Chapter 3
Sociomaterialism, Practice Theory, and Workplace Learning

Introduction

This chapter provides a detailed overview of contemporary sociomaterial and practice-based approaches, focusing in particular on their implications for conceiving workplace learning. It lays the theoretical foundations for the analysis and arguments developed in Parts II and III. It sets out my ontological position, and key concepts that are not so much *applied* in the subsequent empirical work, but *tangled up* in it (including in the approach to ethnographic fieldwork, see Chap. 4). I begin by setting these foundations in a broader context, namely sociomaterial approaches. Here I highlight the way in which contemporary theorists are 'rethinking the thing', based on performative, diffractive and non-representational ontologies. I then locate the 'practice turn' within these wider, diverse, traditions, and hone in on Schatzki's practice theory, as an overarching framework for this book. Next, I turn to research on workplace learning, highlighting the metaphor of emergence and its links to concepts of knowledge. Here I draw on Gherardi and others' practice-based studies approach, which emphasises knowing in practice and aesthetics. The chapter then shifts gear and constructs a bridge to Parts II and III by outlining, in more abstract and general form, the key arguments that are developed in the remainder of the book. I introduce times, spaces, bodies and things as four essential dimensions of professional practice and learning, and then outline my view of professional learning in an asymmetrical and non-reversible relationship with practice. Learning and practice are viewed as entangled, but analytically distinguishable, and my criteria for specifying this distinction are presented. I conclude by explaining Vygotskian ideas of the zone of proximal development (ZPD) and scaffolding: these form a basis for conceptualising the pedagogic of professional work in partnership with service users.

Before delving into the world of theory itself, I wish to clarify something at a meta-level about my approach to working with theory. The work of this book

is deeply entangled with the ideas of Schatzki, Gherardi, and others. I make less systematic and detailed contact with the ontological work of Barad and Thrift, and connect purposefully but eclectically with a wide range of theorists in order to expand on the dimensions of times, spaces, bodies and things. There, the framing draws on Lefebvre, Massey, Grosz, Shove, and others, making more than glancing contact with critical cultural geographies, and relevant lines of feminist scholarship. What is going on here? I imagine alarm bells are already ringing for some readers, perhaps seeking something neater or simpler, perhaps concerned about a lack of coherence or consistency between ideas that have very different disciplinary and, at times, philosophical origins and political agendas.

Such concerns are well placed, and my aim here is to justify my approach. Firstly, let me address the question of deeper theoretical coherence. To me the value of theory is only ever tangible when it becomes entangled[1] with data, with the empirical. I thus see less value in questioning the compatibility or otherwise of one theory with ones in abstract terms, than in seeing what can be produced when these are brought into different relationships with data. The question is not, for example: 'Is it theoretically coherent to draw on both Schatzki and Gherardi?'. Instead it is, 'What benefit is gained by drawing on both bodies of work, with respect to particular questions and research agendas, and in the process of their being worked through empirical data?'. The questions and agendas that provide the referent for this book are those outlined in Chap. 1: exploring what shifts towards partnership and coproduction mean for our understanding of professional practice and learning; producing accounts of these phenomena that let go of Cartesian dualisms, and rational, cognitivist ideologies, instead foregrounding bodies and materiality as inherently wound up with knowing performances that uphold practices. That said, there must be limits to playfulness and eclecticism. For these reasons I take care to outline the bases upon which I see a sufficient complementarity between my (site) ontological position, and the various theories and concepts I bring into play.

Such an approach to working with theory is not particularly unusual. Nicolini (2009b) presents the idea of 'zooming in and out', trailing different connections in practices by moving between different theoretical lenses. Each enables us to take a different position, foregrounding aspects of practice while bracketing others. He writes:

> A coherent practice approach needs also to address how translocal phenomena come into being and persist in time as effects of the mutual relationships between the local real-time accomplishments of practices, as well as how they make a difference in the local process of organizing. For theorizing practice, we need an appropriate methodological approach that makes us see the connection between the here-and-now of the situated practising and the elsewhere-and-then of other practices. I will describe this second movement as 'zooming out of' practice. Theorizing practice thus requires a double movement of zooming in on and zooming out of practice obtained by switching theoretical lenses and following, or trailing, the connections between practices. (Nicolini 2009b, p. 1392)

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[1]I am borrowing on Baradian ideas and vocabulary here, appropriating them significantly.

In this book, zooming in and out does not quite follow the same scalar principles; it has a lateral component, too. I see a similar lateral approach in Nicolini's (2012) exploration of telemedicine through a 'rolling case study', in which he draws on Giddens and Bourdieu, CHAT, ethnomethodology, Heideggarian and Wittgensteinian practice theory, and discourse analysis. Each has a different resolution, yes, but their differences are more than scalar. As I explain in reference to the four essential dimensions of times, spaces, bodies, things, holding each at the forefront of our gaze enables us to attend to features of practices and learning that might otherwise be overlooked. Taking them up as different analytical points of departure helps make connections to theoretical ideas that enrich the analysis, the entanglement between questions, data and concepts.

Such theoretical pluralism or multiplicity affords an open-mindedness in both thinking through data with different concepts, and thinking through concepts as they brush up against different data. Jackson and Mazzei (2011, 2013) suggest this increases possibilities for creating new knowledge about complex social phenomena. By 'plugging' (I prefer the metaphor of entangling) data and theory together in multiple ways, they suggest we can avoid simplistic and mechanistic interpretation than could be achieved through a rigid thematic analysis and singular theoretical tool. In other words, this approach helps to guard against theoretical over-determinism (see also Chap. 4), while enriching the analysis.

We must then confront the question of when to stop, how many lenses to adopt. My response is to seek parsimony: the delicate balance between complexity and power in explanation. For example, does the value gained by folding in Lefebvre's (2004) rhythmanalysis outweigh the additional conceptual burden this brings, and the potential tensions arising in terms of theoretical compatibility? In the case of the analysis presented here, my sense is unequivocally 'yes'. In other cases, I have let go, particularly in relation to concepts of practice memory, affect, language, and power. Not because they are uninteresting or irrelevant, but because to venture down these avenues would require switching the gaze yet again, more zooming in and out, and the result would likely be a weaker response to the questions and issues posed in Chap. 1.

My final step by means of introduction is to acknowledge the personal dimension in theoretical work. No one scholar or framework ultimately wins out in theoretical star-wars, at least as I see it. We become enrolled, persuaded, into certain approaches, ways of thinking, and stances. Yes, this reflects the qualities of particular theories, but it also reflects us, our agendas, interests, our affective response. A useful way to capture my relationship with the work of Schatzki, Gherardi and others, is in the notion of elective affinity, a term used by Max Weber, who borrowed it from a novel by Goethe (see Herbert 1978). Taking a sociomaterial perspective, focusing on practice perspectives, and switching gazes multiple times: these are all choices, elections. There is nothing automatic or necessary about them. From the start the work of working with theory is an entanglement of much more than abstract ideas with empirical data. Following Clegg (2012) I wish to flag my processes of theorising as complex, messy, and not reducible to inductive or deductive logics alone. In reading

Clegg's (2012) account of theorising in higher education research, I was struck by a resonance she noted with Hey's (2006) description of working with Judith Butler's theory. Hey writes of academics' commitments to theory:

> How often their own cherished analytical rationality is broken up by glimpses into the imagination of more provocative thinkers. I have come to the conclusion that it is not so much that we self-consciously assemble all the resources for the making of research imaginaries as those vivid ideas (and frequently their authors) come to haunt us. (2006, p. 439)

It is with this productive notion of haunting in mind that I now turn to the broader theoretical framing of this book.

Sociomaterial Approaches and the Practice Turn

Major changes are occurring in the ways we understand professional practices and learning. Questions are being posed of the body, of materiality, of space and time, and of plural, enacted realities. Inherent here are significant shifts in the way we conceive what it means to carry out professional work, the nature of professional expertise, and the forms of knowledge that are woven into practice and change as practice unfolds. The title of Shapin's (2010) book speaks to this: *Never pure: historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority*. Shapin's countering of a disembodied trope in accounts of scientific practices, and his foregrounding of issues of time and space resonate with contemporary shifts in studies of work and learning, and with the specific arguments I'm making in this book. The first major theme that I will discuss within this broader territory concerns renewed and distinctive attention to materiality: rethinking the thing.

Sociomaterialism: Rethinking the Thing

This book is positioned within a broader body of work that may be considered as 'sociomaterial' in its approach. Reference to a group of different but related philosophies, sensibilities and theoretical frameworks as 'sociomaterial' has been strongly shaped by the writing of Fenwick (2010a, b, 2012a, b), Fenwick et al. (2011, 2012). Complexity theory, cultural-historical activity theory (CHAT), and actor-network theory (ANT) are prominent (Fenwick 2006, 2010a, b, 2012a, b; Fenwick and Edwards 2012), alongside spatiality theories from cultural geography (Fenwick et al. 2011). Barad's (2003, 2007) diffractive approach has contributed significantly to this line of thinking and shares with Shapin a basis in studies of science, as does much of Pickering's (1992, 1995, 2001) work. There is also a set of perspectives linked by a foregrounding of *practice*, which can be located under a broader sociomaterial umbrella. These include practice philosophy (Schatzki 1996b, 2002b, 2010c, 2013; Reckwitz 2002a, b; Rouse 2007; Kemmis 2009, 2010; Kemmis et al. 2012), and practice-based approaches coming out of organisational

studies (Gherardi 2006, 2008, 2009a, b, 2012a, b; Orlikowski 2002, 2006, 2007), and others that take up questions of knowledge, epistemic cultures, and epistemic work (Jensen et al. 2012b; Knorr Cetina 1997, 1999, 2001; Knorr Cetina and Brueggar 2002; Miettinen and Virkkunen 2005; Nerland and Jensen 2012, 2014).

I will first consider the ways in which sociomaterial approaches in general provide a platform for rethinking the nature and role of materiality in relation to social phenomena. I will then explore practice-focused work, and in particular the concepts from Schatzki, Gherardi and others that are the most direct and pervasive influences on this book.

Sociomaterial approaches share a view that materiality is a crucial dimension of all social phenomena, not merely a setting for or adjunct to them (Fenwick et al. 2011). As soon as we conceive of the social, we must also conceive of the material. Sørensen (2007, 2009) critiques dominant approaches in which materiality is treated as if it does not matter, and the history of educational research for its consistent ignorance when it comes to thing. Fenwick (2012b) similarly argues materiality has been rendered immaterial in much research on learning, while social, political and cultural dimensions have received much attention. Markauskaite and Goodyear's (2014) chapter offers a clear account of professional knowledge as culturally and socially situated *and* materially grounded. Action in professional practice is viewed by them as an accomplishment of an 'extended mind', incorporating the tools and resources that come to hand in the workplace.

Sociomaterial approaches provide diverse resources for re-thinking 'the thing' (Fenwick 2010b). Attending to materiality as a constituent of social phenomena expands the sorts of questions we can ask about professional work and learning. It thus enriches the accounts and explanations we can give of those phenomena. The potentially relevant actors multiply (Fenwick et al. 2011; see also Bruni 2005). 'Actors' is a technical term within actor-network theory, but more loosely points to the much wider array of objects, artefacts, organisms, and bodies that are attended to in sociomaterial research. Human beings no longer occupy centre-stage, and the distinction between human and non-human is blurred, or even wholly undermined (Fenwick 2012a, b; see also Barad 2007). Questions of learning are being decoupled from a human-centred ontology (Fenwick et al. 2011). Dual and overlapping roles are implied for human and non-human actors, for material and ideal dimensions: professional practices and learning are understood as assemblages of materials, ideas, symbols, desires, bodies and natural forces (Fenwick and Landri 2012). I will discuss later how this is taken up in Schazki's site ontology—the position from which this book is presented.

In sociomaterial approaches, material entities are not simply *added in* to explanations of social phenomena. There is no non-material core that can be identified separately. As Orlikowski puts it, the view is one of '*constitutive* entanglement of the social and material in everyday life' (2007, p. 1435 [my emphasis]). Schatzki's (2003) site ontology (see below) uses the term *dimension* to convey a similar point: the social and material are not separate, rather materiality is part of what makes up the social. Some, such as Bruni (2005) and those who follow actor-network theory write of symmetry between the human and non-human (see Sayes 2014).

On my understanding this is not about imbuing inert objects with agency of the kind that 'we' as humans feel we exert in the world. Rather it is to abandon the a priori distinction between human and non-human, and to look instead for how what looks like agency is an effect of assemblages in which privilege is not given either to the human, or non-human, or indeed the conceptual bifurcation of the two. Schatzki does not accept the symmetry associated with such post-humanist stances, but nonetheless asserts a strong, entangled, and constituent role for materiality (see below).

Performative, Non-representational Ontologies

Grappling with such blurred distinctions requires a crucial, related, move. Rather than focusing on stable entities with fixed boundaries held in place by exclusive definitions, sociomaterial approaches turn their attention to fluid relationships or assemblages. The ontology is based on enactment or performance: reality is produced, or emerges, through relationships established in practices. Thus Mulcahy, writing from an actor-network theory perspective, states 'reality does not precede practices, but is made through them' (2012b, p. 83). Thus sociomaterial approaches may be described as based on performative or non-representational (see Thrift 2007) ontologies. Barad explains:

> The move towards performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality (e.g. do they mirror nature or culture) to matters of practices/doings/actions. (2003, p. 802)

More recently, Barad has written:

> Matter is substance in its interactive intra-active becoming, not a thing, but a doing, a congealing of agency… mattering is the ongoing differentiating of the world. Matter plays an agentive role in its ongoing materialization. Physical matters, matters of fact, matters of concern, matters of care, matters of justice, are not separable. (2013, p. 17)

Here, Barad lays out an argument that materiality must be understood as emergent and relational, and that through such an approach questions of the good, of ethics, of what it makes sense to do, are never immaterial. In the sense that matter is a becoming, not a thing, we might conceive of it as made, or practised into being. Pickering's argument that 'practice is where nature and society and the space between them are continually made, un-made, and remade' (1992, p. 21) speaks to precisely this point (see also Shotter 2013). Drawing on actor-network theory, Mol (2002) offers an elegant and eloquent account of how a focus on practice can underpin radically different notions of ontology. Hers is one in which reality multiplies, and shows how things, such as bodies, can be enacted into many different kinds of being. Performative approaches have been taken up widely, including in the feminist scholarship of Butler (e.g. 1993). Jensen (2010) argues for a shift to practical ontology, with specific reference to ideas of knowing and learning as sociomaterial enactments (pointing to key themes I discuss below).

Table 3.1 Features of diffraction that resonate with my approach

Diffraction	Reflection
Diffraction pattern—marking differences from within, part of entangled state	Mirror image—reflection of objects held at a distance
Performativity—subject and object do not pre-exist as such, but emerge through intra-actions	Representationalism—pre-existing determinate boundary between subject and object
Entangled ontology—material-discursive phenomena	Separate entities—words and things
Intra-acting within and as part of	Interacting of separate entities
Diffraction/difference—intra-acting entangled	Words mirror things—social ǀ nature binary

Ideas of non-representationalism and diffraction are worth exploring further. Table 3.1 presents excerpts from a fuller table in Barad (2007, pp. 89–90). This is based on contrasting diffraction with reflection as a key underpinning metaphor.

Notice above, the shift from representationalism to performativity. Reality and knowledge of it are conceived as emerging through relationships. Boundaries between material and other phenomena are dismantled in favour of notions of entanglement and intra-action. I see parallels between Barad's intra-action and the way Schatzki describes the material and social as constitute dimensions of a site (see below). Thrift (2006, 2007) characterises non-representational theory through a 'motif of movements', highlighting performance, multiplicity, porous boundaries and emergence. In his work, things are taken seriously, as are bodies, cyborgs, questions of space, affect,[2] and practices. Indeed in Thrift, concepts such as space are viewed as animate, plural and enacted (see below). The human subject is decentred. This idea of performing or enacting reality into being is a crucial thread that runs throughout this book. I return to it below in discussion of my taking up Schatzki's site ontology, the notion of emergence, and in the approach to understanding times and spaces as practically produced (see Chaps. 5 and 6).

Such positions also involve a move away from language as a central theme. Thrift argues that his approach does not assume language is the 'main resource of social life' (2007, p. 77). Barad argues strongly:

> Language has been granted too much power. The linguistic turn, the semiotic turn, the interpretative turn, the cultural turn: it seems that at every turn lately every "thing" – even materiality – is turned into a matter of language or some other form of cultural representation. The ubiquitous puns on "matter" do not, alas, mark a rethinking of the key concepts (materiality and signification) and the relationship between them. Rather, it seems to be symptomatic of the extent to which matters of "fact" (so to speak) have been replaced with matters of signification (no scare quotes here). Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that does not seem to matter anymore is matter. (2003, p. 801)

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[2]Affect is one of a number of key themes that readers may notice for their absence in this book. See Chaps. 1 and 9.

This sentiment is shared by Schatzki who writes of the 'impotence' of language and critiques Butler for what he regards as an overly linguistic notion of practice which squeezes out nonverbal doings (1996a). "Language and rules (or 'discourse' in Foucault's terminology) are important components of social practices. So, too, however are nonlinguistic behaviours, behaviours that neither name nor declare something" (Schatzki 1996a, p. 65). Indeed Caldwell notes[3] Schatzki's deep criticism of the 'linguistic turn' in philosophy, suggesting his work is aimed at extricating practice theory from dead ends (collapsing practice into language or reducing agency to discourse), in a view that holds 'practices to be ontologically more fundamental than language and discourse' (2012, p. 284).[4]

Sociomaterial perspectives thus offer a basis for disrupting many features of conventional approaches to researching professional work and learning. As discussed in Chap. 1, the critical dimensions of this book are not levelled at the practices under examination—the work of professionals on the Residential Unit of Karitane—but are instead constituted through the theoretical approach. By taking up sociomaterial agendas and commitments, this book undermines and challenges human-centred, cognitive, technical and rationalist notions of practice and learning. Performance, enactment and emergence take hold, through a sensitivity to unfolding relationships relational rather than stable entities. It joins many others in emphasising and bringing into sharper focus the material dimensions of practice and learning. Bodies become more (and differently) visible, while questions of time and space are complicated. Following Barad (2007), Mol (2002) and Thrift (2007), reality multiplies and resists singular representation from a disentangled point of view. Below I explain in greater detail the specific ways such ideas are taken up in this book with reference to the practice theoretical approach that imbues them with particular meaning. However, before this, I will introduce the practice turn as a distinctive feature within broader contemporary sociomaterial terrain.

The Practice Turn

In his introduction to a widely cited volume (Schatzki 2001; Schatzki et al. 2001) heralds a 'practice turn' in contemporary social theory. The term was reinforced several years later in Miettinen et al.'s (2009) description of a 're-turn to practice', and noted by Nicolini (2009b) as a palpable shift in approaches to organisation and management studies. Practice turns (plural) might be a more accurate phrase, since the places where scholars have turned from, and where they are

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[3]To be fair to Caldwell I should acknowledge that he is critical of Schatzki's turn away from language.

[4]I would acknowledge here that there are many who see a key theoretical challenge of bringing language 'back in' within practice theoretical accounts, including Somerville and Vella (2015) and Green (2015).

turning to, vary significantly. As Gherardi and Strati (2012) note, there are long traditions in sociology and philosophy in which practice occupies a central role. Philosophically based approaches include what Schatzki (2001a) refers to as practice theory, sharing occupation with accounts of social life in general that have other philosophical works (such as Wittgenstein, Heidegger, Aristotle) at their foundation (see also Reckwitz 2002a, b). These have been taken up in research by a range of scholars pursuing questions of professional practice, learning and education (see Green 2009; Green and Hopwood 2015; Hager et al. 2012; Kinsella and Pitman 2012; Kemmis 2005, 2010; Kemmis and McTaggart 2005; Kemmis and Smith 2008; Kemmis et al. 2014). Hager (2013) notes how understandings of practice (with its embodied emphasis) within educational research has been resourced by sociomaterial perspectives.

What Nicolini (2003) and Gherardi and Strati (2012) call *practice-based studies* has grown out of work more focused on organisations and learning, and has different disciplinary and theoretical roots, including communities of practice (Lave and Wenger 1991), and more recently actor-network theory. This work is also distinctive in its strong basis in empirical work (see Bruni 2005; Corradi et al. 2010; Gherardi 2006, 2008, 2009a, b; Gherardi and Landri 2012; Landri 2007, 2012, 2013; Nicolini 2009a, b, 2011; Nicolini and Roe 2014; Strati 2003, 2005, 2007, 2008). Landri (2012) explains that the term 'practice-based' is used not only to indicate an interest in or study of practice, but empirical approaches that are based on explicit theorisations of practice. There is potential for confusion and what may be unnecessary boundary-work in using terms such as sociomaterial, practice theory, and practice-based approaches. In this book I am concerned with how ideas drawn from varied approaches resource empirical analysis.

Reich and Hager (2014) outline six[5] prominent threads in contemporary theorisations of professional practice. These draw from diverse sources including organisational studies, philosophy and sociology, and the authors suggest a degree of compatibility as the threads apply across approaches including practice theory, actor-network theory, cultural historical activity theory, and so on. Table 3.2 presents a summary of their argument.

Table 3.2 is useful in making links between the practice turn and the sociomaterial approaches discussed above. It also rehearses ideas that will be developed more fully in the remainder of this chapter, and indeed throughout the book. I will return to Hager and colleagues' work in the next main section when I shift the focus from theorising practice to theorising learning.

I wish, briefly, to address the issues that arise in working with both Schatzki's practice theory and Gherardi et al.'s practice-based studies in the same empirical study. This takes up the question of compatibility raised by Reich and Hager (2014). The points I made earlier in reference to Nicolini's (2009b) notion of zooming in and zooming out are particularly relevant here. The aim is not to resolve theoretical consistency or divergence at an abstract level away from

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[5]This work builds on Hager et al.'s (2012) description of five threads.

Table 3.2 Six prominent threads in theorising practice (after Reich and Hager 2014)

Thread	Description
Knowing in practice	Practice as a collective and situated process linking knowing, working, organising. Echoes of Aristotelian notions of phronesis, and more recent works of Gherardi and Orlikowski, holding that knowing is done together
Sociomateriality	Practice as a sociomaterial phenomenon, involving human actors and non-human objects. Reference to Schatzki, Fenwick, Gherardi, Orlikowski and notions of constitutive entanglement
Embodiment	Practices as embodied, happening in and between bodies, including through speech acts. Rejection of mind/body dualism
Relationality	Practices as constituted through shifting, multiple relationships between people and other people, materiality, and between practices. Reality produced through relationships rather than entities
Historical and social context	Practices as evolving and existing in historical and social contexts shaped by social forces including power. Links to literature on governmentality. Suggests fluidity and heterogeneity (multiplicity) within practices
Emergence	Practices change and evolve in ways that are not fully specifiable in advance, they are not determined before their occurrence. Links with performative ontologies

particular questions asked in relation to particular data. Instead, the drawing on multiple theoretical frameworks is justified in terms of the value they add to the empirical work—the questions this enables us to pose, and the richer responses that can be developed in relation to them. This said, it is important to expose the basis for doing so in terms of theoretical common ground, and to acknowledge the tensions that arise in this process. This is particularly so because there are so few references made between the two approaches in the existing literature.

Both approaches build around practice as a central and fundamental concept. They do this in order to avoid problems associated with binary or dualistic logics of structure/agency, mind/body and so on (a project not confined to these writers, see Cairns and Malloch 2011; Hodkinson 2005). Both adopt an emergent or performed ontology. Gherardi's (2009a) asserts that practice-based studies bring us closer to *dasein*, Heidegger's notion of union between thought and action. This mirrors Schatzki's (1996b) account of mind/body/action, and the turn to Heidegger in his later work (e.g. 2007a, 2010c). Gherardi and Strati (2012) describe practice as a bridging concept between knowledge and action. I see echoes here of the way Schatzki handles the concepts of practice, activity, and the forms of understanding that shape them (see below).

Such connections become even more explicit in Corradi et al.'s (2010) articulation of three key dimensions of practices. The first treats practice as a 'set of interconnected activities' (p. 277), socially recognised as a way of ordering, stabilising collective action, and built around common orientation. The second focuses on sense-making, and the third on how practices connect with one another. Each has parallels in Schatzki's work, in the idea of practices as spaces of multiplicity

upheld by activities dispersed in time and space, in the idea of practices being shaped by what it makes sense for people to do, and in concepts of hanging together. In relation to this final point, what Gherardi (2006) refers to as 'texture' or connectedness in action addresses the question of relatedness that emerges as people perform their work. Schatzki's multiple notions of how practices hang together provide a different, but complementary, approach to addressing the same core issue. Both are tied to performance, both suggest that to understand practices we must not draw boundaries around single practices, but explore connections and relationships between them.

While there are clearly strong resonances between Schatzki's practice theory and the Italian-led approach to practice-based studies, I must also acknowledge their differences. Some of these are productive, in the sense that the approaches lead us down different lines of enquiry, elucidating features that might otherwise have been overlooked—in other words differences that can be mobilised through zooming in and out based on adoption of different lenses. However, others are more fundamental, and require a degree of appropriation on my part.

Schatzki's work is presented as a philosophy of social life. Questions of professional practices are rarely in focus for their own sake, and learning receives scant attention. On the other hand, practice-based studies developed through work dedicated to questions of knowing and learning in the context of (professional) work in organisations. This brings concepts that are crucial to this book into much sharper relief than in Schatzki's work. Indeed I found Gherardi's notion of texture more productive in my analysis for certain purposes than Schatzki's ideas of hanging together. Texture kept me closer to questions of knowing and learning, and provided the foundation for the idea of four essential dimensions that forms the focus of Part II. Similarly, the idea of aesthetics receives much richer and more explicit treatment in practice-based studies, again maintaining close connections to professional knowledge and learning (see below). Had I remained exclusively with Schatzki, much of value would have been missed. Each approach enables me to zoom in on different details of professional practices and learning on the Residential Unit, and to zoom out in different ways, seeing these details as part of a wider picture.

However, while both might be subsumed within a sociomaterial fold, and more specifically a 'practice turn', I must acknowledge some fundamental differences of position. Schatzki defends a residual humanism (see below), while Gherardi and others' work in practice-based studies draws on actor-network theory, which is post-humanist in its assumed symmetry between human and non-human (see Sayes 2014). This is not a merely aesthetic difference, but one which Schatzki (2005) argues is sufficient to claim ontological allegiance between approaches. Both propose a strong materiality, though the extent and form of this strength is different. To be clear, I adopt Schatzki's site ontology and follow his residual humanism in this book. In the way I mobilise concepts such as knowing in practice and aesthetics, a site ontology allows them to remain sufficiently in tact. Indeed I would suggest that the power, value and agility of such concepts is demonstrated through their being worked within a process of zooming in and out.

I have located this book within a broader sociomaterial turn, and more particularly within dual strands of a practice turn in contemporary social theory. So now I turn my attention to explaining in more the particular ontological stance upon which my work here is based, and introducing the key concepts that are drawn upon most prominently in the analysis presented in subsequent chapters.

A Schatzkian Approach to Theorising Practice

I will now explore Schatzki's practice theory as it relates to this book, beginning with a brief overview of his work. There are parallels between my approach and how Schatzki describes his engagement with the philosophers who inform his work: a *creative interpretation* of Wittgenstein (Schatzki 1996b), and *appropriative interpretation* of Heidegger (Schatzki 2010c). What follows is not an objective or neutral rendering of Schatzki's philosophy, but a selective account focusing on those ideas that have the most currency in the context of the analyses that follow. It reflects my interpretation of how these concepts can be put to work in empirical research. Such gainful use by empirical investigators is, after all, what Schatzki (2002, p. xviii) states that he hopes will be an outcome of his work. I begin by addressing foundational questions of ontology, and then outline how practices bundle with material arrangements, residual humanism and the idea of practical intelligibility, relationships between practices and activities, how practices are organised and hang together, and prefiguration, indeterminacy, stability and change.

Schatzki's work on practice theory goes back at least to his critique of Bourdieu (Schatzki 1987), and writing on issues of structure and agency (1990). Subsequent publications draw explicitly on Wittgenstein (Schatzki 1991, 1993), rehearsing the first of three major monographs (1996b). Bourdieu and Giddens remain key reference points in establishing the distinctiveness of his approach (1997), and Wittgenstein is sustained as a central foundation (2000b). His site ontology becomes highlighted more explicitly in a series of papers as part of an increasing emphasis on materiality in his work, along with his defence of a residual humanism (2000a, 2001b, 2002b, 2003, 2005, 2010a), which marks one of the key developments in his second monograph (2002a).

A greater interest in temporality and spatiality then emergences, through papers (Schatzki 2006a, b, 2009, 2010b, 2012c), and a book focused on Heidegger (2007b). A shift in focus from practices to human activity is clearly marked in his latest (2010c) monograph, which weaves through much of the Heideggarian work on temporality and spatiality. Some of his more recent works are more summative in nature (e.g. 2012b), while others take up questions of practice change more explicitly (2012a, 2013). Throughout this time, Schatzki has moved laterally, for example engaging with geographers to consider questions of the body and place (2001c). Of note are his (2001a) much-cited chapter within a volume he co-edited with Knorr Cetina and von Savigny, which outlines the broader landscape of practice theory approaches, an his (2007a) paper, offering a succinct account of the value of (his) practice theory over other approaches.

A Site Ontology

In this book I adopt Schatzki's site ontology. In particular, this means a focus on practices as they are inherently bundled with material arrangements, from which flow notions of performance or enactment that are consistent with a broader sociomaterial approach. I see Schatzki's sense of bundling as conveying relational forms that suit the metaphor of entanglement, rather than separate entities having some kind of a bearing on one another. In Schatzki practices are not a feature of reality, but bring reality into existence. Reality is enacted into being through the many activities that uphold practices. As I explained above, Schatzki is far from unique in adopting a view of reality as practised or enacted. However it is important to be clear about how my working with Schatzki involves a particular take on this broader sociomaterial commitment. I join Schatzki's defence of residual humanism as a necessary foundation for the concept of practical intelligibility, which proves highly fruitful in the analysis that follows in Parts II and III. I conclude this section by considering ways in which a site ontology resonates with (but no more) features of a diffractive approach (Barad 2007).

Schatzki's practice theory builds on what he calls a *site ontology* (or sometimes a social ontology). This stems from a view that practices should be treated as the fundamental social phenomenon (1996b). However, Schatzki's views of practices as materially mediated, and inherently bundled with material arrangements, means that he regards materiality as a dimension of social reality. Material arrangements do not simply exert an influence on social reality, they are part of it. To borrow Fenwick et al.'s (2011) terminology, all social reality is sociomaterial reality.

Schatzki writes that 'practices are *intrinsically* connected to and interwoven with objects… human activity implicates a world amid and with which it proceeds' (2002, p. 106 [my emphasis]). A site is a mesh of practices and arrangements of people, artefacts, organisms and things (i.e. materiality). Practices and material arrangements are viewed as dimensions, rather than separable components of a site (2003). 'To advocate a site ontology is to claim that the character and transformation of social life are inherently tied to the site of the social' (Schatzki 2003, p. 177). For me, this quotation translates into a position that says our questions about professional practice and learning must attend to the sites at which they unfold.

Consistent with the performative, non-representational principles discussed above, these sites comprise and *emerge* through practices and their shifting but ever-present and fundamental relationships with the material world. A practice happens at a site, produces it and is also moulded by it (2003). Thus in this book I do not treat the buildings and materialities of the Residential Unit as a site (in a physical container sense) in or with which professional practices proceed. Rather professional practices unfold as material accomplishments, amid material arrangements, and produce a site. Emergence is thus taken up as a key metaphor. At the same time, those practices are shaped by the site of which they are a constituent part. I will return to the notion of site in relation to fieldwork in Chap. 4 (see also Schmidt and Volbers 2011).

The question of how practices bundle with material arrangements is a crucial one. It connects directly with Schatzki's site ontology, but also expands on what makes Schatzki's position distinct from others. I will briefly outline the many ways in which Schatzki suggests practices 'bundle' with the material world of bodies, (other) organisms, artefacts and objects. As I mentioned previously, when viewed together, these forms of bundling create a sense of practices and materiality as being entangled, not relating from a distance. These are not all mobilised as distinctive key concepts in my subsequent analysis, but they do provide a basis for a more fine-grained understanding of Schatzki's site ontology. The most important concepts are those of bodily performance, practical intelligibility and prefiguration, each discussed further below. The list below draws from a range of texts (particularly Schatzki 2002a, 2005, 2010c), and sets these key ideas in a wider context.

- Practices bundle with material arrangements in the sense that both are dimensions of *sites* (see discussion of ontology above).
- Activities are always performed bodily. Every professional doing and saying is accomplished by a physical, tangible, material body.
- Practical intelligibility shapes which features of the material world are pertinent to practices, when, and how. This connects with Schatzki's notions of spatiality, and is a major conceptual feature of this book (discussed in greater detail below).
- Material arrangements can prefigure practice. This means that materiality shapes what it makes sense to do, makes certain actions more straightforward, likely to succeed, efficient, and so on. The architectural arrangements of client suites prefigure practices of settling in which professionals and parents retreat from the nursery to the corridor.
- Some practices can only be carried out with particular things in place (you can't rock a cot without a cot); other practices would assume a radically different form if materialities that are conventionally pervasive were removed or changed. If the clipcharts hanging by each nursery room door were taken out of the Residential Unit, a whole cascade of changes would take place, changing the character of practices. In these senses, materiality is co-constitutive of practices.
- Actions are performed amid, with, and attuned to material entities. Practices of supporting parents and children in play are performed *amid* the toys of the playroom in the sense the toys provide a setting, *with* those toys in the sense that they are used or folded into bodily doings and sayings, and are *attuned* to them in the sense that these relationships are not given, but rather emerge through interactions between toys and sense-making informed by professional expertise.
- People react to material events and states of affairs, including through causal mechanisms. When the sun sets, practices are triggered to manage the effects of outside darkness within the walls of the Unit.
- Materiality may fill out ends or purposes. Many practices on the Unit are directly related to changing something about the material world—for example the exchange of breast milk between mother and child.

- People are forced to negotiate the physicality of the material world, the physical properties of things matter, as matter. The physical composition of things has significance for social affairs, as, for example, when professionals on the Unit have to negotiate the materialities of sound, shape and distance, when working with families based in rooms on different corridors (helped, at least, by the switch from carpeted to plastic floors, which enables the sounds of cries to carry further and more sharply).

These ideas help make sense of the importance of materiality to professional practices and learning on the Residential Unit (see particularly Chap. 8). Chapter 7 expands significantly on the second point, bringing bodies into clear focus. Having introduced Schatzki's site ontology and his particular view of the relationship between practices and materiality, I can now turn to his defence of residual humanism, and the important concept of practical intelligibility.

Residual Humanism and Practical Intelligibility

Residual humanism refers to Schatzki's stance in relation to materiality, and whether any a prior distinction between human and non-human makes sense. His view, as I understand it, is that while a site ontology certainly presents a strong role for materiality in social phenomena, it does retain a distinction between the two. This distinction is not one of hard and fast boundaries between exclusive phenomena. It is one that accepts fuzzy and porous boundaries. 'Residual humanism' points to Schatzki's reluctance to step as far as others—perhaps labelled as 'post-humanists'—who argue that such distinctions are flawed, and propose a symmetry instead. Nicolini refers to Schatzki as an 'agential humanist', and summarises his interpretation of a Schatzki an ontology thus:

> Schatzki affirms that only humans carry out practices. While he concedes that artefacts do have agential power, he suggests that we need to keep human actions and material performatance distinct *at least for analytical purposes*. Although human activity implicates a world amid which it proceeds, and albeit materials do exert a direct impact on human action… the two are set apart by the notion of intelligibility, and the fact that only human actions can attribute intentionality and affectivity… his view is that human co-existence and organized phenomena emerge from a mesh of people, things and other entities. (2012 p. 169 [my emphasis])

I see consistency with Pickering's (1993, 1995, 2001) view that agency does not reside, pre-given, inherently in any being or object (human or otherwise), but emerges through relationships between the two. Again Nicolini captures the position succinctly:

> While human and non-human elements *are different*, in that intentional agency can be attributed to the former but not to the latter; such intentional agency does not emerge in a vacuum but within the temporally-emergent structure of real-time practices. (2012, p. 170 [emphasis in original])

Thus Pickering (1993, 1995, 2001) refers to a 'mangle' of practice, as actions and intentions emerge (more or less stable) together through shifting relations

between the social and material. Pickering suggests neither can prevail in determining what occurs, and on my reading Schatzki's view is similar: practices remain indeterminate, while some space is reserved for a human notion of intentionality.

I interpret Schatzki's argument thus: materiality exerts its force in social affairs largely by virtue of the way that it becomes intelligible in relation to particular unfolding practices. The meaning materiality has comes into being only as part of practices. Insofar as practices are carried out through bodily doings and sayings, and what it makes sense to do is shaped by ends, values and norms, then there is an asymmetry, an a priori role for human activity and sense-making. These ideas are captured in what Schatzki calls (1996b) *practical intelligibility*. Objects acquire meaning within practices, and these meanings are practical meanings (1996b). This concept proves important in understanding many features of professional practice and learning on the Residential Unit, including ways in which chairs 'act' when placed in corridors during settling, the importance of pens, signatures and signing (see also Hopwood 2014c), and the practical significance (in the sense of having meaning through and to practice) of dimmer switches, blocked out windows, bumps in the floor, mucus, expressed breast milk, and so on (see, in particular, Chap. 8).

Schatzki (2002b) holds that the general ends of practices govern the meaning and force that particular objects exert in social life. That material arrangements play such an important role is therefore due to practices, not something that objects force on humans (2002b). Hence the asymmetry, the residual humanism.

> Objects, if you will, make a contribution, but the nature of that contribution depends on us. Practices and the arrangements they establish, largely mediate the causal relevance of materiality for social life. (Schatzki 2002b, p. 117)

How material entities enable and constrain each other, and human activities, depends on their physical properties, yes, but also on the ways they become intelligible as part of practices. What a person wants, or is intending to do, shapes the relevance of certain physical properties to what is going on. A chair in a dining room may be intelligible within practices of eating simply as an object for sitting. However, the same chair placed in the corridor of the Residential Unit at three o'clock in the morning, is intelligible in a different way. Its invitation to sit means something different. It does work of normalising the time it can take to settle children. This is just one example of many discussed in Parts II and III, but suffices to illustrate the point. The same chair might be intelligible in many different ways when used by a toddler as a support to aid standing.

Notions of intelligibility and the meaning that material entities assume as part of practices, preserves a special role for human beings. As far as I am aware, post-humanist theories do not suggest that objects have agency in themselves, just like we traditionally think humans do. Rather they hold that what appears to be agency is an effect of assemblages that can never be located exclusively within human or non-human categories. Schatzki's view is similar in that it is concerned with relationships and enactment rather than entities. However he does suggest a special

role for human beings. My point is not so much that this is a truer or even better view than others. Rather it is one that I am drawn to, which makes sense to me, and most importantly, which proved highly fruitful in making sense of professional practices and learning in my ethnographic work. Other ideas that are both crucial features of Schatzki's wider framework, and important in the analysis presented in Parts II and III of this book concern the relationship between practices and activity, and it is to these that I now turn.

Practices and Activity

To understand how Schatzki's theory can be used in empirical, ethnographic research, we have to explore the relationship between practices and activity in his framework. One of the more often quoted phrases describes practices as 'embodied, materially mediated arrays of human activity centrally organised around shared practical understandings' (2001a, p. 2). We may immediately note the emphasis here on bodies and materiality—both are treated as omnipresent and foundational. The organising forces at work include practical understandings, as in the quotation, and also rules, teleoaffective structures, and general understandings (which I discuss below). Schatzki also describes practices as open, temporally unfolding and spatially distributed (e.g. 2002a, p. 20). Human beings coexist by virtue of participating in or relating to common social practices (2010c). To understand this, it is important to consider the relationship between practices and activities.

'Practice organisations circumscribe activity. In turn, activity maintains practice organisations' (Schatzki 2010c, p. 212). An activity can be performed by one person; practices are nexuses of many activities[6] (2012b), while any one activity may be performed by an individual. Activity, in Schatzki's terminology, denotes doings and sayings, both of which are performed bodily. Some activities further other, related activities. The activity of rocking a cot forwards and backwards contributes to the accomplishment of encouraging an infant to settle. Individual performances of these are activities; the spaces of multiplicity comprising many instances of such activities, dispersed in space and time, are the practices to which those activities relate. The practices are spaces of multiplicity because the activities need not be identical for them to uphold those wider practices. Practices depend on the ongoing performance of activities in order to continue to exist (Schatzki 2010c, 2012b, 2013). Practices also govern and shape activities. To practise cot rocking implies certain bodily doings. Each activity instantiates and upholds one (or more) social practice(s), while being shaped by them.

In Schatzki, activities share many of the properties of practices, including their inherent bundling with material arrangements. This is crucial, because activities

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[6]Note the difference here between Schatzki's use of the term 'activity' and the meaning of the term within Cultural Historical Activity Theory (CHAT), where 'activity' refers to collective, object-oriented efforts.

become a window onto wider practices. Practices cannot, by Schatzki's definition, be observed in a single moment. Activities, however, can. Because activities are expressions of the forces that organise practices, we can learn about practices by studying activities (see below). Each activity of settling an infant expresses the rules, practical and general understandings, and teleoaffective structures that govern the wider practices of settling. Thus in my ethnographic work, my role was to describe (and become entangled in, see Chap. 4) activities of the Unit. Empirical data relating to these activities provide a kind of 'clearing' through which light is shone upon professional *practices* on the Unit, particularly because so many activities were observed so many times. In turn, these practices provide a window onto the wider spaces of multiplicity that include practices performed by professionals in similar contexts, and practices associated with wider challenges and changes unfolding across many professions.

This logic underpins how Kemmis (Kemmis and Grootenboer 2008; Kemmis et al. 2014; see also Hopwood et al. 2013; Hopwood 2014c) argues that we can see 'big' forces, such as professional norms, ethics, regimes of accountability and so on, through 'small' instances. Indeed the two are so entangled it makes little sense to refer to them in this way. There are no 'big' forces or patterns outside of 'small' instances, and no 'small instances' that are not shaped by and contributing to those wider phenomena. It is thus that we can move from detailed empirical details from one particular 'site' to constructing answers to the much broader questions that I posed in Chap. 1—questions about the changing nature of professional practice, the role of professional expertise and learning in partnership-based work, and so on.

How Practices Are Organised and Hang Together

As we saw above, an activity, and its associated doings or sayings belong to a practice if they express components of that practice's *organisation*. I will now explain the four key components of this organising referred to in the quotation below:

> A practice is a temporally evolving, open-ended set of doings and sayings linked by practical understandings, rules, teleoaffective structures, and general understandings. (Schatzki 2002a, p. 87).

The notion of organising here has a sense of shaping or arranging, but also one of coexistence. Schatzki writes repeatedly of *hanging together* as a metaphor for how practices and activities relate to one another. This is deliberately non-hierarchical, imagining a (slightly thick) horizontal plane. Where practices (and the activities that uphold them) are governed by the same understandings, rules, or teleoaffective structures, they hang together through *commonality*. They may also hang together through *orchestration*, where some or all of those structures differ, but there remain non-independent relationships between them. The connections I describe in this book are largely those of commonality, given my empirical focus in such a contained professional setting. I expand on each of the organising forces below, as these are drawn upon in the analyses presented in Parts II and III. However I would signal that overall, Gherardi's notion of texture (connectedness

in action) is taken up more pervasively and deeply, including its expansion through the dimensions of times, spaces, bodies and things.

Practical understandings (Schatzki 1996a, b, 2002a, 2010c) denotes know-how that enables people to carry out actions that it makes sense to perform. They build on the ability to carry out bodily actions. A nurse on the Residential Unit knows how to rock a cot back and forth, pat a mattress, burp a baby, stand still and calm during settling or a tantrum, and so on. Of note is Schatzki's association of the word 'understandings' with the body. This points to his notion of the instrumental body (discussed below). But it also reflects the view that knowledge and understanding are not properties of the mind that are simply enacted by the body. Practical understandings also include dimensions such as rhythm, pace, tone, gesture, and more aesthetic qualities of bodily doings and sayings. In the context of professional practices described in this book, these aesthetic qualities are extremely important, hence I turn to Gherardi and Strati's work (see below).

By *rules*, Schatzki means formulations, principles, precepts, and instructions that enjoin, direct or remonstrate people to perform some actions and not others (2002a). These need not be rules set out explicitly as such. Indeed one of the ways normativity shapes what makes sense for people to do is through rules. What makes sense to someone to do need note quate to what is rational to do (2010c). Emotions may inflect the determination of practical , and thus also mediate the way in which rules and normativity shape practices. Linking back to the ideas prefiguration and indeterminacy, we can say that these do not determine activity, but rather forms part of the context in which people act, influencing what it makes sense to do. Rules, whether explicit and specific articulations, or more implicit and diffuse norms and traditions, do not determine what happens. Professional practices on the Residential Unit are organised by numerous rules, some of which become more apparent than others in the remainder of this book. There are rules relating to the operation of a 'well person facility', which organise practices of monitoring for signs of illness (see Chap. 6). There are rules relating to child protection, and forms of accountability that shape what is documented and signed off, when, and by whom (see also Hopwood 2014c).

The idea of *teleoaffective structures* refers to ends, purposes, projects, beliefs, and emotions that become normative in a practice. They shape questions of what is right to, what one ought to do (which in turn shape, but do not determine, what it makes sense to do) (1996b). To say a practice is shaped by a teleoaffective structure is not to say all participants in it share a uniform, singular collective set of ends. However, intentions and attachments are crucial to understanding how activities performed by different people hang together. On the Residential Unit, the idea of partnership, and in particular the Family Partnership Model (FPM; see Chap. 2) are significant features of such structures. In turn, they are part of values, ethics and a commitment to a sense of 'good' that are shared by professions across the Unit, and indeed services for children and families more widely. Significantly, the FPM attaches affective significance to, and orients practical intentions towards, not only the outcome of supporting families, but features of the process, too. For example, in partnership, professionals seek to ensure that parents feel listened to, and respected in empathetic, non-judgemental ways. We may note resonances here between Schatzki's concept and Gherardi and others' (Gherardi 2009; Gherardi et al. 2007)

emphasis on passion and passionate attachment in practice. This idea also comes up in relation to materiality, and the 'textured intimacy' between people and objects (see Jensen 2012; Knorr Cetina 2001; Knorr Cetina and Brueggar 2002; Miettinen and Virkkunen 2005; Nerland and Jensen 2012, 2014; and Chap. 8).

The concept of *general understandings* refers to understandings that we rely on in our recognition of certain practices (Schatzki 2002a). To recognise and agree that a particular practice is in evidence, we must draw on general understandings of what that practice constitutes. General understandings also refer to things like manners of conduct. This is thus a broader concept than the bodily know-how of practical understandings. In my (admittedly flexible) appropriation of the concept, I also include the sense of relatively stable professional knowledge bases. For example, there are understandings about child and family nursing that enable us to recognise practices as child and family nursing practices, and to distinguish them from other kinds of practices. There are understandings about what it means to act professionally as a child and family health nurse. And there are also understandings about anatomy, child development, attachment, and so on. While Schatzki doesn't (as far as I can tell) explicitly designate these within his organising forces, to me it makes sense to do so, and particularly proves fruitful in the analyses presented in Part III (see Hopwood et al. 2014 for further explanation and application of this idea).

Practical understandings, rules, teleoaffective structures, and general understandings all influence what it makes sense to do and how the material world becomes practically intelligible as practices unfold. Exactly what this 'influence' looks like, and how strong it is, brings us to consider Schatzki's concepts of prefiguration and indeterminacy.

Prefiguration and Indeterminacy, Stability and Change

A brief examination of agency within Schatzki's framework is an important prelude to understanding the concepts of prefiguration and indeterminacy. Schatzki argues that 'what people are capable of doing depends in part on the people, organisms, things, and artefacts around them' (2002a, p. 208). While he aims to 'vindicate the integrity and unique richness of human agency' (p. 193; further traces of his residual humanism are apparent here), such agency is contingent, not absolute. This clearly debunks any notion of a form of agency that stems from individuals *per se*. Agency is a relational, arising through, or an effect of, bundles of practices and material arrangements at particular sites. There is, as I have explained above, asymmetry here, a sense of capacity that people have to bring about to commence, continue or change events in the world (Schatzki 2002a, 2013).

Prefiguration refers to the ways in which bundles of practices and arrangements make particular courses of action easier, harder, simpler, more complicated, shorter, longer, ill-advised, promising of ruin or gain, riskier or safer, more or less feasible, and so on (see 2002a, p. 225). Prefiguration does not clear some paths and obliterate others, but rather figures them with different qualities or associated intelligibility in terms of what it makes sense to do. Courses of action can be made

more or less difficult, threatening, distinct, and so on. A nurse's route through the Unit may be prefigured by its spatial layout and its temporal routines, which shape whether families are likely to be in the dining room, playroom or nursery, and her purpose in seeking contact with families. Handover practices are prefigured in different ways and to different degrees—a feature I pick up in Chap. 9 through related notions of choreography in order to highlight the patterning of bodies, movements, spatial relations, rhythms and objects. This patterning is one of many instances and effect of prefiguration evidence in professional practices on the Residential Unit. Manidis and Scheeres (2013) see prefiguration as a central quality of practices, viewing it as key to understanding how practices prevail.

Indeterminacy brings questions of agency and prefiguration together. Schatzki (particularly 2002a, 2010c) argues that nothing determines what a person does before the act is done. By extension, whatever causes or leads to that action is not fixed until the moment of its performance. 'Until a person acts, it remains open just what he or she will have done' (2002a, p. 232). Indeterminacy gives practices and the future the openness that has been mentioned before, and retains important temporal qualities liked to intentionality that will be discussed below. While Schatzki accepts that people, and thus practices, are strongly shaped by normativity, there is always possibility for change (see also 2013). 'All the prefiguration in the world cannot sew up agency before it occurs' (2002a, p. 233). This brings us back to the metaphor of emergence: practices are not determined in advance, and the realities they produce therefore emerge.

The accounts I give in Parts II and III are *not* ones of wider change in the ways practices on the Unit unfold or organised, nor are there stories of individual pioneers trailblazing changes, deviating radically from the prefigured patterns and routines of their work. Indeed in some ways, the practices I describe are remarkably stable. However, Schatzki (2013) holds that stability and change are not the exclusive opposites of one another, but rather constantly co-occur (see also Price et al. 2012; Tsoukas and Chia 2002). Indeed as I introduce below, and elaborate in Chap 9, professional practices on the Unit unfold amid myriad subtle and less subtle, minor and less minor changes. I associate the maintenance of connectedness in action (texture), its repair, restoration and modification, and the production of new textures, with the idea of professional *learning*, when they further the ends of practices through meaningfully altered interpretations and actions. Thus Schatzki's notion of indeterminacy opens up a view of simultaneous instability and preservation of practices that, in turn, enables us to explore what and how professionals learn as they work (together). Having gone into some detail about Schatzki's practice theory, I now turn my attention to questions of knowledge, knowing and learning.

Theorising, Knowing and Learning in Professional Practice

In this section I continue to engage with existing theoretical literature, as a way to frame the theoretical aspects of this book, and introduce some of the key concepts that are drawn upon later. I shift now to focus on knowledge, knowing and learning.

I begin by describing recent shifts in workplace learning research, in which the metaphor of emergence has become prominent. This links directly to the changes and critiques at play in the broader sociomaterial agendas discussed above. I then address concepts of knowledge and professional expertise, knowing in practice, and aesthetics. Here, Schatzki is backgrounded somewhat, and the work of Jensen, Nerland, Gherardi, Strati and others is brought to the fore.

This book is located within, and contributes to, a distinctive approach to researching workplace learning, specifically learning in professional practice. This approach relates closely to the sociomaterial and practice turns outlined above, although it is in some ways broader than this. Emergence is taken up as a key metaphor of learning, rather than participation, or acquisition and transfer. Emergence points to complex temporalities, the non-specifiability of the knowledge needed to perform particular practices or carry out professional work, the role of judgement, and continual interpretation and reinterpretation that go on in practice, all of which give practices suspense and uncertainty. Drawing particularly on Hager's (2011, 2012) accounts of historical developments in workplace learning research, I will now provide more details, linking the discussion of practices to questions of learning.

Hager (2011) traces a series of shifts, initially from behaviourism to more cognitive approaches influenced by psychological theory, particularly those associated with Schön's work on reflective practice. The basis of this approach in acquisition and transfer metaphors of knowledge, the treatment of learning as a product or thing (often independent of context), and the individual as the primary unit of analysis, have all been targets for sustained criticism. In response, according to Hager's account, various sociocultural theories emerged. Rather than treating knowledge as an entity held by and transferred between individuals, different units of analysis were used, focusing more on collective and social dimensions, framed around a metaphor of participation (e.g. Lave 1988; Lave and Wenger 1991; Wenger 1998).

These approaches reject cognitive/technical rationality, and place emphasis on thinking and acting rather than acquiring knowledge. They extend the work of Dreyfus and Dreyfus (1988, 1999) in which the body emerged more strongly in accounts of learning and cognition (Dreyfus and Dreyfus 1999). This work formed a central feature in studies of organisational learning and situated cognition undertaken in Italy, by Gherardi and others (e.g. Gherardi 1995, 2000b), before their later turn towards actor-network theory and 'practice-based studies'. Hager (2011) locates Eraut's (2000, 2004a, b, 2007a, b) work within this tradition, alongside that of Billett (1998, 2006, 2009, 2010a, b, 2011, 2014; Billett and Somerville 2004; Billett and Smith 2010, 2014; Billett et al. 2005, 2014), Boreham and Morgan (2004), and some variants of activity theory (e.g. Blackler 1993, 1995; Guile and Young 1998). Some of the earlier work by Fuller et al. (2005, 2007) and Fuller and Unwin (2003) also demonstrates the insights afforded through theories of learning anchored to the idea of participation.

Hager (2011) frames this third trance around the central metaphor of emergence (see also Fenwick 2008). This is related to ideas of becoming, practice,

and temporal dimensions in fluid, ever-shifting contexts. He makes links between it and broader postmodern traditions, though I find the terms 'post-Cartesian' (used by Hager et al. 2012b) as this points more directly to the rejection of mind/body dualism (see below). Hager asks, if practices have emergent properties, why should the same not apply to learning? Practices and reality can be understood as co-emerging: practices unfold through actions, interactions and the assemblages they produce and are shaped by; social reality is a sociomaterial accomplishment, or emerging effect, of these practices.

Within this third tranche, Hager identifies learning-focused research informed by sociomaterial approaches including actor-network theory, practice theory, practice-based studies and (some variants of) cultural historical activity theory (CHAT). The latter seems apt given strong notions of material mediation (Engeström 1999, 2001, 2005, 2007, 2011; Engeström et al. 1999; Mäkitalo 2012), and emphasis on relationality (see Edwards 2005b, 2009, 2010; Edwards and Daniels 2012; Edwards and Darcy 2004; Edwards et al. 2009, 2010). The extensive work done in this guise has produced a rich and diverse literature, bringing a range of contemporary theories into contact with questions of learning and work. Some examples include: the actor-network theoretical work of Mulcahy (2012a, b, c, 2013), Somerville (2010), Aberton (2012b), Fenwick and Edwards (2010, 2012); the practice-based studies of Gherardi (2001, 2006, 2009a, b, c, 2012a, b; Gherardi and Strati 2012; Nicolini (2009a, b, 2011, 2012; Nicolini et al. 2003) and others, (as introduced above and discussed further below); the practice theoretical work brought together by Green (2009a, b, c), Green and Hopwood (2015a, b, c), Hager et al. (2012), and Kemmis et al. (2014); studies of epistemic cultures and practices by Jensen, Nerland and others (Jensen et al. 2012b; Nerland and Jensen 2012, 2014); and other work focusing on knowledge, knowing and materiality in organisations (Antonacopoulou 2008; Carlile et al. 2013a, b; Hydle and Breunig 2013; Orlikowski 2002, 2006, 2007; Orlikowski and Scott 2013; Orlikowski and Yates 2002; Tsoukas 2008, 2009; Sandberg and Tsoukas 2011). Shotter's (1996a, b, 2001, 2004, 2005, 2008, 2013) work is also of note. We might also note the uptake of such ideas in educational research more broadly (rather than specifically workplace learning), as illustrated in Nespor's (1994, 1997, 2002, 2012) and Sørensen's (2009) studies of formal education and Aberton's (2012a) work on learning in everyday community settings.

Gherardi writes that 'practice-based approaches to learning and knowing in organisations share a common interest in the construction and maintenance of shared orders as emergent phenomena and interactional effects' (2006, p. 52). Knowledge as possession, and learning as transfer of knowledge are almost atemporal in their conception, save perhaps a basic sequential chronology. Participation explicitly invokes temporality through notions of trajectories, strongly characterised by ideas of novices or apprentices learning to become full members of communities (reflecting the basis of much participation-focused work on studies of apprenticeship). Emergence opens up questions of time and temporality, and in particular challenges notions that learning required for successful performance in any occupation can be specified in advance. If practices are emergent, and their

emergence continually produces social realities, then learning must emerge with practice. While patterns and stabilities in social life and their prefiguring effects (see above) do not preclude us from anticipating how practices will unfold, we cannot fix what must be known in order to carry out work or a particular activity prior to its unfolding.

Hager (2011) concludes that one of the most significant outcomes of theoretical developments in this field has been the realisation that for any job to be performed, learning must be happening. Practices cannot go on for any sustained period without learning, irrespective of how experienced the practitioners are. As I discuss below, this does not mean that I collapse practice and learning into one another as concepts, nor do I argue that all activities undertaken in the conduct of professional work require and bring about learning. The concept of emergence gives us a coherent way into this view.

Professional practices are emergent phenomena. This emergence provides a constant pressure to learn. In Part III I discuss in particular how shifts to partnership-based approaches (as described in Chap. 2) intensify this learning imperative and infuse it with distinctive relational qualities. Hager (2012) argues that learning is an essential part of good practice. I interpret the word 'essential' here not only to mean necessary, but also in the sense 'is part of the essence of' (I use the term in the same way in reference to four essential dimensions of practice and learning, see below; also Hopwood 2014a). This point is echoed by Jensen et al. (2012a) who describe increasing requirements for professionals not only to apply or enact knowledge, but to participate in producing and sharing new knowledge. Practice is not held secure by a stable, fixed body of knowledge. Rather its accomplishment is responsive, unpredictable, and indeterminate. Professional practice cannot be conceived without learning (though this does not mean they should be conceived as synonymous or the same thing). Chapters 9 and 10 explicitly explore the learning that goes on as professional practices at Karitane unfold—the former focusing on what and how professionals learn from families and each other (through my expanded concepts of connectedness in action), the latter on the professional learning that is inherently interlaced with practices that are pedagogical in nature. Any discussion of learning must address questions of knowledge; when our focus is on learning in the process of work, then questions of professional expertise must also be in the frame. It is to these, and their connections, that I now turn.

Knowledge and Professional Expertise

Despite increasing reference to knowing (see below), there remains significant value in approaching questions of professional practice and learning with reference to knowledge (as a noun). This does not mean that we revert back to knowledge as an entity residing in individual heads, but it does mean that we can consider forms of expertise and understanding that are more or less stable, shared across communities, and to some degree characteristic of particular professions

and fields. For example, Guile (2012, 2014) talks about professional knowledge in terms of continuous recontextualisation, embedded in workplace practices and artefacts, used by professionals to address challenges that arise in the conduct of work. Drawing on CHAT, this does not cleave knowledge into some abstract, idealised entity wholly divorced from practice, but it does not rely on a wholly performative notion of knowing either. Guile offers valuable insights into forms of reasoning in theoretical and professional ways while retaining a strong grip on the notion of 'content' that has some meaning outside of in-the-moment actions (at least, this is my reading of his work).

Indeed Young and Muller position the whole volume (of which Guile's chapter is one contribution; Young and Muller 2014b) as putting 'the sociological study of professional knowledge into the centre of scholarly focus in research on professions and their formation' (2014a, p. 5). They add:

> We have noted in earlier work how the exclusive stress on the 'can do' side of knowledge… can impair educational provision. It is the distinctive socio-epistemic properties of different kinds and bodies of knowledge that are put to use by members of professions in problem-solving and other kinds knowledgeable practice that is our singular concern in this volume. (2014a, p. 5)

This statement is qualified by an explanation that this does not necessitate or imply a strong split between knowledge and action—something they acknowledge would be especially counterproductive in the context of professional knowledge. They write instead of a blurred continuum between the two, where distinctions are *analytical* (rather than, I assume, of an ontological nature). Their interest in the specialised knowledge involved in particular practices is located towards one end of this continuum, where I imagine notions of knowing in practice (Gherardi, Orlikowski and others, see below) might lie at the other. Perhaps in between these is the work of Jensen, Nerland and others. This is centred around ideas of epistemic cultures—those that create and warrant knowledge—and the epistemic or knowledge work that is wound up in professional practices, where expert knowledge is not always certain (see Jensen et al. 2012a). Nerland and Jensen (2014) write of professional knowledge cultures, understanding professional learning in relation to wider ecologies of knowledge and practice. They view ongoing participation in professional practices as conditional upon enrolment in collective but also specific ways of knowing—an enrolment that is never finished.[7]

Jensen et al.'s (2012b) volume reports outcomes of a large empirical project focused on learning and expertise in a range of professional contexts. They explore contemporary professional work in terms of engagement in knowledge practices that go way beyond application, but involve epistemic work of exploring, testing, validating, and sharing what is or comes to be known (Jensen et al. 2012b). They draw on Knorr Cetina's (1997, 1999, 2001; Knorr Cetina and Brueggar 2002) work, particularly concepts of epistemic cultures and objects, highlighting knowledge and

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[7]Interestingly, Gherardi and Perrota (2014) make a similar point relating to professional becoming as ongoing; they draw on a different notion of knowing, and place greater emphasis on tensions and contradictions.

knowledge work as phenomena that bind professions and professionals together. As Lahn (2012) notes, this avoids the performative inscription of 'knowing', but shares a strong materiality with a broader sociomaterial and practice perspective, and close connection to unfolding action. Their analysis opens up fascinating questions about passionate attachment to knowledge and objects (Jensen 2012), non-knowledge and linked notions of awareness, intentionality and stability (Jensen and Christiansen 2012), and how workplaces may stimulate and support professional learning through a match between knowledge practices and knowledge resources (Klette and Carlsten 2012; Klette and Smeby 2012). Nerland's (2012) piece clearly eschews an individual unit of analysis, and also steps away from social participation as a metaphor, engaging instead with questions of professional knowledge and learning in terms of temporality and spatiality, mediation, and circulation.

Young and Muller (2014) find Jensen et al.'s (2012b) work rather too far in the direction of 'can do' and 'practice' of knowledge-based professions. However, as I see it, both bodies of work share a commitment to, and beautifully illustrate, the value of working with the concept of knowledge in sociomaterial research on professional practices and learning. In particular this speaks strongly to the issues raised in Young and Muller's introduction:

> In the present climate of the 'knowledge economy', 'knowledge work' and 'expert occupations', there is simultaneously concern about the increase in the riskiness of professional judgement, the threat that codification and standardisation poses to the autonomy and discretion of the traditional 'liberal' professional, and a residual suspicion about the probity and trustworthiness of all professions and professional judgement. (2014, p. 4)

Thus, in this book I do work with the concept of professional knowledge. It provides a coherent basis for my appropriation of Schatzki's (2002) idea of 'general understandings' (see above), and enables me to elucidate features of professional expertise and learning that would not be apparent if I was tied exclusively to performative notions of knowing. This is not about hedging my theoretical bets, or seeking to produce a hybrid compromise. It is about being playful and agile, drawing on varied concepts as long as they enrich the analysis, and share a consistent basis within broader sociomaterial canons. In the next subsection I will outline features of the more performative concept, knowing, as these too provide an important reference in the remainder of this book.

Knowing in Practice

Performative concepts of know*ing* are a hallmark of a significant body of research on professional practice and learning. This is so particularly within the fold of practice-based studies associated with Gherardi, Strati, Bruni and Nicolini, but also with the work of Orlikowski, which similarly comes out of organisational studies. The essence of the idea is this: rather than conceiving of knowledge, something that is held, we conceive of knowing, something that is done—a shift from noun to verb (see Gherardi and Nicolini (2000) for an early adumbration of

the idea). Given this has developed within sociomaterial and practice-based traditions, this doing is understood as a doing together, and one that is never separated from materiality. Thus knowing is treated as a phenomenon that emerges through fluid relationships that are established (and I would add, unravelled, repaired, restored, modified) in practice. "The study of knowing in practice prefers action verbs to transmit the idea of an emergent reality, of knowing as a material activity" (Corradi et al. 2010). This is a foundation for much of this book, particularly Part II, which takes up the idea of texture or connectedness in action—ideas for which knowing in practice is a crucial basis.

I will now explain the idea in more detail, pointing to some of the premises behind it, and its important implications. There is now a large literature around this concept and its application in research, and I make no attempt to capture this here. Instead I focus on those aspects that feed most directly into the analyses that follow in Parts II and III.

Gherardi et al. (2007) write that (organisational) knowledge is not solely mental, it does not reside in the brain of the human body, nor does the body serve as its instrument. This is an important starting point, as it locates us firmly in a post-Cartesian terrain in which mind/body dualisms are dismantled (see Hodkinson (2005) for a discussion of mind and body as a troubling dualism in our understanding of learning). Bruni et al. offer a powerful introduction to the idea of knowing in practice:

> When we conceive knowledge as a substance, we see it as materialised in objects; when we conceive it as a property, we see it as owned by individuals. (2007, p. 85)

They argue that the concept of practice provides a way to theorising knowing and work, enabling us to capture the materiality and indeterminacy of specific forms of knowing. The echoes of sociomaterialism (as I outlined it above) are loud and clear here. Corradi et al. (2010) suggest that practices constitutes the topos that ties knowing to doing (here I understand topos close to its original Greek sense of 'place' or 'site'). Knowing is structured in practice through relation to the objects and artefacts that are folded into professionals' everyday work.

Nicolini's writing on this concept conveys many aspects that are highly relevant to the way I take it up in this book. He notes:

> Knowing, for example, transpires particularly through the sayings and doings, the tempo and rhythm of the practice, the objects used in the course of the activity, the interactional order and accountability regime, and how deviations and innovations are taken into account and dealt with. (2011, p. 609)

Of note here are the explicit links he makes with ideas of 'doings and sayings' (Schatzki's vocabulary is echoed here), and temporality and rhythm—ideas taken up in Chap. 5. His focus on objects and accountability rehearses the way I explore questions of partnership, responsibility and signatures (Hopwood 2014c). It is important also to acknowledge that knowing in practice is not exclusively a concept associated with Gherardi and her co-authors. Orlikowski (2002, 2006, 2007; Orlikowski and Scott 2013; Orlikowski and Yates 2002) has also written extensively on this idea. She writes:

> Knowing is not a static embedded capability or stable disposition of actors, but rather an ongoing social accomplishment, constituted and reconstituted as actors engage the world in practice. (2002, p. 249)

The parallels with the Gherardian idea are evident: knowledge is produced and reproduced in social practices, 'always in the making' (2006, p. 460). My understanding, use and appropriation of the idea is informed much more heavily by Gherardi's work, hence my primary reference to her and her colleagues' texts.

Adopting the concept of knowing in practice means we let go of knowledge as mental substance, and instead focus on the practical accomplishment of knowing, tracing what people do together, materially (Gherardi 2006). The researcher interested in questions of expertise and learning, therefore, focuses on the doing, and the materiality of social relations (Gherardi and Nicolini 2002). As practitioners perform the activities that uphold or reproduce practices, they embody and enact the knowing required to do so. However, the indeterminacy of practices (note the parallels with Schatzki; see above), means that practice and knowing are mutually constituted, each shaping and shaped by the other. Where Schatzki (1996b) refers to what it makes sense for someone to do, Gherardi (2006) refers to a 'situational logic resulting from the connections in practice among practitioners, artefacts, context and the normative and aesthetic codes which sustain the performance of practice' (2006, p. 230).

Here the notion of connections comes into sharper view. Gherardi's (2006) concept of texture or connectedness in action, is a major conceptual anchor for my work in this book. She holds that practices are nested with each other, forming a texture that may be locally dense to varying degrees. Schatzki (2002b, see above) conceives practices as hanging together through shared practical and general understandings. I see Gherardi's notion of texture as occupying similar conceptual terrain. Both point explicitly to questions of knowing, tied intimately to the 'action' of unfolding practice, both heavy with materiality and bodies. To me, the idea of connectedness in action is wonderfully open and fluid. Indeed, Part II is devoted largely to expanding this concept as a means to understand professional practices and learning, by teasing out four essential dimensions of texture (times, spaces, bodies and things).

I introduce these in the next main section, but before this I draw out a key feature of practice-based approaches to conceiving knowing: aesthetics. Insofar as I mobilise the concept in this book, it does not sew up questions of practice, knowing and learning by enabling us to collapse one onto the other, to use them interchangeably—these are issues I take up in the final section of this chapter.

Aesthetics

Schatzki (1996b) refers explicitly to aesthetic qualities of bodily doings and sayings, and to practical understandings (bodily know-how) including aspects such as rhythm, pace, tone, gesture and so on. Attending to aesthetics is a crucial part

of a broader countering of technical and rationalist approaches to understanding professional practice, learning and expertise—a critical disruption that is central to the sociomaterial and practice theoretical agenda (this carries forward to my argument about the nature and place of critique in this book, discussed in Chap. 4). However, despite his explicitness, Schatzki does not develop this point in great detail. Fortunately, aesthetics is brought into sharp and nuanced focus within practice-based studies in a Stratian and Gherardian guise.

As mentioned above, aesthetic codes are viewed as one form or source of connection among practitioners, objects and wider context (Gherardi 2006). Here, aesthetics is imbued with particular meaning—in fact, meaning that makes it broader than its everyday usage, which is often focused on (visual) judgements or appreciation of beauty. Aesthetics refers to having an eye, ear, nose (and so on) for particular features of practice which may be tangible or intangible, explicitly articulated or otherwise (Strati 2003). Through an aesthetic lens we can value the corporeal and interpersonal nature of knowing—rejecting Cartesian mind/body dualism and notions of knowledge being held in individual minds, and implemented in a rational process of cognition translated into action.

Gherardi et al. (2007) highlight the salience of aesthetic ways of knowing, sensory work, and expressions of judgement based on taste (see also Gherardi 2009c). Knowing in practice incorporates (the corporeality here is deliberate) knowledge gained through the senses, and aesthetic judgments made as people go about practices (Corradi et al. 2010). Strati's (1992) describes two offices, and compares them on an aesthetic basis. In doing so he drew attention to the fact that professional practices and organisations are not devoid of questions of beauty, the sublime, sacred, graceful, ugly and picturesque. As he later notes, aesthetics pervades everyday life in workplaces (2008). It is important to note that Strati's (1992) account documents not only the physical environment, but also the aesthetic qualities of actions—doings and sayings. Aesthetics are not confined to questions of artwork hanging on walls, or architectural design. They are lived, spoken, done, performed, practiced.

Strati (2003) illustrates his meaning through an example of men working on a roof at a construction site. The aesthetic dimension of what he observed included their confidence in footwork, posture, manual dexterity, speed in movement, individual and shared rhythms, focus of attention, gesticulations as communication, and changing positions and postures in order to assist and work with others. Another example concerns how a skilled surgeon uses a scalpel, making precise changes to position, pressure, speed of movements in response to cues sensed through vision, touch, ears, and so on. Immediately we get a sense of how aesthetic knowing and judgement are enacted, in movement, fused with objects and other people. Indeed Strati is explicit in his argument that attending to aesthetic dimensions leads us to understand knowledge as interpersonal and enacted, not residing within individuals' heads.

Aesthetic judgments are not just about what we sense, how we sense, what we feel, how we move, how we speak, our sense of taste. The idea thus disrupts a reliance on cognition in rationalist or mental models, and thus knowledge, or

knowing-in-practice are not just about the way we think, but also are formed, sustained and enacted through sensory faculties and associated judgements. Schatzki's ideas of practical and general understandings do not fall into the traps of cognitive rationalism, and have strong embodied qualities. I argue that the elements that Strati describes as aesthetic have a comfortable place in Schatzki's idea of the forms of understanding that organise practices.

Strati (2005) connects questions of aesthetics with issues of materiality. The aesthetic dimension of an artefact can stimulate our senses and taste. With a practice-based approach, aesthetic questions pertain to artefacts in their 'being-in-use', not as static entities. Here I see clear parallels with Schatzki's idea that we treat materiality in terms of its pertinence to or involvement in practices, and his notion of practical intelligibility. For example, the chair placed in the corridor in the middle of the night enacted aesthetically as a means to de-pathologise children's night waking and the time taken to resettle them: the pedagogical effect of the chair has a profoundly aesthetic and material basis.

An aesthetic sensibility in our research means that we may approach questions of practices and learning as (inter)corporeal and multi-sensorial (Strati 2007). This resists the privileging of sight as we also consider postures, movements, sounds, touch, smells—all highlighted in Parts II and III of this book. This requires forms of evocative and metaphorical expression that counter scientific reductionism and formalisation. I seek to address this in the chapters that follow through the presentation of vignettes, accounts based on my observations, and through visual representations, particularly line drawings based on photographs. These deliberately depict certain features of bodies and materiality, evoking aesthetic senses of poise, posture, calm, and so on.

Strati (2008) notes a legitimacy that is now given to the study of aesthetic dimensions of organisational life and practices. Corradi et al. (2010) outline how practice-based approaches have stressed that learning and knowing have aesthetic and not just cognitive dimensions. Crucially aesthetic attention requires researchers to attend to bodies, in particular material bodies. More recently, Gherardi and Strati (2012) articulate the value of a practice-based lens precisely in terms of the emphasis it places on aesthetic as well as cognitive dimensions, wherein these imply collective (in the sense not individually isolated) forms of sensory awareness, qualitative judgement, bodily doings and sayings, and material artefacts, involved together in establishing and maintaining aesthetic order as an inherent part of social practices.

A sensibility to aesthetics pervades much of what follows in this book, including the basis for discerning and changing rhythms (Chap. 5), production of spaces of pedagogy through finely attuned body geometries, postures, and gestures (Chaps. 6 and 7), and materialisations of aesthetic readings of children's behaviour (Chap. 8). Furthermore, Part III weaves these threads into accounts more sharply focused on professional learning.

Four Essential Dimensions of Professional Practice and Learning

In this section, I will draw out threads from the previous discussion of sociomaterial, practice-theoretical and practice-based approaches in order to rehearse some of the key arguments that are developed in full in Parts II. This begins with a mapping out of the four essential dimensions that form the focus of Chaps. 5–8 respectively, and which expand on a Gherardian notion of texture, or connectedness in action. Empirical substantiation and illustration of these is put on hold for now: the purpose here is to locate the ideas within the broader theoretical terrain that I have explored above, and to foreground some of the important ideas from other, related, literatures that are brought to bear in the detailed analyses that follow. In the following section I anticipate the theoretical foundations for and arguments developed through Part III by making explicit my stance on the relationship between practice and learning, and by introducing the basic Vygotskian concepts built upon in Chap. 10.

Part II of this book explores times, spaces, bodies and things as four *essential* dimensions of professional practice and learning. This builds on and significantly expands my initial working through of this idea (Hopwood 2014a). Gherardi's (2006) notion of texture provides a key conceptual anchor here: the four dimensions all relate to connectedness in action, and professional learning in practice is understood in terms of the development, maintenance, modification, restoration and repair of textures (see below, and Part III). Each dimension is resourced by a range of theoretical and empirical work, including that of Schatzki, but also drawing on critical cultural geographies (Massey 2005; Thrift 2004, 2006, 2007), feminist approaches to embodiment (Grosz 1994; Haraway 1991), and so on. The following sections take each dimension in turn, mapping this rich theoretical resourcing. I follow Jackson and Mazzei (2013) and Nicolini (2009b) in arguing that such an approach—combining eclecticism with informed selectivity—adds significant value to the analysis.

I must clarify what I mean when I say the four dimensions are *essential*. This has two aspects. The first is that they constitute practice texture: they are its essence. Connectedness in action is constituted in times, spaces, bodies, and things—all multiple, enacted, fluid relational accomplishments, as consisted with a site ontology (Schatzki 2003). Schatzki writes that timespace is a "central constitutive feature *of* human activity, where by 'constitutive' I mean helping to make up what something, in this case activity, essentially is" (2010, p. ix). I am adding bodies and things to this notion of essential constitution. The second is that they are non-optional. I argue that there are no textures of practices outside of times, spaces, bodies and things. Connectedness in these four dimensions is essential. Put differently, the dimensions are essential in the sense that if one was taken away, the practices to which they relate would collapse. This is a bold claim, but it is one that flows out of much writing on sociomateriality (as I will show below).

The obvious question is, why only four dimensions? There may well be others, as I acknowledged previously (Hopwood 2014c). A prime contender for a fifth dimension might be affect. My sense of the rich emerging literature on affective economies (see for example Ahmed 2004) and the ways in which sociomaterialists are taking up questions of affect in relation to knowing and materiality (see Edwards and Daniels 2012; Knorr Cetina 1997, 1999, 2001; Knorr Cetina and Brueggar 2002; Jensen 2012; Miettinen and Virkkunen 2005), leads me to conclude there is much to say here—more than I could do justice to in this book without it becoming overwhelming. Its absence from my framework here and subsequent analysis is not so much a considered, empirically supported rejection, as a question of economy and scope. I had to draw boundaries around the focus of this book somewhere.

Before delving into each of the four dimensions, I must comment briefly on their separation. As discussed in Chap. 1, exploring each of the dimensions separately (as I do in Part II, and in the conceptual introductions below), is both powerful and awkward at the same time. The power lies in the way in which each constitutes a distinctive and richly resourced analytical point of departure. By holding, for example, times relatively still and central in our gaze, we can notice things about professional practices that might otherwise be overlooked. When we switch to focus on spaces, it is not that times (and other dimensions) are evacuated, but again we are cued to, become sensitive to, other features. The awkwardness stems from very clear theoretical foundations that challenge the very notion of such separation: times are not aspatial, bodies are also things, and so on. Goodwin's (2007) account of practices and knowledge in anaesthetic work illustrates this clearly. Having discussed these slippages in more detail in Chap. 1, and because I acknowledge them throughout Part II, I will say little more here, other than to reinforce the point that the outline I provide below is one of analytical distillation or perhaps diffraction, to borrow Barad's vocabulary: a way of exploring entanglements that is at the same time false in its tidiness.

As a segue to the discussion of each dimension below, I will quote Nicolini. He points to times, spaces, bodies, and things (as well as affect and other issues), and highlights how paying attention to them underpins the broader intervention and critique constituted in sociomaterial perspectives and practice turns. The quotation also highlights how the four dimensions that I discuss are not additions to existing thought from outside, but rather come from within. This is a point that the following sections will further elucidate.

> The view offered here instead locates knowing both in the doings and sayings and in the body, artefacts, habits, and preoccupations that populate the life of organizational members. In this way, the idea of practice as the site of knowing offers a vastly richer picture of both knowing and organising. It is one in which materiality, spaces, time, the body, affectivity, interests, and preoccupations are given prominence and explanatory power. It draws attention to a variety of aspects that are usually bracketed or not taken into consideration by the sense-making and distributed cognition traditions, starting from the fact that the hard work of interlocking behaviours is often delegated to such mundane objects as a well-designed piece of paper, as in the example above. In other words, claiming that practice constitutes the site of knowing contributes to understanding cognition as being not only among people but also, in effect, down to earth. (Nicolini 2011, p. 617)

Times

Times as a dimension of practice texture has a number of crucial meanings, many of which carry through each of the other dimensions. I see times as plural and enacted, not singular, given, entities. Rather than seeing time as something that practices take or use up, I follow others in understanding times as produced through practices. In this sense times must be, by definition, also spatial, embodied and material. I will begin by outlining the aspects of Schatzki's practice theoretical view of times as they are pertinent to this book—linking the previous broader discussion with the detailed empirical analysis that follows in Part II.

While Schatzki, like others (myself included), rejects a fundamental separation between ontologies and concepts of time and space, he does entertain the value in approaching them separately. The notion of activities and practices as temporalspatial emerges strongly in Schatzki's later work, which shifts from a Wittgensteinian basis to one more closely informed by Heidegger (Schatzki 2007b, 2009, 2010c, 2012b, c, 2013). Schatzki holds that times have a bearing on practices, and practices produce times.

Schatzki suggests temporality is not marked by succession—what follows what on a linear trajectory marked by relentless forward motion of clock time. Instead he suggests temporality is always a question of past, present and future, drawing on Bergson's idea that these occur 'at a single stroke'. Temporality and teleology are entwined: each action is performed from the past, now, towards the future. In every doing and saying we are already in the world: 'so long as a person acts, she is sensitive and responsive to states of the world and pursues possibilities' (1996b, p. 171). We also always act ahead of ourselves towards something.[8] 'The temporality of activity is thus acting amid entities toward an end from what motivates' (2010c, p. 29).

Activity time is one of several terms Schatzki uses to move away from the notion of objective time (2006b, 2007b; see also Tretter 2008). Objective time is linear, singular, inevitable and used up. Activity time is wound up in the unfolding of activity events which exhibit temporal features such as rhythm and patterning through their coordination (Schatzki 2006a). Elsewhere (2006b) this is also referred to as the time of ongoing human activity, human time, and related to what other thinkers have called lived time, in contrast to world or physical time (see also Schatzki 2009). In Chap. 5 I explore how practices on the Unit enact time as if it is it objective, but then move on to examine textures that reflect more fluid and multiple notions of activity time.

As a dimension of practices, the notion of times thus pulls strongly towards notions of enactment. The work of Shove (2009) and others (Shove et al. 2009a, b) highlights the way in which contemporary approaches, focusing on practices and materiality, embrace temporality. Rather than practices being linked within a single

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[8]Key concepts include Schatzki's take-up of Heidegger's thrownness and projection; however these are not so crucial in my subsequent analysis, so I gloss over them here.

objective time, practices produce multiple times that co-exist. Gherardi (2009a, 2012; see also Gherardi and Strati 1988) argues that temporality emerges through activities performed and the objects woven into these performances. We can, she suggests, go 'inside' practices to understand the various orders that are produced through them. Times come from within, rather than existing without. Barad (2007) rejects a string-like notion of time, but rather talks of entanglement (particularly with regard to temporalities of causality). Again multiplicity and enactment are foregrounded in place of singular, linear, and container metaphors.

My working with times as an essential dimension draws heavily on Lefebvre's (2004) rhythmanalysis. Schatzki (2010c) offers a substantial account of the promise of rhythmanalysis in direct relation to his work. Thus I take up rhythmanalysis as a complementary analytical toolkit, offering a range of concepts and forms of empirical sensibility that enrich exploration of the temporal dimension of professional practices and learning (see also Hopwood 2014b). Lefebvre suggests rhythmanalysis helps us attend to the 'concrete universal that philosophical systems have lacked, that political organisations have forgotten, but which is lived, tested, touched in the sensible and the corporeal' (2004, p. 45). Through associated concepts, questions of times become nuanced in reference to notions of similarity and difference, secret and public, the body, dressage, aesthetic qualities of performances, and materiality.

Thus taking times as a point of departure does not betray the fundamental rejection of exclusive separation between the four dimensions. Indeed, through times, we are able to explore spaces, bodies, and things in distinctive and informative ways. These key ideas are revisited in Chap. 5, when specific concepts are entangled with empirical data, and with questions of space.

Spaces

The meaning of spaces as an essential dimension mirrors many of the key points developed in relation to times. Rather than seeing space as a singular, fixed contained for practices, I follow others in understanding spaces as plural, fluid, and enacted. Schatzki (1996b) writes of practices 'opening up' a type of space. The idea of spaces as produced through practices or activity is by no means a new one, particularly within critical cultural geography (see Lefebvre 1991; Soja 1996). Indeed commentators have written of a 'spatial turn', a widespread shifting of attention to space as a corrective to dominant tendencies to foreground history and sociality (see Thrift 2006). Familiar as the notion may be, it remains hugely powerful, and is central to both the ontological commitments of sociomaterialism, and the distinctive value that contemporary practice approaches to researching professional work and learning offer. Fuller and Unwin (2011) are keen to unlock the secret spaces of work, suggesting sophisticated tools are required to do this.

While the notion of space(s) as produced is established, sociomaterial approaches have expanded our understanding of how this happens and why it is

important for questions relating to professional practice and learning. Space can be understood as an effect of heterogeneous material relations (Fenwick et al. 2011). This foregrounds materiality in conceptions of space, but in an active, plural and fluid way, rather than as a 'dead' kind of container. Approached from a non-representational perspective, the concept of space takes on exciting new meanings. As Thrift (2004, 2006) writes, we can turn away from space as a search for authenticity, as separate from movement, and from time (see below). All spaces are understood as 'shot through' with other spaces, replacing clean, exclusive boundaries with porous and fluid edges. All spaces are understood to be in constant motion, always open, and multiple in nature. The mobility and multiplicity of space is prominent in Massey's (2005) notion of space as a coming together of trajectories (an idea I take up in Chap. 6).

Schatzki's practice theory adopts a particular view of space that is consistent with the position I've outlined above. A brief consideration of this is helpful in framing some of the links between spaces, practices, and the other dimensions of times, bodies, and things. Schatzki's most detailed discussions of space come later in his work, when Heidegger is a stronger influence. Here space is understood in terms of its involvement in or pertinence to practice, its being at hand in some unfolding activity (2010c). Distance is not conceived in Euclidian terms across two points in space. Instead, some*thing* is near to the extent that it is woven into ongoing activity in some way (see above for a discussion of the forms such relationships may take). This is important, for example, when one considers how the playroom can be produced as many different kinds of spaces: a space of play, a space of relaxation, and so on. In practices of play, certain materialities of the playroom are 'near', while in practices of relaxation, they are (practically) far, and others move closer (see Chap. 6). In Schatzki space is not objective, but tied fundamentally to practice. As practices as spaces of multiplicity, so multiple spaces are produced or opened up through practices. These may be in the same physical location, and may occur simultaneously.

This brings us to questions of relationships between times and spaces. 'Spatiality reflects temporality but spatiality also determines temporality' (Schatzki 2010c, p. 171). Here, Schatzki means that the practical nearness of something, its folding into ongoing activity, cannot be separated from the ends towards which that activity is oriented—hence from its activity time(s). In Schatzki, therefore, space and time are unified through teleology (more vestiges of his residual humanism are apparent here, see above).

In Schatzki, spaces and times are not conceived separately, although as we have seen, we can approach them somewhat distinctively as concepts. Both are viewed as inherent constitutive dimensions of reality, not containers for it. The list of scholars who have similarly rejected the notions of space as what remains when time is frozen and time as extending aspatially (see Lefebvre (1991), Massey (2005), Soja (1996)—examples that are woven into this book). Expressing this idea in close relation to the notion of enactment, Cooren et al. (2005) write of spac*ing* and *timing* as hybrid achievements: spaces and times are done, together.

Schatzki does identify a lacuna in Heidegger's philosophy as a basis for his own work on time and space, namely a lack of clarity around the human body and how it is tied up with questions of time and space (2010c). Hence, in Chap. 6, I return to Lefebvre's (2004) work and draw on rhythmic concepts of secret and public, as through rhythmanalysis we not only find rich connections with notions of times, but also those of bodies. Again, we find that by foreground ideas of spaces, we are led to important ideas that are not necessarily so readily apparent in consideration of spaces. Chapter 6 revisits the key ideas outlined above, and entangles them with the practices, bodies, materialities, and times of the Residential Unit.

Bodies

And so we come to bodies. First, let us address the issue of multiplicity, which applies here just as it does with times and spaces, and for the same fundamental reasons. Mol (2002) expresses the idea of the 'body multiple' in her delicate (actor-network theory informed) analysis of practices concerned atherosclerosis. I join many sociomaterialists in understanding the body as enacted into being, rather than a given biological entity.[9] As Mol and Law (2004) put it: we *do* our bodies. Thus when I explore bodies in relation to professional practice and learning, my interest is not in describing bodily features, but rather bodily *performances*—on how professionals do their bodies. Chapter 7 is chiefly occupied with highlighting the body work involved in accomplishment of professional practices on the Residential Unit, and by extension, in the production of embodied connectedness in action.

A second point, and one that again pulls out threads from the previous discussion of times and spaces, is that viewing bodies as enacted also entails adopting a relational perspective. If we explore bodily performances, then we must always be looking at bodies in relation to other bodies and other things (for bodies are also material presences). Thus, Chap. 7 begins by taking up a spatial theme, examining body geometries as a form of texture.

Schatzki (1993, 1996b), Schatzki and Natter (1996) presents a particular view of the body within his broader practice theory. In particular he distinguishes:

- *Being a body*—the body that we are, that aligns with our sense of self and being; this is the body that 'does' for us in what feels like an automatic way: we don't try to see when we open our eyes, we don't think about moving our legs when we walk. To be a body is also to experience bodily sensations and feelings.
- *Having a body*—the body that we become aware of in moments of struggle, discomfort, or breakdown; the fact that one is a body becomes manifest explicitly: when we lose our balance, strain to hear, squint our eyes to see in the dark, when we ache after hours of cot rocking, and so on.

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[9]I also join many in a move away from notions of the body as a discursive construction or product of discourse.

- *The instrumental body*—this is the body that we put to use in the service of other doings; the body that moves the pen as we sign a document or write progress notes, the body that holds objects in finely tuned balance and relation to each other when pouring and measuring expressed breast milk.

This framework is, as I see it, another way of viewing bodies as *done* in multiple ways, and traces of each permeate Chap. 7. Related to this is another tri-partite view: Green and Hopwood's (2015b) notions of body as background, resource and metaphor. Broadly, the first two parallel Schatzki's being and having a body. The third is somewhat different, but usefully brings us into connection with other features of a sociomaterial approach to understanding professional practice and learning, and wider literatures that resource the analysis presented in Chap. 7.

The body as metaphor points to the way that thinking and writing about the body frequently relies on imagery, conceptual standing in and differentiation. Most prominently, it refers to Cartesian mind/body dualism, in which the two are viewed as separate, the ethereal mind contained 'within' the physical body, the body acting at the will of the mind. The same metaphor underpins problematic notions of the mind as rational, and the body as emotional, source of affective interference. Through this mind and body take on metaphorical association with male and female. Thus Turner (2007) refers to epistemological and political failures inherent in ways of thinking that have Cartesian dualism as their basis.

The role of bodies in learning and practice is obvious (Barnacle 2009); one cannot act in the world as a 'brain in a vat'. The subjugation of the bodily to the mental or verbal is epistemologically fallacious and contradicts our experience of the body as a lived reality (Jackson 1983). However Dale (2001, cited in Haynes 2008) argues that 'scientific' knowledge writes out the body in the deployment of rationality and objectivity. Professional practices have been encoded as mindful and bodyless, performed by 'empty workers' (Acker 1990), and many accounts of professional practice are 'virtually bodiless' (Ellingson 2006; see also 2015). Shapin's (2010) account of scientific practices was a response to precisely these oversights. Such somatophobia reflects perceived dangers of the body and its threats to rationality through association with the feminine (Grosz 1994; Swan 2005). The metaphorical codification of the body as purely biological, devoid of expertise, haunts us as intellectuals (Boyer 2005)

Placing bodies at the centre of an analysis of professional practices and learning thus constitutes radically different basis (Macintyre Latta and Buck 2008), and contributes the form of critique and intervention that underpin and motivate this book (see Chap. 1). This agenda has been taken up recently as an explicit focus of an edited volume, dedicated to exploring the body in professional practice, learning and education (Green and Hopwood 2015a, b, c). Paying attention to the body so it ceases to be an absent presence (Shilling 2003, 2005) in accounts of social life, is now a hallmark of a diverse literature across philosophy, humanities, and social sciences. Indeed, such is the momentum gained that scholars write of a 'somatic turn' (Hancock et al. 2000; Monaghan 2002a, b, 2003; Pink 2009; Thrift 2006). It seems

there is a 'turn' for everything: practices, space, body.[10] The point is not that socio-material and practice perspectives sprawl across others, or somehow subsume them. Rather my intention is to highlight how many of the tenets of sociomaterial-ism are resonant with broader shifts in social theory and research.

Hence the notion of body as metaphor points us to profound shifts in the way the body is conceived However a clean break with Cartesianism is not easy (Hodkinson 2005). So profoundly embedded in our thinking is a mind/body dual-ism that we cannot simply pretend it does not influence us any more (Grosz 1994). So strong are rationalist views that attempts to suggest there might be intuitive, bodily forms of knowledge, learning and practice are held as undermining Western society (Habermas' response to Dreyfus, cited in Flyvbjerg 2001). Grosz' (2004) approach is to live with the ideas of mind and body, but to reframe their relation. She uses a metaphor of a Möbius strip[11]—holding mind and body in play, yet allowing for their folding together without one collapsing onto or being subsumed within the other. This key metaphor is taken up in Chap. 7. Grosz wagers that 'bodies have all the explanatory power of minds' (1994, p. vii), aiming to displace the centrality of mind.

Grosz's (2004) Möbius metaphor brings us to questions of the body and knowl-edge. Having rejected Cartesian notions of mind being the housing for (all) knowl-edge, what, now, of the body? The work of practice scholars, including Schatzki and Gherardi, offers us useful but different responses to this question. In Schatzki the body is always approached with practice in mind, within a site ontology (see above). Practices are upheld by activities that are in themselves performed through bodily doings and sayings. Every doing and saying is shaped by, and upholds, forms of organising that are distinctive properties of wider practices. As discussed above, these forms of organizing include practical and general understandings, as well as rules and teleoaffective structures. All of these imply knowledge, or know-ing. It is a knowing body that does and says in practice.

Gherardi and colleagues similarly refute a dissociation between mind and body. The concept of knowing in practice has at its core a sense that performances are not, cannot be, divorced from knowing. Yet these performances are always bodily. The emphasis placed on aesthetic qualities in performances and in knowing, judg-ment, and sense-making, further furnish the metaphors through which concepts of mind and body can be grappled with in post-Cartesian ways. Indeed I see both

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[10]Reference is also made to a 'relational turn': "a theoretical orientation where actors and the dynamic processes of change and development engendered by their relations are central units of analysis" (Boggs and Rantisi 2003, p. 109). This has parallels with the emphasis on relations, assemblages, and emergence in sociomaterial and practice theoretical perspectives.

[11]Imagine a ribbon, one side of which represents 'mind', the other 'body'. One could join them as a simple loop and keep them apart, even if they share the same fabric. The Möbius goes one step further: before joining two ends of the ribbon, one is flipped over. Thus a creature crawling along the ribbon will traverse all of both sides and arrive back at the start, without ever crossing a boundary between the two. Thus we can conceive mind and body as sharing the same fabric, dis-tinct and yet impossible to tease apart fully, resisting any position or moment where one applies and the other does not.

Schatzki's and Gherardi et al.'s approaches as consistent with a Möbius metaphor: neither fully escapes notions of mind and body, but both bring them into play, through practice, in ways that invoke a knowing body, and embodied knowledge. It is through such a lens that the body work described in Chap. 7 maintains close connection to issues and questions of professional expertise and learning, although these are brought into sharper focus in Part III.

It remains to add one final layer to the meaning of 'bodies' within my four dimensional framework. This concerns the fuzzy boundaries of the body, and lead us to the fourth dimension (things). Schatzki (1996a, b) goes into some detail concerning the difficulty in defining the 'edge' of the body. This is particularly problematic when the body in question is a *doing* and *done* body, with all the qualities of multiplicity and relationality that flow from this. A key metaphor taken up by Schatzki, and in Chap. 7, is that of the cyborg (after Haraway 1991). This suggests that the body does not end at the skin, but can incorporate a range of appendages, including clothes, spectacles, prostheses, equipment and so on. The nurse wearing latex gloves still feels texture and warmth, now *through* and *with* the gloves. Just as scholarship on body image suggests its extension across 'abject borders' (Weiss 1999; Weiss and Fern Haber 1999), so the body in practice resists clear demarcation as purely human form. Chapter 7 concludes with an expanded note on this point, which is taken up further in Chap. 8.

Thus once again we bump up against the problem of separation between the four dimensions. Nonetheless as I have shown with respect to times and spaces, and will show below in relation to things, foregrounding questions of the body does particular, distinctive work. It elucidates features of sociomaterial and practice perspectives that might otherwise have remained murky, and it helps to position my related analysis within the broader political terrain and critical corrective that characterize this book and of the work that inspires and informs it. The fruits that such a conceptualization of bodies can bear can only be fully discerned and articulated through its entanglement with empirical data. This is the focus and work of Chap. 7, but before that I must complete the foundation work by explaining the conceptual basis for treating 'things' as a fourth essential dimension of professional practice and learning.

Things

I use 'things' as a (somewhat inadequate) term in reference to materiality, including organisms, artefacts, objects and bodies (see Schatzki 2005). My approach to understanding things follows the same logics as those discussed above in relation to the other dimensions. Interest in things is not as entities, but in the relationships or assemblages they become part of in the course of professional practices. As an essential dimension, I argue that there can be no connectedness in action that is not in some way, material. The previous discussion of Schatzki's practice theory covered much of what is relevant here, including:

- A *site ontology*: practices and material arrangements bundle together to produce reality, and in turn become a basic unit of analysis. Materiality is not alongside practices, but rather practices and materiality co-constitute each other.
- *Residual humanism*: my sharing of Schatzki's reluctance to follow post-humanists in adopting a symmetrical view; retention of something distinctive about humanness, while remaining in 'ontological allegiance' with broader sociomaterial perspectives.
- *Practical intelligibility*: objects acquire meaning within practices, and these meanings are practical meanings; the force that the material world exerts arises through relationships between things and practices.
- *Spatiality, temporality, embodiment*: All four dimensions continually rub up against each other; see previous discussion of spatiality understood as the pertinence of materiality to ongoing activity, where such activity is teleological and therefore produces 'activity time', and is performed by the body.

The points above all permeate the detailed analysis of things presented in Chap. 8. This chapter began with an even broader consideration of materiality within sociomaterial approaches. Recall the quotation from Barad (2007) about how and why matter matters. Orlikowski notes:

> Materiality has been largely ignored by organisational theory, which appears to assume (often implicitly) that it does not matter or does not matter very much in everyday organising. (2007, p. 1436)

Thus the fourth of the essential dimensions explored in Part II brings us back to the very heart of sociomaterialism, and the sense that new approaches are needed if we are to acknowledge materiality in its full mattering, including in relation to phenomena that have often been seen as outside the material realm (such as knowing, learning).

As Gherardi's (2006, 2009b) concept of knowing in practice connects notions of mind and body, so her writing equally foregrounds materiality:

> The ideas of movement and materiality focus attention on the fact that meanings arise and travel in a spatio-temporal continuum. Too often has the materiality of the social been virtually removed by locating thoughts, ideas, politics, the law and culture in an ethereal domain or in one which only exists in the world of ideas and in the heads of people. Social and work practices have material consistency. (2006, p. 91)

Here, Gherardi is linking things with meaning. This is not in a representational sense—things capture or reify meanings that were first in someone's head, and which in turn reflect a truth about the world grasped from an independent viewpoint. Her sense, as I understand it, shares the notions of entanglement and enactment that are brought to the fore in Barad's (2007) diffraction and Thrift's (2006) non-representational theory. The link between things and meaning is a fluid one, based in movement, shifting relationships. Meaning does not reside in objects, but is produced through practical engagement with them (echoes with ideas of practical intelligibility are loud here).

Not only are things associated in such ways with meanings, but they can also be seen as doing work–work of organising and stabilising (as discussed in Chap. 8).

This often also involves epistemic work–work about what is known and how (see Jensen et al. 2012b). Chapter 9 takes this up as a key feature of professional learning in practice on the Residential Unit—the learning that is required in working with knowledge and knowing characterised by provisionality, partiality, and contingency. Here, we arrive at another key notion that links things with questions of knowing.

Knorr Cetina's concept of 'epistemic objects' (see 2001) takes a firmly non-representational and entangled view of the relationship between materiality and knowledge. An object is not inherently an epistemic object or not—this quality is one that is enacted, dependent on the practices with which it is bundled (in this way it might be regarded as a particular form of practical intelligibility). Knorr Cetina (2001) tells us that epistemic objects insert moments of interruption and conscious reflection, they help dissociate the self from practice. They are open-ended, incomplete or unfinished, inviting or generating questions. Many materialities of the Unit can be understood in these terms, including the bodies of infants and parents, that professionals attune to, and thus make sense of in ways that treat them not like a book to be read, but as an object that raises questions, points to what is not known as much as what is known. Clients in residence sheets, personal notes, behaviour charts (see Fig. 5.1), and other objects routinely folded into handover practices are routinely enacted as epistemic objects (see Chaps. 8 and 9; Hopwood 2016). Having outlined relevant features of the contemporary workplace learning terrain, the next section will address the questions that arise within this concerning the relationship between practice and learning.

An Asymmetrical, Entangled View of Practice and Learning

In this last main section I will outline the position I take in this book in specific regards to the idea of *learning* within a practice perspective. I begin by locating my view alongside others who maintain the need for analytical separability between practices and learning. I then present the distinctive arguments that I develop in Part III, explaining how they are located within a broader sociomaterial, practice perspective, but also take a particular position within contemporary literature. To conclude I introduce basic Vyogtskian concepts of scaffolding and the zone of proximal development. These are used in Chap. 10 as a basis for conceptualising the pedagogic work of supporting parents. This is crucial to the framing of partnership-based practices as involving reciprocal learning between professionals and service users (in this case, families).

As Hager (2012) demonstrates, the question of the relationship between practice and learning is an open and contested one. In the workplace learning literature, one can find accounts that maintain a relatively loose connection between learning and practice—as temporally separable. In what Hager calls more exclusive accounts of practice, the two are more closely entwined. The questions then are: How closely? Does it make sense to separate them analytically?

My position is broadly consistent with Hager's (2012) view. He suggests that ongoing learning is an essential part of good practice. He repeats Taylor's (1995) argument that to perform a (professional) practice is not simply a question of rigid rule following. The enactment of rules requires judgement, and all practices involve continual interpretation and reinterpretation. Given that actions are temporally irreversible, this infuses practices with 'suspense and uncertainty' (Taylor 1995, p. 177; cited in Hager 2012, p. 28). This inflects ideas discussed previously, such as Schatzki's notion of rules as structuring practices and how they hang together: rules are static and external, but rather are folded up in decisions about how to act, what to do and say. These are full of suspense and uncertainty.

Practices unfold in an unstable equilibrium, where small changes require learning responses of the practitioner.

I see in Hager (2012) a reluctance to collapse learning and practice onto one another as concepts. He is not sure that it makes sense to regard learning as a practice itself. This does not mean that we cannot say learning is accomplished through practices, or an effect of them. Indeed that is precisely the position I take in this book. I cannot imagine learning being accomplished outside of practices—without there being some performance of bodily doings and sayings. Such a position also allows us to maintain the argument that to practise well is to learn. Overall, we cannot conceive of professional practices unfolding without learning also being accomplished.

To say that learning is an essential or necessary part of (good) professional practices, is not to say that one can be reduced to the other, or that both are universally co-occurring. I do not hold the view that in every moment of practice there must always be learning. I do not see learning as a continuous, ever-present feature of professional practices. To me, this relationship is one of varying degree, and therefore one that requires empirical reference, rather than theoretical absolutes. A sociomaterial approach does not mean questions specifically about learning become redundant because we just need to look at practices instead. What is needed, and what I am offering in this book, is an approach that subjects the idea of learning to the same disruptions and assumptions (non-individualistic, material and embodied as well as cognitive etc.) without leading to its being replaced or usurped by other ideas. To me, questions of learning remain important, and they cannot be answered by only looking at practices, or at knowing.

I do not adopt notions of knowing and practicing as equivalent or synonymous (see Bruni et al. 2007). While they may be co-implicated in the idea of any competent performance in professional practice, the possibility of analytical separation proves powerful in empirical analysis (see above). I treat learning and practice in a similar way. In the next section I will outline my particular position in more precise detail.

Practice and Learning as Entangled in Asymmetrical and Non-reversible, Emergent Relations

My position on the relationship between professional practice and learning can be summarised in the points below. My sense is one of entanglement rather than equivalence, sameness, or apartness. These key arguments provide a foundation for the detailed empirical analysis presented in Part III.

1. Practice and connectedness in action have four essential dimensions: times, spaces, bodies, and things.
2. Professional learning is entangled with but analytically separable from practice.
3. Professional learning involves changes in connectedness in action (texture) that further the ends of practices though meaningful changes in the way practitioners interpret and act in practice.
4. These changes include producing new textures, repairing, modifying or restoring existing ones, or maintaining them in light of other changes. This is based on the idea of stability and change as co-present features of practices.
5. Professional learning in practice performs both connecting and sensitising functions through textural and epistemic work. Attuning is central to both of these.
6. Professional practices that accomplish and unfold through partnership with service users have an intensified pedagogic dimension. This has implications for the nature and focus of professional learning: it creates particular imperatives to learn and foci for the use and emergence of professional expertise.

These arguments are based on an a priori position concerning the relationship between practices and learning: professional learning arises through practices, not all practices bring about learning. I refer to this as an asymmetrical or non-reversible relationship between learning and practice.

At this stage I am simply rehearsing arguments that are developed and justified more fully in Part III. Their value and coherence are not absolute and are best judged in their entanglement with empirical data. The purpose of such a stance is to enhance the outcomes of such entanglement. Does this way of thinking help me address the broad questions and themes outlined in Chap. 1? Does it offer new and valuable insights into how we understand professional work that proceeds amid rubrics of partnership and coproduction? Is it illuminative of things that might have been missed otherwise? Does it extend and enrich the critical purpose of sociomaterial and related (practice, diffractive, non-representational) approaches, to intervene and disrupt disembodied, cognitivist and rationalist accounts of professional practice and learning?

Learning is a crucial feature of all professional practices as they go on. Hager (2011) argues that it is never possible to specify all the knowledge needed in order to perform a particular professional practice. Whenever we examine a performance

or set of performances we can say there is an attendant knowing. Knowledge shapes these performances, connects them,[12] and is enacted through them: the knowing and the doing are entwined.

New forms of knowing emerge through practice. Practices create and demand new knowledge, new ways of making meaning, responding to the suspense and uncertainty discussed above. This is not to say that all forms of knowledge must be in constant flux. But it is to take up the idea of emergence (see above) and suggest that practices cannot go ahead if all these elements remain fixed. Practices cannot go on without there also being learning. Learning is crucial in order for professional practices to occur, be maintained over time, preserved in the face of changing circumstances, and of course to evolve. Billett and Smith write:

> Learning in the circumstances of work is the relational enactment of numerous interdependent elements of practice, the process and product of which is the continuing transformation of that practice. (2014, p. 755)

I similarly view learning in professional practice as a relational accomplishment, something that is enacted or done, rather than held or acquired. I therefore view professional learning as occurring through changing practices, while also having the affect of changing practices. I share Billett and Smith's (2014) sense of the purpose or intentionality in such enactments and transformations. I might also clarify here, that the learning I have in mind is different from that described by Billett (2014) as mimetic learning. The latter is a very useful conceptual device, drawing from anthropology, for understanding how less experienced practitioners are able to exploit the learning opportunities that arise through everyday work experiences, based on observation, imitation and practice. This strikes me as relatively conservative in comparison to the notion described by Billett and Smith (2014). I this book I am referring to the learning that is required no matter how experienced the practitioner, and learning that is transformative in the sense that it is about how practices respond to changing circumstances.

This is not to say that wherever there is a practice there is always learning. While every action may be an instance of knowing, to me this does not imply learning. I agree with Edwards (2005a) on the need for a concept of learning that can distinguish between what is *learned* and what is *done*. Others view learning as ubiquitous, attendant in all engagements in all practices (e.g. Billett et al. 2005; Manidis and Scheeres 2012). Indeed, in his foreword to Hager et al.'s (2012c) volume, Schatzki (2012a) suggests learning transpires *continually* as practices are enacted. While I agree that practices, learning, and change should be viewed in a 'tight embrace' (Schatzki 2012a) I do not treat learning as a continuous, incessant feature of practices. I see learning as something related to but analytically separable from practices. Learning occurs in and through practices. This means that learning becomes empirically available through the study of practices (see Chap. 4), rather than through methodologies that (attempt to) delve into people's

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[12]For example in forms of practical and general understandings, through which, Schatzki suggests, practices hang together.

heads. This position can be traced back to the fundamental assumptions of the site ontology (Schatzki 2003, see above), which holds that all social phenomena are constituted in practices, bundled with sites.

When I say this relationship as asymmetrical I mean that a description of the professional practices of the Residential Unit, and a description of learning accomplished through those professional practices would not be identical. They would be qualitatively different, asymmetrical, although much of their substance would be shared. This enables me to distinguish between a practice, say, of a nurse walking quietly down a corridor in order to reach the lounge, and a practice in which the nurse walks quietly down the corridor, attuning closely to the sounds from a particular nursery, re-interpreting the word and modifying her actions and the connectedness in action between her, her colleagues, clients, and the behaviour charts, post-it notes, clients in residence sheets, progress notes, and so on. To me, it makes no sense to treat both as equally of interest to us in terms of learning. But it does make absolute sense to pursue an interest in learning through the study of practices. Hence the companion metaphor of non-reversibility. Discriminating between practices, actions (which are all knowing in their performance) and *learning* brings about a number of benefits that will be evident in the arguments I present in Part III. Having addressed the first two points listed above, I will now turn to the third and fourth.

I conceive professional learning as changes in ways of knowing that occur in and further the ends of practices. What changes in professional knowing are implied here? Edwards (2005a) refers to learning as changes in the way people interpret or act in the world. This distinguishes learning from giving and receiving of information (and in doing so rejects possession and acquisition metaphors). She views (professional) learning as

> A question of repositioning oneself in relation to aspects of knowledge through changing one's interpretations of contexts and the possibilities for action within them. (Edwards 2000, p. 200)

Edwards' ideas are rooted in Cultural Historical Activity Theory (CHAT), which foregrounds both the social and materially mediated nature of learning.[13] She highlights how CHAT continues Vygotsky's rejection of Cartesian dualism, and its 'embodied and culturally embedded' view of mind (Edwards 2000, p. 199). Edwards' (2012) discussion of CHAT approaches to links between knowledge, practice and intentionality (motive) is further revealing of resonances with many of the ideas and assumptions discussed in this chapter.[14] Edwards and Daniels

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[13]See Nicolini (2012) for an excellent account of CHAT within a broader practice theory approach to studies of work and organisation, and the role of Marxist philosophy in the twentieth century return to practice.

[14]In particular, Edwards (2012) notes the idea that motives are neither internal nor only in practices, but arise in people's engagements in practices—to me this is echoed in Schatzki's notions of teleoaffective structures and the relationships between practices and activity; secondly Edwards notes Leont'ev's view, building on Marx, that practice and cognition mutually arise through and constrain each other.

explicitly take a 'practice view of knowledge' (2012, p. 43), and make close links between CHAT and Knorr Cetina's work on epistemic cultures and objects (see also Hopwood 2016). Mäkitalo's (2012) paper the materiality of social practices in professional learning, from a sociocultural, Vygotskian perspective, sits comfortably alongside other sociomaterial contributions to the special issue 'Reconceptualising Professional Learning'. Thus I view it as consistent enough with a sociomaterial and practice theoretical approach: in my analysis performative, aesthetic, spatial, temporal and embodied features are given greater emphasis.

Thus I refer to changes in knowing as professional learning insofar as they arise from and produce changes in the way people interpret and act in the world. I do not pull interpretations and actions apart from each other, but view them as co-constituents of knowing performances. This is consistent with the notion of practical intelligibility, where the meaning of materiality is folded up with ongoing activity. It also makes coherent connections with Gherardi's notion of knowing in practice.

What kind of difference must be made for a change in knowing to qualify as learning? My answer to this lies in the fourth point above. This difference refers to producing new textures (connectedness in action), modifying, restoring or repairing them, or maintaining them in the face of other change. Thus I specify the concept of professional learning with reference to the idea of connectedness in action. As discussed previously, I argue that such connectedness has four essential dimensions. In this way, the exploration of textures in terms of times, spaces, bodies, and things in Part II becomes a crucial basis for the account of learning presented in Part III.

Billett and Smith's (2014) discuss transformations and learning in practice. They describe how handover activities between nurses not only trans*act* practice but also trans*form* it. They suggest these transformations may be subtle, almost indistinguishable, as when previous practices are re-enacted. Or they may be more pronounced as when explicit decisions are made to change the course of action. My approach shares their view that transformations vary qualitatively, but seeks to draw an analytical line through the very broad range denoted by Billett and Smith, to sharpen the sense of change and difference that is made to practice through learning.

It is important to clarify that notions of repair, modification, and restoration do not imply a single, linear trajectory that can be specified in advance. This would undermine the notion of practices as emergent and indeterminate. Such changes to textures are not accomplished with reference to an invisible, known trajectory, but as in-the-moment responses to the suspense and uncertainty of practice. In the case of the Residential Unit, the referent is always a notion of effective partnership with families, which implies particular relational qualities, and evidence of positive change for families. There are (prefigured) patterns and routines that mean some textures are more familiar and expected than others. Practices on the Unit do indeed display and produce some highly rhythmic qualities (see Chap. 5), and there are spatial geometries and patterns (Chap. 6) and choreographed practices such as handover (Chap. 9). There are some forms of professional knowing that are more stable and widespread than others (see discussion of pedagogic continuity in Chap. 10). These constitute instances where textures may be brought back towards arrangements that are routinized, and which shape the collective

anticipation of how things would normally, or should be. However, as Chap. 9 shows, professional practices on the Unit proceed amid significant degrees of provisionality, partiality and fragility of knowing. Thus textures are not plotted and monitored against a stable, known 'map'.

Restoration, repair and modification have no fixed referent, but are always tied to the emergent, contingent, and suspenseful unfolding of practice. In this way, these concepts add to the notions of practice change outlined by Schatzki (2013), placing learning and shifting textures as key figures in the constant dance between stability and change.

The view of learning I have presented here and take up in Chap. 9 in not based on deviations from or perpetuation of a linear course of action. Instead it is based across changing relationships between people and things that arise from, are constituted in, and have an impact on professional practice. Learning in professional practice is not only about creating new textures. Understanding practices as complex and emergent leads us to recognise that no matter how well established and seemingly stable practices may seem, there is almost always a degree of concurrent change: stability and change co-occurring (see Price et al. 2012; Schatzki 2013). In some cases changes will prompt or require the creation of new connections in action and, qualifying a sensible notion as to the degree of change, we can say that learning is occurring. But learning is also required to maintain and perpetuate practices. Perturbations to ways of working arise, and these may put strain on textures, or even break them.

Notions of modification, restoration and repair point to ways in which practitioners keep practices going amid, attuned to, and altering material arrangements. Modification implies both stability and change: adjustment but not revolution. Restoration is not a movement backward in time, but a steering of emerge towards more historically prefigured forms. The metaphor of repair acknowledges that there are instances of breakdown in practices. By breakdown I mean when actions do not hang together in the ways they need to in order for practices to go on, for them to accomplish the ends around which they are oriented. Practices can stall, or seize up, or mistakes can be made. In the context of partnership, repair may be needed when connections are severed—for example if a handover is missed or notes misplaced, making linking from one shift to another more difficult. Repair may also be needed in relationships between professionals and families if trust is lost. While there may be a repertoire of repair strategies from which professionals may draw, each instance of repair is different. Whenever new textures are created, or existing textures are modified, restored and repaired, this is an effect of professional learning.

Professional Learning, Pedagogy and Partnership

In Chap. 2 I introduced the idea of partnership between professionals and families as an instance of a broader scene of shifting relationships between professionals and service users. I argued that such moves towards coproduction intensify

the pedagogic nature of professional work. I frame partnership practices as based in reciprocal learning between professionals and parents. My focus in this book is not on the pedagogic practices of professionals *per se*, but on the professional learning that is woven into such pedagogic work. Professional learning and practice and the pedagogic practices of working in partnership as I describe them in Chap. 10 share, produce, and are shaped by common temporalities, spatialities, embodied action and material arrangements. Pedagogy and professional learning are entangled.

While the focus remains on professional practices and learning, the pedagogic aspect cannot go conceptually unaddressed. To this end I draw on Vygotsky's concepts of the zone of proximal development and scaffolding. Let me be clear: I claim no great sophistication in this application. As I have intimated previously, a Vygotksian notion of pedagogy fits well within my broader framing, given its social and material emphases. The Vygotskian tradition of cultural historical activity theory (which has Marxist origins) is named by Fenwick et al. (2011) as among key contemporary sociomaterial approaches,[15] and is addressed in detail by Nicolini (2012). He positions Marx alongside Heidegger and Wittgenstein as key figures in the 'rediscovery of practice'. As I mentioned above, Vygotskian traditions share important hallmarks of sociomaterialism, including rejection of Cartesian mind/body dualism, and embodied concepts of mind (see Edwards 2000).

I will thus wrap up this chapter with a brief outline of these concepts as I put them to work, entangling them in the analysis of Chap. 10. It is worth noting that the professional practices that are the focus of this book have not traditionally been conceived as pedagogic in nature, although there is a growing body of work demonstrating the relevance and value of such an approach (Fowler et al. 2012a, b; Fowler and Lee 2007; Hopwood 2013, 2014a, b, c, 2016; Hopwood et al. 2013; Lee et al. 2012). As will become apparent as in Chap. 9, unpacking concepts of the ZPD and scaffolding proves highly fertile in terms of elucidating learning, emergent forms of knowing in practice, and the variously skilled and aesthetic accomplishments of everyday professional work on the Unit. This understanding is achieved by interweaving sociomaterial and practice theoretical concepts with the basic pedagogical ideas. In other words, it is through entanglement with other ideas that these concepts bear fruit.

The zone of proximal development (ZPD) is perhaps one of Vygotsky's better-known concepts. The ZPD is defined as 'the distance between the actual developmental level (ALD) as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky 1978, p. 85). Put simply, it refers to the difference between what someone can do now, alone, and what she or he can do now, with appropriate support and guidance. This means that guidance should be oriented towards what lies just beyond current capability:

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[15]See also Fenwick (2006)'s discussion of practice-based conceptualisations of learning.

> What the child can do in cooperation today he can do alone tomorrow. Therefore the only good kind of instruction is that which marches ahead of development and leads it; it must be aimed not so much at the ripe as at the ripening functions. (Vygotsky 1986, p. 188)

While Vygotsky's definition referred to children, the concept has been used to understand learning throughout life. My analysis conceives the professional role as providing support and guidance that brings parents into their ZPD. This does not infantilise parents, nor does it imply a didactic role on the part of the professional. Rather, when parents approach the challenges they face together with parenting professionals, the situation is no longer one of independence, but one of collaboration, in which different expertise and experience are now available.

As mentioned previously Edwards (2005a) defines learning as changes in the way a person interprets and acts on the world. So, in the context of parenting services, I take the ZPD to refer to interpretations and actions that lie just above parents' current capability—those that they can undertake when appropriate support is in place (see Hopwood 2013). This support is termed scaffolding (see below). The ZPD has an upper limit: there are some interpretations and actions that, given the current ALD, are not achievable regardless of the support in place. This does not mean parents can never reach that point, but rather than changes within their ZPD must be addressed first, as a means to then take on those that currently lie beyond this. Vygotsky (1986) noted that presenting a child with problems he [sic] is able to handle without help fails to utilize the ZPD. By extension, this means that professionals on the Residential Unit must bring parents into a zone of challenge that *by definition* they would not cope with alone. This is entirely consistent with the FPM (see Chap. 2; Davis and Day 2010; Day et al. 2015), in which partnership is not a question of a particular quality of relationship between professionals and parents, but a question of creating the relational basis under which meaningful challenge can be presented and taken on.

Scaffolding is the term used widely to refer to the support placed around a learner that enables her to enter her ZPD. The collaboration and availability of different expertise and experience that come about through working with others on a problem takes a particular form through scaffolding. The helping or supporting party does not take over and solve the problem for the learner. She rather works to put in place concepts, tools, various kinds of assistance and guidance, in order to help the learner interpret and act in new ways. Thus my working use of the concept of scaffolding refers that which enables parents to enter their ZPD. The idea is that scaffolding is later withdrawn, at a point when parents can now continue these newly developed interpretations and actions independently. The quotation above speaks of a being able to do alone tomorrow things that could only be achieved in collaboration today. Thus I conceive partnership as working with parents, helping them enter their ZPD, and then withdrawing scaffolding such that parents' independent capacity is now enhanced (see Hopwood 2013 for more detail).

Conclusion

In this chapter I have set this book within a diverse theoretical terrain. I have clarified my ontological position, following a Schatzkian site ontology, and located this as a distinctive but allied feature of wider sociomaterialist perspectives, highlighting the emphasis on performance and emergence within a non-representational paradigm. I have explained the key concepts of Schatzki's practice theory as they pertain to the analysis presented in Parts II and III, and I have supplemented this with accounts of knowledge, knowing and aesthetics. Rehearsing Part II, I have explained the theoretical basis and meaning of times, spaces, bodies and things as four essential dimensions of professional practices and learning. And I have laid the groundwork for Part III, grappling with the difficult question of the relationship between practice and learning, stating my own position and the distinctive arguments that will be developed, specified and justified in Chaps. 9 and 10. However, before any of these ideas can be entangled with empirical data, I must account for the processes through which these data came into being. Hence Chap. 4 describes my ethnographic methodology, and inflects this with a site ontological view of ethnography as a practice through which the researcher becomes socially and materially entangled in the phenomenon under investigation.

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