague received about being "crazy" to deviate from the straight and narrow path raises a vital question: Is it legitimate to engage in *Spielwiesen* with a strategic mindset, or must one, by definition, treat them playfully? This is a sensitive topic in a profession whose members have, in the footsteps of Schiller (1972) and Weber (1949), conceived it as requiring an inner drive to dedicate oneself to the pursuit of science for its own sake (Berthoin Antal & Rogge, 2019). Going about one's career strategically does not sit well in this academic tradition, as evidenced by studies of obituaries, whose narrators position only natural talent and merit as the determinants of successful academic careers (Hamann, 2016a, 2019). From our personal reflections, we concluded that *Spielwiesen* can be approached somehow strategically, with funding options in mind, as well as

curiosity-driven. We captured this aspect in our auto-ethnographic reflections and labeled it motivational drivers, and carried the topic into our discussions with our colleagues, whose opinions were divided. Maria, a postdoc, shared that “*to be honest, we had a very strategic eye on a place where we could publish the Spielwiesen stuff I just talked about. I think it can be a Spielwiese even if you approach it strategically.*”

However, her colleague Jim, a doctoral student, disagreed and countered that “*too much strategy would not suit a Spielwiesen-approach.*”

How much strategy is “too much” for academic *Spielwiesen*? The boundary may be shifting under the influence of new rules of the game stemming from NPM and the audit society’s encroachment into academia. It is unlikely that previous generations of academics never thought strategically about their professional development and profile but revealing that kind of thinking was in bad taste. By contrast, recent entrants to academia need to show that they can think and act strategically (Morris & Rip, 2006; Müller, 2014). Does a change in the academic climate make it advantageous for academics to approach *Spielwiesen* as a conscious strategic choice? Remarkably, references to strategic choices and advantages peppered our discussions with our colleagues. Feelings ran high as colleagues talked about whether or not their research interests were considered strategically relevant in their institution or the scientific community. In response to the frustrations he heard, David, a postdoc, observed:

That is a normal part of the game, that there are some themes that an institution considers strategically important at a particular time, and not others. You have to choose which you want to do, and there are times when your topic will be in the strategic focus, and times when it will not be.

This observation led another colleague to point out that “*so far, we have talked about Spielwiesen topics as new and cutting edge, but they can also be ‘old’ topics that are not (currently) strategically valued*” (Sofia, doctoral student).

Our conversations with colleagues thus included little consensus about the strategic character of *Spielwiesen*. An overly strategic choice of research does not sit well with the traditional view of academics as devotedly pursuing an inner calling. Distinguishing between strategic, purposeful gaming, and more open play might help clarify the legitimacy of strategic approaches.

Overall, we learned from our conversations that the notion of *Spielwiese* resonates immediately with our female and male academic colleagues of all ages and career stages, while also raising a multiplicity of issues and diverging views. The concept offers rich ground for researchers to study the underlying dynamics and its implications for individuals and institutions in academia. We therefore propose the following agenda as a starting point for further research on *Spielwiesen* as spaces for developing expertise and achieving recognition as professionals in academia.

***Spielwiesen*: Outlining a Research Agenda**

Prompted by reflections on our own experiences and conversations with colleagues, we find that the standard portrayal of streamlined professionalization in academia hides playful deviations from the primary path into new intellectual and social spaces. Inspired by Huizinga's *Homo Ludens* (1949), we propose making space for play as a voluntary and, perhaps indeed, necessary facet of the academic profession. With our explorations, we have brought to light a number of issues from which we conclude that *Spielwiesen* is a fruitful concept to investigate the dynamics of becoming proficient academics. We have also drawn attention to the importance of play in academic work more generally. With our autoethnographic reflections and group discussions, we have revealed five important aspects of *Spielwiesen* that can serve to operationalize the notion and guide future research: proximity to main activities; scholarly valorization; emotional engagement; professional support; and motivational drivers.

Concluding our contribution, we would like to synthesize these aspects to develop a tentative typology of *Spielwiesen*. This typology could anchor a research agenda on social and intellectual spaces of play and creativity in academia. The first important dimension of a typology of *Spielwiesen* is the degree of institutional visibility or support they receive: those that organizations, or, depending on the career stage, supervisors or mentors, legitimize and encourage; those that organizations, supervisors, or mentors do not consider strategically relevant; and “secret” *Spielwiesen* in taboo areas of which institutions or supervisors are never informed. A second dimension to include in a typology of *Spielwiesen* is their temporal existence relative to the primary activity: One could distinguish *Spielwiesen* that become “skeletons in the closet,” as one colleague put it; *Spielwiesen* that are productive but remain at the margins; *Spielwiesen* that transform into the primary field of research (and possibly teaching), as experienced by both Ariane and Julian; and *Spielwiesen* that emerge temporarily within the primary area of activity—such as this essay.

Given that accounts of heavy time pressure constitute a prominent and pervasive feature in academic work (Vostal, 2016; Ylijoki & Mäntylä, 2003), it is puzzling that anyone would freely choose to add an excursion into a *Spielwiese* which, as colleagues pointed out in our conversations, by definition generates more work (see also Chap. 3 by Banfield (2023) for a discussion of the hurdles entailed in venturing out of a primary field of expertise). Thus, a third dimension of a typology of *Spielwiesen* is concerned with motivational drivers. Possible explanations to examine include: choosing to engage in a different topic or activity despite the time pressures at work may satisfy an overriding personal need rooted in the pursuit of academia as a calling (Berthoin Antal & Rogge, 2019; Weber, 1949), such as unbridled curiosity or the drive to exercise autonomy in an increasingly controlled system. Pursuing *Spielwiesen* may also be a way of compensating for having to do research on a project for which funding is available but which does not really capture one's imagination. In other words, might it enable academics to “manage the tension between the need to be highly results focused, disciplined, and even

submissive in order to mobilize their personal resources best possible, while at the same time being experimental, exploratory, and even rebellious to develop new personal resources” (Muhr, Pedersen, & Alvesson, 2013, p. 196)? Or might engaging in *Spielwiesen* be a strategic move to develop an interesting personal profile, either to develop and grow into a new field of expertise, or to position oneself as different from the mainstream while still meeting the demands of the system? Which motivations predominate in which generation?

Given that we have written this paper within the context of the social sciences, predominantly sociology, it is essential to discover whether academics in other disciplines venture into *Spielwiesen* in their professional development, and if so, how. Because there is reason to expect disciplinary differences, the disciplinary fields in which *Spielwiesen* are anchored form a fourth dimension for a tentative typology. Some fields, most notably in the natural sciences and life sciences, require material conditions like laboratories, which could make the pursuit of *Spielwiesen* more difficult. Furthermore, different disciplinary approaches to conducting research could influence the prevalence of *Spielwiesen*. For example, fields in which research is based on extensive teamwork might provide different conditions for creativity-driven, playful explorations. Collaboration can allow academics to explore new topics, as Leahey and Reikowsky (2008) found for the social sciences, and collaboration can also distribute agency for *Spielwiesen* across several actors (cf. Garud & Karnøe, 2003). Some fields may feature different approaches to developing proficiency and creativity that complement or supplant the role of *Spielwiesen*. For example, engineering’s practice of tinkering, which grows out of a practical orientation and a predilection for trial and error, is so strong that it extends beyond academia into German manufacturing firms (Glückler, Punstein, Wuttke, & Kirchner, 2020). Closer examination would be needed to specify whether disciplines that value tinkering are more or less likely than other disciplines to use *Spielwiesen*. More generally, the degree of paradigmatic openness as well as different styles of scientific thinking and reasoning might lead to different approaches to *Spielwiesen* (Crombie, 1994; Fleck, 1979). For example, following Becher and Trowler’s (2001) conceptual distinction of “rural” and “urban” research specialisms, Colavizza, Franssen, & van Leeuwen (2019) find more and smaller topics per specialism in the humanities than in the natural sciences.

Beyond the tentative, four-dimensional typology of *Spielwiesen*, a few additional issues belong on the research agenda. First, how do generational differences between academics pursuing *Spielwiesen* feature? For example, how do senior scholars affect the perceived demarcation of each kind of *Spielwiese* and enable or impede younger scholars’ engagement with them? A concern in the back of our minds when we started our conversations was that the younger generation might be less likely to feel free to engage in *Spielwiesen* activities than senior scholars who were socialized into academia in a different era and who have often repeatedly done so over the course of their career. The conversations we had did not support this hypothesis, but the mix of colleagues we spoke with may have been biased. Researchers studying younger generations of scholars have concluded that more competitive

circumstances lead to a more competitive orientation (Müller, 2014), which might in turn lead to a more strategic approach towards *Spielwiesen*. In future, researchers should therefore take a multigenerational approach to composing samples. Our conversations with colleagues left open whether specific career stages and *Spielwiesen* are related, so it seems crucial to systematically sample different career stages as well.

A second issue researchers should consider is located at the systemic level. Certain types of national career systems and funding systems likely affect the ways in which academics pursue *Spielwiesen*. The introduction of NPM and the audit society's encroachment into academia is a world-wide phenomenon, but cultural differences still matter (cf. Meusbürger, Heffernan, & Suarsana, 2018). We developed the ideas in this paper within a German academic context, which has not been spared from NPM (Schimank, 2005). Nevertheless, traditional characteristics still hold: The German chair-faculty system remains characterized by comparatively steep hierarchies in which younger scholars are usually expected to participate in the chair-holding professor's research. This system can suppress creativity and the autonomous pursuit of a primary research agenda (Yair, 2019). Under such conditions, *Spielwiesen* may be both difficult to carve out but also important as a means for non-tenured academics to develop their own profile. Countries that have flatter hierarchies with the department-college system might offer more leeway for the emergence of *Spielwiesen*. However, when those systems entail output-oriented assessments and pressure for streamlined research profiles (Hamann, 2016b), they are likely to either hold researchers back from engaging in *Spielwiesen* on top of their primary work, or to force researchers to conduct unfunded research to keep up their intellectual creativity and flexible autonomy (Edwards, 2020). Given that scholars have suggested a relation between national career systems and the emergence of new research lines in individual careers (Laudel, 2017), it would be worth undertaking internationally comparative studies to determine whether academics have more or less latitude to pursue *Spielwiesen* projects in other contexts.

A research agenda on *Spielwiesen* would be a fruitful way to examine the connection between proficiency development and creativity. Straying out of one's field of expertise implies choosing to go through a phase of amateurish "improficiency" (see Chap. 3 by Banfield, 2023) in the hopes of developing something new and different. The work inside the *Spielwiese* might generate "incidental knowledge" that "may not be of immediate use, but it will become the fuel that powers acts of creativity and discovery to come" (Alves, 2013, para. 16). Or the potential for creativity may be fueled by the movement back and forth between the spaces because they entail engaging with different bodies of literature, people, and possibly also different institutions (Berthoin Antal, 2006). Given the influence of class and gender on, for example, choices of fields of study (Seehuus, 2019), the use of unconventional methods (Koppman & Leahey, 2019), international research collaborations (Zippel, 2017), and academic career opportunities (Blome, Möller, & Böning, 2019), it would be logical to examine whether there are class- and gender-specific patterns related to the pursuit and nature of *Spielwiesen*.

In *Homo Ludens* (1949), Huizinga characterizes play as a voluntary activity and emphasizes the freedom and fun related to it, yet this positive characterization also masks a shadow side. For example, the addition of *Spielwiesen* projects can obviously exacerbate the tendency to self-exploitation in academia. “When do we cross the border between enough and too much? When does a comfortable abundance become an oppressive surfeit? When does choice move from being a privilege to a burden?” (Wilk, 2019, p. 191). Academics should design their research to explicitly address questions such as these in order to avoid romanticizing the notion.

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The Klaus Tschira Foundation

The German foundation Klaus Tschira Stiftung supports natural sciences, mathematics and computer science and the appreciation of these subjects. It was founded in 1995 by physicist and SAP co-founder Klaus Tschira (1940–2015) by private means. Its three priorities are: education, research and science communication. This commitment begins in kindergarten and continues in schools, universities and research institutions throughout Germany. The foundation advocates the dialogue between science and society. Further information (in German) at: www.klaus-tschira-stiftung.de (Figs. 1 and 2).

The Klaus Tschira Foundation is located in Heidelberg and has its head office in the Villa Bosch, once the residence of Carl Bosch, a Nobel laureate in chemistry.



Fig. 1 Participants of the symposium “Professions and Proficiency: The rise and demise of knowledge” at the Studio Villa Bosch in Heidelberg, Germany. (© Johannes Glückler, Heidelberg)



Fig. 2 Villa Bosch, the head office of the Klaus Tschira Foundation, Heidelberg, Germany. (© Peter Meusburger, Heidelberg)

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