

**KNOWLEDGE AND KNOWING REVISITED:
A DIFFRACTIVE ANALYSIS OF SERVICE
DELIVERY IN AN IT CONSULTANCY**

A thesis submitted to the University of Manchester for the degree of
Doctor of Philosophy in the Faculty of Humanities

2020

WOJCIECH M KWIATKOWSKI

Alliance Manchester Business School

TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF TABLES	9
LIST OF FIGURES	10
ABBREVIATIONS	11
ABSTRACT	12
DECLARATION	13
COPYRIGHT STATEMENT	14
ACKNOWLEDGEMENTS	15
CHAPTER 1: INTRODUCTION	16
1.1 Theoretical framing.....	16
1.1.1 The KCT perspective.....	17
1.1.2 The CoP perspective.....	18
1.1.3 The LoP perspective	19
1.2 Empirical background	21
1.2.1 Varieties of knowledge-intensive business services firms.....	21
1.2.2 MonTech – an IT consultancy.....	21
1.3 Research motivations	22
1.4 Research objective and questions	24
1.4.1 Research objective	24
1.4.2 Research questions	26
1.5 Overview of research methodology	28
1.5.1 Research philosophy and strategy	28
1.5.2 Diffractive analysis.....	29
1.6 Outline of remaining thesis structure	31
CHAPTER 2: LITERATURE REVIEW	33
2.1 Introduction.....	33

2.2	The strategic management perspective and its critique.....	35
2.2.1	Development	35
2.2.2	Critique	36
2.2.3	Towards a new ontology of organisational knowledge	38
2.3	Possession- and practice-based theorising.....	40
2.3.1	Possession-based theorising.....	40
2.3.2	Practice-based theorising	41
2.3.2.1	Composition and consistency of practices	42
2.3.2.2	The language of practice theorising	42
2.3.2.3	Rejection of dualisms	43
2.3.2.4	Relationality.....	45
2.3.3	Interaction between possession- and practice-based theorising.....	46
2.3.3.1	Towards inter-disciplinary dialogue	46
2.3.3.2	Familial resemblance of practice-based theorising.....	47
2.3.3.3	Alienation of possession- and practice-based approaches.....	48
2.3.3.4	Reinvigorating dialogue between possession- and practice-based theorising	50
2.4	Overview of the three perspectives	53
2.4.1	The KCT perspective.....	53
2.4.1.1	Knowledge as a subjective construct	53
2.4.1.2	Tacit-explicit duality	54
2.4.2	The CoP perspective	56
2.4.2.1	Situated learning theory.....	56
2.4.2.2	Definition of a CoP	57
2.4.2.3	Two competing CoP perspectives.....	58
2.4.3	The LoP perspective	61
2.4.3.1	From local practices to practice landscapes	61
2.4.3.2	Site-ness and translocality	62
2.4.3.3	Residual agential humanism.....	64
2.5	Comparison of the three perspectives	66
2.5.1	Social dimension	67

2.5.1.1	KCT: Collective knowledge	67
2.5.1.2	CoP: Practice boundaries.....	70
2.5.1.3	LoP: Practical intelligibility and reflexivity	73
2.5.2	Material dimension	75
2.5.2.1	KCT: Embedded knowledge.....	75
2.5.2.2	CoP: Reifications and boundary objects	76
2.5.2.3	LoP: Material performativity	79
2.5.3	Power-conflict dimension	81
2.5.3.1	KCT: Consensus	81
2.5.3.2	CoP: Power as performance.....	82
2.5.3.3	LoP: Empowerment and disempowerment	84
2.6	Summary.....	85
CHAPTER 3: RESEARCH METHODOLOGY		87
3.1	Introduction.....	87
3.2	Research philosophy	89
3.2.1	Socio-constructionist ontology	89
3.2.2	Interpretive epistemology	91
3.2.3	Methodological implications.....	94
3.2.3.1	Dominance of qualitative methods	94
3.2.3.2	Abductive reasoning.....	95
3.2.3.3	Reflexivity	96
3.3	Research strategy	99
3.3.1	Rejected approaches	100
3.3.1.1	Ethnographic approach.....	100
3.3.1.2	Phenomenological approach.....	101
3.3.1.3	Orthodox GTM	102
3.3.1.4	Constructivist GTM	102
3.3.1.5	Theory-building case study research.....	103
3.3.2	Interpretive case study approach	103
3.3.2.1	Epistemological considerations	104
3.3.2.2	Pragmatic considerations.....	105
3.4	Ethical considerations.....	106

3.4.1	Ethical responsibilities towards the participating organisation.....	106
3.4.2	Ethical responsibilities towards individual participants	107
3.5	Data collection	109
3.5.1	Case selection.....	109
3.5.2	Types of data collected	111
3.5.3	Non-participant observation.....	113
3.5.4	Interviews.....	116
3.5.4.1	Participant selection	117
3.5.4.2	Interview design.....	119
3.5.4.3	Conduct of the interviews.....	124
3.5.4.4	Transcription.....	126
3.5.5	Documents.....	127
3.5.6	Research notes	128
3.6	Data analysis	130
3.6.1	Choice of analytical method.....	130
3.6.1.1	Rejection of coding-based approaches	130
3.6.1.2	Diffractive analysis	132
3.6.2	Analytical process of diffractive analysis	133
3.6.2.1	Incorporation of non-interview data.....	133
3.6.2.2	Bracketed reading of the data	134
3.6.2.3	Theoretical readings of the data.....	136
CHAPTER 4: CASE DESCRIPTION AND INTERPRETATION		140
4.1	Introduction.....	140
4.2	Description of MonTech.....	142
4.2.1	Background and service offering.....	142
4.2.3	Office and atmosphere	143
4.3	Overview of service delivery	145
4.3.1	Service delivery process	145
4.3.1.1	Requirement Gathering, Development Consultation and Sizing.....	146
4.3.1.2	Development and Scenario Testing	147

4.3.1.3	Acceptance Testing	149
4.3.1.4	Maintenance.....	150
4.3.2	Client site specificity	150
4.3.2.1	Replicating client IT infrastructure	150
4.3.2.2	Software branching	151
4.3.2.3	Security.....	152
4.3.3	Implications of changes in ownership	154
4.3.3.1	Activity prioritisation	154
4.3.3.2	Quality assurance	154
4.3.4	Participation	155
4.3.4.1	Development.....	156
4.3.4.2	Support	157
4.3.4.3	Helpdesk.....	159
4.3.4.4	Client’s business staff.....	160
4.3.4.5	Client’s technical staff.....	161
4.3.4.6	Distributors	163
4.3.4.7	Third-party infrastructure providers.....	164
4.4	Requirement gathering and responding to client-raised issues.....	164
4.4.1	Requirement Gathering.....	164
4.4.2	Responding to client-raised issues during Acceptance Testing and Maintenance	168
4.5	Diffractions.....	174
4.5.1	KCT-based interpretation.....	174
4.5.1.1	Solving problems without experiencing them	174
4.5.1.2	Incommensurability and disjointedness of meaning.....	180
4.5.1.3	Organising of service delivery from a KCT perspective.....	183
4.5.2	CoP-based interpretation.....	184
4.5.2.1	Preliminary considerations	184
4.5.2.2	Dominance of Development through power performances.....	188
4.5.2.3	Constructing boundary objects in and for power performances	192
4.5.2.4	Organising of service delivery from a CoP perspective.....	195
4.5.3	LoP-based interpretation	196

4.5.3.1	The software revealing itself	196
4.5.3.2	Positionality in a landscape of practices.....	201
4.5.3.3	Organising of service delivery from a LoP perspective	205
4.6	Concluding remarks	206
CHAPTER 5: DISCUSSION.....		208
5.1	Introduction.....	208
5.2	Engagement with individual theoretical perspectives.....	209
5.2.1	Practicality of individual knowledge	209
5.2.2	A practice-focused analysis of power.....	212
5.2.3	Human agency and material performativity.....	216
5.3	Partiality of individual interpretations.....	219
5.4	Suppleness of individual interpretations	221
5.4.1	KCT-based interpretation.....	222
5.4.2	CoP-based interpretation.....	224
5.4.2	LoP-based interpretation.....	225
5.5	A possession-and-practice-based perspective.....	227
CHAPTER 6: CONCLUSIONS		230
6.1	Introduction.....	230
6.2	Summary of key findings	230
6.2.1	Uniqueness of individual interpretations	230
6.2.2	Complementarity and potential for dialogue.....	232
6.3	Contributions	233
6.3.1	Theoretical.....	233
6.3.1.1	KCT literature.....	233
6.3.1.2	CoP literature	234
6.3.1.3	LoP literature	234
6.3.1.4	Dialogue between possession- and practice-based theorising	235
6.3.2	Empirical.....	236
6.3.3	Methodological.....	236

6.4	Limitations.....	238
6.5	Future recommendations	239
	REFERENCES	240
	APPENDIX A: PARTICIPANT INFORMATION SHEET	272
	APPENDIX B: CONSENT FORM	275
	APPENDIX C: INTERVIEW GUIDE	276
	APPENDIX D: PARTICIPANTS' PEN PORTRAITS	278
	APPENDIX E: PROBLEM SEVERITY AND RESPONSE TIMES UNDER MONTECH'S SLA (REPRODUCTION)	279
	APPENDIX F: DBMT SPRINT PERFORMANCE TRACKING DATA	280

Total word count: 87,335

LIST OF TABLES

Table 3.1	Overview of research problematics	90
Table 3.2	Overview of reflexivity practices and their implementation in the current study.....	97
Table 3.3	Considered research strategies and their underlying epistemological assumptions	99
Table 3.4	Types of singular interpretive case studies and their selection logics	109
Table 3.5	Summary of the empirical material collected throughout the research	112
Table 3.6	Overview of qualitative interviewing approaches	122
Table 3.7	Summary of diffractive analysis of service delivery at MonTech	138-139
Table 5.1	Overview of how respondents' articulations featured across the three theoretical interpretations of service delivery at MonTech	220

LIST OF FIGURES

Figure 1.1. Diffractive analysis of service delivery at MonTech.....	30
Figure 3.1 Overview of research methodology of the current study.....	88
Figure 4.1 Layout of MonTech's office (not to scale).....	144
Figure 4.2 MonTech's service delivery process	146
Figure 4.3 Origin of Stories in the Development DBMT Backlog	147

ABBREVIATIONS

ANT:	Actor-network theory
CHAT:	Cultural-historical activity theory
CIT:	Continuous Integration Tool
CoP	Community of practice
C-KIBS:	Creative knowledge-intensive business services
DBMT:	Development Backlog Management Tool
DMA:	Development Methodology A
DMB:	Development Methodology B
DMS:	Document Management System
GTM:	Grounded theory method
KCT:	Knowledge creation theory
KIBS:	Knowledge-intensive business services
LoP:	Landscape of practices
NDA:	Non-disclosure agreement
P-KIBS:	Professional knowledge-intensive business services
PRA:	Product Release Approval
QM:	Quality Manual
RBV:	Resource-based view
RSD:	Requirement Specification Document
SLA:	Service Licence Agreement
SLT:	Situated learning theory
SMS:	Service Management Software
T-KIBS:	Technology-oriented knowledge-intensive business services
VCS:	Version Control System

ABSTRACT

Despite their shared origin in the critique of the conceptualisation of organisational knowledge expressed in strategic management literature, common socio-constructionist ontological assumptions and initial enthusiasm towards inter-disciplinary dialogue, interaction between possession- and practice-based approaches to the study of organisational knowledge has been relatively limited and often alienating. This thesis attempts to reverse this historical tendency and reinvigorate discourse between them. It achieves this objective through a diffractive analysis of service delivery at an IT consultancy.

Diffractive analysis is an abductive approach to qualitative data analysis. It entails interpreting the same empirical material, which in the current study comprises interviews, documents and non-participant observations, using a selection of theoretical lenses. The lenses used in the current research are based on three theoretical perspectives derived from the extant literature. Drawing on their core concepts, I label them ‘knowledge-creation theory’ (KCT), ‘communities of practice’ (CoP) and ‘landscape of practices’ (LoP), respectively. KCT is associated with possession-based theorising, whereas the CoP and LoP perspectives are exemplars of practice-based theorising.

Each of the theoretical interpretations resulting from the analysis elucidates a different understanding of service delivery at the case study organisation, whilst also extending the theory from which it has been derived. The complementarity of the three interpretations, whereby they enable understanding service delivery in greater depth and, in doing so, help overcome each other’s limitations, demonstrates that intellectually-stimulating dialogue between possession- and practice-based theorising is not only possible, but also desirable.

DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

COPYRIGHT STATEMENT

The author of this thesis (including any appendices and/or schedules to this thesis) owns certain copyright or related rights in it (the “Copyright”) and s/he has given The University of Manchester certain rights to use such Copyright, including for administrative purposes.

Copies of this thesis, either in full or in extracts and whether in hard or electronic copy, may be made **only** in accordance with the Copyright, Designs and Patents Act 1988 (as amended) and regulations issued under it or, where appropriate, in accordance with licensing agreements which the University has from time to time. This page must form part of any such copies made.

The ownership of certain Copyright, patents, designs, trademarks and other intellectual property (the “Intellectual Property”) and any reproductions of copyright works in the thesis, for example graphs and tables (“Reproductions”), which may be described in this thesis, may not be owned by the author and may be owned by third parties. Such Intellectual Property and Reproductions cannot and must not be made available for use without the prior written permission of the owner(s) of the relevant Intellectual Property and/or Reproductions.

Further information on the conditions under which disclosure, publication and commercialisation of this thesis, the Copyright and any Intellectual Property and/or Reproductions described in it may take place is available in the University IP Policy (see <http://documents.manchester.ac.uk/DocuInfo.aspx?DocID=24420>), in any relevant Thesis restriction declarations deposited in the University Library, The University Library’s regulations (see <http://www.library.manchester.ac.uk/about/regulations/>) and in The University’s policy on Presentation of Theses.

ACKNOWLEDGEMENTS

First and most of all, I would like to thank the love of my life, who throughout the course of my PhD became my wife. Tiny, I think it's safe to say that my PhD journey was quite the bumpy ride. However, the most horrifying thing about it was that we've spent most of it approximately 9,588 kilometres apart... and yet you made it feel like you were here with me for the entire ride, lifting me up whenever I fell down. Words can't express how grateful I am not just for what you did, but for all of you. However, one thing I have to say is how horribly sorry I am for making you endure this. As happy as I am to finally be done, I can't stop thinking about what life would have been, had I never started.

Second, I would like to thank my parents. I can't even begin to count the times when I completely lost any sense of confidence in myself and felt like I was destined for failure. Fortunately, you were always there, sometimes in the middle of the night, to at least try and persuade me that I wasn't a disappointment to you. I wouldn't have done it without you.

Third, I would like to thank my brother and sister-in-law and... I'm going to leave it here just because they didn't see this coming. However, they need to know they played a part in this as well.

Not to mention, I would like to express my upmost gratitude to my supervisors, Prof. Marcela Miozzo and Dr Matthew Allen. I really enjoyed working with you even though, I think, we realised quite early on that we had very different ideas about how to do research. Thank you for sticking with me. Also, I would like to apologise for probably being a difficult student to supervise because of how stubborn I can get and my preference for (re)thinking my research rather than writing it.

I would also like to express my sincere gratitude to MonTech, particularly the man known throughout this thesis as Jack. Thank you for being the case study I struggled so long to find. This thesis is literally all about you.

This wouldn't be a proper acknowledgments page if I didn't mention my comrades from C1 MBS East. Miles and Nick, for all the late night bromancing over stashed away alcohol, I salute you. Cristina and Imran, every psychotic cop needs a good cop and I got two. Lucky me!

1 Introduction

1.1 Theoretical framing

The theoretical framing of this thesis comprises three perspectives which emerged from the critique of the view of organisational knowledge expressed in strategic management literature (see 2.2.1) and sought to explore issues that had been neglected by it – the tensions inherent in knowledge and learning in social contexts (Scarbrough, Robertson, Swan & Nicolini, 2007: 261-262); the significance of context to knowledge, understanding, learning and practice (Handley, Sturdy, Fincham & Clark, 2006: 643); and the social micro-mechanisms through which knowledge becomes valuable to organisations at large (Hecker, 2012: 425). Drawing on their core concepts, I label them ‘knowledge-creation theory’ (KCT) (e.g. Hargadon & Fanelli, 2002; Nonaka, 1994; Nonaka & von Krogh, 2009; Spender, 1996a, 1996b), ‘communities of practice’ (CoP) (e.g. Brown & Duguid, 1991, 2001; Contu, 2014; Lave & Wenger, 1991; Wenger, 1998) and ‘landscape of practices’ (LoP) (e.g. Nicolini, 2011; 2012; Omidvar & Kislov, 2014; Schatzki, 2001; 2005).

The KCT perspective is representative of possession-based theorising of organisational knowledge (i.e. epistemology of possession) (see Cook & Brown, 1999). It views knowledge as an entity, or a substance, which can be possessed and stored in some form of memory, from which a learner can acquire it in order to store it in their brain for future use (*ibid.*: 382; Gherardi, 2006: 1). In comparison, the CoP and LoP perspectives constitute examples of practice-based theorising of organisational knowledge (i.e. epistemology of practice) (see Cook & Brown, 1999). This approach rejects the notions that knowledge exists and awaits to be discovered (Gherardi, 2006: 19) and that it resides in individual heads or is externally embedded in artefacts (Gherardi, 2001: 133; 2006: 41; 2009: 354; 2016: 681; Marabelli & Newell, 2012: 19). Instead, it argues that knowledge is fabricated by situated practices (Gherardi, 2006: 19) and is ‘manifest in and through’ those practices (Marabelli & Newell, 2012: 19). Correspondingly, instead of focusing on what knowledge workers know, which is the case in possession-based theorising, practice-based analyses focus on what they do and how they accomplish it (Blackler, 1995: 1039; Blackler, Crump & McDonald, 2000: 281; Gherardi, 2001: 134; Nicolini, Gherardi & Yanow, 2015: 8; Whittington, 1996: 732).

Despite their shared origin (see 2.2.2), common socio-constructionist ontological assumptions (see 2.2.3) and an early call for interdisciplinary discourse (Easterby-Smith, Snell & Gherardi, 1998: 261-262), interaction between possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) theorising has been rather infrequent. Moreover, the limited dialogue between them has had alienating effects (see 2.3.3.3). In comparison, discourse within practice-based theorising has been vibrant and intellectually stimulating (see 2.3.3.2), which reflects the purported familial resemblance of its constituent strands (Miettinen, Samra-Fredericks & Yanow, 2009: 1312; Nicolini, 2009a: 1394; 2012: 1).

1.1.1 The KCT perspective

In KCT literature, knowledge is believed to be constructed exclusively in human minds (Nonaka, 1994: 15; Nonaka & Takeuchi, 1995: 59; also Essers & Schreinemakers, 1997: 25) because only people are capable of interpreting information, thus enabling it to become knowledge (Nonaka, 1994: 15; Nonaka & Konno, 1998: 41; Nonaka, Toyama & Konno, 2000: 7; von Krogh, Roos & Slocum, 1994: 59). Interpretation is related to the action-oriented nature of knowledge whereby to know is to be able to act (Nonaka, von Krogh & Voelpel, 2006: 1181-1182; Nonaka & von Krogh, 2009: 638, 642; Spender, 1996a: 64). Correspondingly, the relationship between knowledge and practice is one where the latter is a representation of the former.

The distinction between the tacit and the explicit aspects of knowledge (see Polanyi, 1966: Chapter 1) is frequently utilised in this form of theorising. The two form a continuum along which elements of knowledge can be defined and along which they can move and interact (Nonaka, 1991: 98; 1994: 15; Nonaka & von Krogh, 2009: 636, 640-641, 647). The tacit-explicit continuum is employed to explain how human knowledge becomes embedded in symbolic and material artefacts (e.g. Gourlay, 2006; Hargadon & Fanelli, 2002; Nonaka, 1991; Ribeiro & Collins, 2007) and how sharing of knowledge through dialogue gives rise to collective meanings and understandings (e.g. Kodama, 2005; 2007; Nonaka & Konno, 1998; Nonaka & Toyama, 2005).

Interest in the latter (see 2.5.1.1) stems from the notion that it is not uncommon for people to hold different worldviews and pursue disparate goals (Kodama, 2005: 896; 2007: 116; Nonaka & Toyama, 2003: 2-3; 2005: 421). With regard to the former, because knowledge originates in the human mind, symbolic and material artefacts are effectively reduced to being imperfect representations of human knowledge (Hecker, 2012: 430; Massey & Montoya-Weiss, 2006: 101) used either to communicate it to others, make it available to

be used by them or to coordinate activity among collaborators (see 2.5.2.1). Their imperfection stems from their inability to capture meaning, which is attributable to the fact that they comprise exclusively explicit knowledge (Hargadon & Fanelli, 2002: 295; Hecker, 2012: 429; Nonaka & Toyama, 2005: 423). Thus, they depend on the person interacting with them to reattach meaning to them in the context of their own practical circumstances (Ribeiro & Collins, 2007: 1430; Spender, 1996a: 64-65, 68, 71; also Cowan, David & Foray, 2000: 230). Nonetheless, the indirect and partial exposure to a competing perspective of the world this affords (Hargadon & Fanelli, 2002: 300) facilitates collective negotiation of meaning and development of shared understandings (see 2.5.1.1).

1.1.2 The CoP perspective

The concept of a 'community of practice' originates in situated learning theory (SLT) where it was intended to convey the idea that learning is not a purely cognitive exercise, but an integral and inseparable aspect of social practice (Lave & Wenger, 1991: 53). Conversely, from a CoP perspective, individuals do not acquire knowledge of the world in isolation, but through participation in everyday practices of a community through which they learn how to act in the world (Brown & Duguid, 2001: 200-201; Fox, 2000: 853-854; Handley et al., 2006: 641-643). Relatedly, instead of being contained in the human mind, knowledge is localised, embedded and invested in practice, including its purpose, function, objects, abstract accounts and situated demands (Brown & Duguid, 1991: 42; Carlile, 2002: 442-443, 445-446, 453).

A key consideration of the CoP literature is the notion that knowledge can be shared with ease within CoPs, but its flow across pragmatic (i.e. practice) boundaries is obstructed (Bechky, 2003a: 313-314, 317-320; Carlile, 2002: 442-443, 446; Brown & Duguid, 2000: 202, 205-206, 208-209; Swan, Scarbrough & Robertson, 2002: 480-481, 491). The latter has been attributed to the existence of 'variable norms of justification, variations in tacit understandings and conflicts of interests' across CoPs (Giroux & Taylor, 2002: 502; also Tsoukas, 2002: 421, 423; Wenger, 2000: 233). This does not necessarily preclude the possibility of multiple CoPs effectively working together (see Brown & Duguid, 2001: 209; Oborn & Dawson, 2010: 856). However, this requires members of the participating CoPs to 'overcome the incommensurability between them [...] without sacrificing the integrity and distinctiveness of their own perspective' (Boland & Tenkasi, 1995: 355-356; Gherardi, 2006: 135).

The manner in which the issue introduced in the preceding paragraph is theorised depends on whether a study adheres to the practice- (e.g. Contu & Willmott, 2003; Gherardi, 2006; Gherardi et al., 1998) or community-focused (e.g. Hydle, Kvålshaugen, & Breunig, 2014; Kislov, 2014; Wenger, 1998; 2000) rendition of CoP theory (see Nicolini, 2012: 87-95). The former emphasises that practice precedes the community built around it (Gherardi, 2006: 108, 110; Gherardi et al., 1998: 278-279; Nicolini, 2012: 94; Orr, 2006: 1807, 1814) and, arguably, boundaries between CoPs interacting in work situations. Consequently, work involving multiple CoPs is portrayed as an ongoing accomplishment in which boundaries always remain open to (re)negotiation (Gherardi, 2006: 135; Gherardi & Nicolini, 2002b: 421; Mørk, Hoholm, Maaninen-Olsson & Aanestad, 2012: 267-268) and community identities associated with individual practices are continuously (re)constructed (Gherardi, 2006: 135, 136, 152; Gherardi & Nicolini, 2002b: 421, 431-432; Mørk, Hoholm, Ellingsen, Edwin & Aanestad, 2010: 582, 588-589). Explanations of how such work proceeds adopt a performative conceptualisation of power (see Contu, 2014: 292-293, 311-312; Fox, 2000: 858-862; Swan et al., 2002: 482). They also accentuate the contribution of boundary objects to the ongoing construction of power relations (e.g. Bechky, 2003b; 2006; Hawkins et al., 2017; Huvila, 2011), rather than merely recognising their capacity to facilitate the flow of knowledge across CoPs (e.g. Carlile, 2002; 2004; Fox, 2011; Star & Griesemer, 1989). As I will explain in greater detail in the literature review (see 2.4.2.3), in this study I extend this rendition of CoP theory on the basis that the community-focused variation reframes the concept of a CoP in line with a managerialist discourse (Contu & Willmott, 2003: 289; Corradi et al., 2010: 268; Cox, 2005: 534; Amin & Roberts, 2008: 353-354; Nicolini, 2012: 91-92).

1.1.3 The LoP perspective

The LoP perspective developed as the interest of practice theorists gradually shifted away from individual practices towards multiplicities of interconnected practices (Gherardi, 2017: br). As the diversity of metaphors used to describe the latter and their organising illustrates (see 2.4.3.1), there is no single, unilaterally-accepted approach to the exploration of organisational knowledge from this standpoint. The perspective I have constructed for the purposes of this research draws primarily on the work of Schatzki (2001, 2005, 2006), which I supplemented with ideas from other scholars (Knorr Cetina, 1997; 1999; Nicolini, 2011; 2012; Sandberg & Tsoukas, 2011). Although the metaphor of a landscape I employ to label this perspective has previously been used in CoP literature (Omidvar & Kislov, 2014: 270-273), the manner in which I use it is consistent

with Schatzki's (2001: 51) conceptualisation of order not as a form of regularity, but an arrangement which accommodates 'manifolds of variably similar and divergent entities as ordered phenomena' and acknowledges 'the complex and variable connections that exist among things'.

The distinct contribution the LoP perspective makes towards the understanding of organisational knowledge stems from its two main features. Firstly, when it is acknowledged that practices do not exist in isolation, ordering of the world in local practices (Gherardi, 2006: 35) can no longer be understood without consideration of the network of practices in which they are embedded. Correspondingly, activities, organisations and social orders must be viewed as 'the outcome and effect or order-establishing nexuses of practices' (Nicolini, 2012: 174; also Schatzki, 2001: 63). Secondly, the 'residual agential humanism' (see Blackler & Regan, 2009: 162-163; Nicolini, 2012: 164, 169-170; Schatzki, 2005: 471, 473, 480; 2006: 1863-1864) which characterises the LoP perspective employed in the current study enables appreciating how humans and non-humans both actively participate in the enactment of organisational knowledge, albeit with the acknowledgement of the differences in their influences (see Nicolini, 2011: 610-611; 614-615; Orlikowski, 2007: 1436-1437; Pickering, 1993: 562-563; Schatzki, 2005: 476; 480; 2012: 164, 169-170; 2006: 1864-1865, 1870). The concepts of practical intelligibility (Nicolini, 2011; 2012; Schatzki, 2001; 2005; 2006) and reflexivity (e.g. Chia & Holt, 2006; Sandberg & Tsoukas, 2011; Yanow & Tsoukas, 2009) are crucial to exploring and understanding the involvement of humans. As for the influence of non-humans, this is brought to our attention with the help of the concept of epistemic objects (e.g. Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005) and by recognising that material artefacts shape and support human practices (e.g. Bruni et al., 2007; Manidis & Scheeres, 2013; Nicolini, 2012; Orlikowski, 1992).

1.2 Empirical background

1.2.1 Varieties of knowledge-intensive business services firms

Knowledge-intensive business services (KIBS) firms are a subset of knowledge-intensive¹ firms alongside R&D companies (see Alvesson, 2004: 1, 18-19). In short, the former are generally described as business organisations which collect, transform and apply technical and/or professional knowledge to solve strategic problems faced by their clients who often participate in the development of the service solution. Organisations falling underneath the KIBS umbrella represent multiple areas of expertise, which were historically internalised in firms, especially in large corporations. Among others, they include providers of R&D services, technical services, engineering services, legal services, IT services, marketing consultancies, strategic consultancies and financial consultancies (Alvesson, 2004: 17, 35; Bettencourt, Ostrom, Brown & Roundtree, 2002: 100-101; Corrocher, Cusmano & Morrison, 2009: 174-175; Miles et al., 1995: 28-30, 32-33; Miozzo & Soete, 2001: 165; Tether & Hipp, 2002: 166; Miles, 2005: 39; 2012: 13; Lehrer, Ordanini, DeFillippi & Miozzo, 2012: 500; Scarso & Bolisani, 2012: 16). Often specialising in a single type of service or a limited range of related services, KIBS firms generally tend to be relatively small (Freel, 2006: 336) and often serve a relatively uniform client base (Miles, 2012: 21). However, as primary sources of information or providers of intermediary knowledge-based services (Miles, 2005: 40; Miles et al., 1995: 28), they play an important role in the knowledge-intensive economy because they are responsible for the combination of knowledge from various sources and its subsequent distribution (Corrocher et al., 2009: 174; Tether & Hipp, 2002: 165; Hipp & Grupp, 2005: 518).

1.2.2 MonTech – an IT consultancy

MonTech are a provider of niche monitoring software solutions for customers in multiple sectors. The company was established in 1989. Their first software package was intended for the financial industry, which still accounts for the largest portion of its clients, some of whom have had MonTech's software for over two decades. The organisation's service

¹ The label 'knowledge-intensive' is somewhat misleading since it suggests that a clear distinction can be drawn between organisations, work and workers which are knowledge-intensive and those which are not (Alvesson, 2004: 11-13, 27-28). It is more appropriate to distinguish firms which are ordinarily described as knowledge-intensive from others on the basis of how instrumental claims to knowledge are to their work. Thus, it may be better to describe them as rhetoric-intensive or knowledge-claims-intensive (see *ibid.*: 83-85, 88-89).

offering has since expanded to include three software packages. In addition, MonTech occasionally develop bespoke applications for their customers.

MonTech's software connects to the client's own infrastructure to collect, process and analyse data in real-time and generate textual and visual representations intended to aid organisations in addressing day-to-day problems. It is also capable of monitoring infrastructure performance to ensure MonTech's applications do not have adverse effects on the systems they 'live on'. The need to integrate MonTech's solutions with the client's existing IT infrastructure means they are not only customisable with regard to how the customer intends to use them, but also in terms of the IT system on which they 'live', which may have widespread implications for how the service is delivered.

Service delivery at MonTech involves three areas of activity – Development, Support and the Helpdesk. The number of Development staff fluctuated between five and six during data collection, while the number of Support and Helpdesk staff remained constant at four and one, respectively. Overall, as with most KIBS firms (Freel, 2006: 336), MonTech are a relatively small organisation.

1.3 Research motivations

When I first conceived this research project, my motivations were purely empirical. Drawing on conversations with my friends and other acquaintances who worked in various types of KIBS firms, I speculated that knowledge differences among participants in KIBS projects resulted in tensions that had implications for the organising of the service delivery process. To my utmost surprise, this was not universally acknowledged in the extant literature.

The majority of the publications I reviewed drew on the conceptualisation of knowledge propagated by strategic management literature (see 2.2.1). Correspondingly, even if they appreciated that some of the KIBS firm's knowledge resources were individually rather than organisationally controlled (Leiponen, 2006: 446) or that knowledge was actually exchanged in course of social interactions between members of the organisations participating in a KIBS project (Bettencourt et al., 2002: 117; Scarso & Bolisani, 2012: 22-24), knowledge flows within such projects were analysed as if they were exclusively inter-organisational phenomena. Likewise, the challenges of the KIBS firm-client

relationship were examined from the perspective of the participating organisations as a whole, rather than their members (Miles, 2012: 20). Thus, people were portrayed as doing no more and no less than performing their part in what was fundamentally an interaction between two organisations. Consequently, discussion of knowledge in these publications revolved around organisational- and inter-organisational-level constructs, including characteristics of desirable clients and tools for managing them (Bettencourt et al., 2002), innovation modes and strategies (Corrocher et al., 2009; Freel, 2006; Leiponen, 2006; Möller, Rajala & Westerlund, 2008), learning strategies (Leiponen, 2006), knowledge exchange strategies (Landry, Amara & Doloreux, 2012), variability in intensity of client involvement (Lehrer et al., 2012) and trust mechanisms (Scarso & Bolisani, 2012).

A more sceptical perspective on KIBS, which I was able to identify, argued that the view described in the preceding paragraph was idealistic and biased (Alvesson, 2004: 59) on the basis that knowledge involved in KIBS delivery lacked the qualities associated with scientific knowledge, which allowed the latter to speak for itself with regard to its purported value (see Alvesson, 1993: 1005-1006; 2004: 65-66; 2011: 1646). Consequently, the publications emphasised the role of rhetoric, client management and manipulation in the provision of KIBS (see Alvesson, 1993: 1007-1008; 2004: 29, 72-73, 82-85, 88-89, 102-103, 116; 2011: 1649, 1651). Relatedly, asymmetric relations between providers and customers, as well as the coexistence of competing interests (see Alvesson, 2004: 26, 113-117) were accentuated. Finally, misunderstandings rather than technical failures were identified as the reason why some KIBS projects fail (Alvesson, 2004: 85-86).

While the latter perspective was more aligned with my understanding, as well as the opinions of my acquaintances, I still felt it did not devote sufficient attention to the role knowledge played in the provision of KIBS and how challenges associated with it affected its organising. Consequently, I turned to literature on organisational knowledge in search of a theoretical perspective which would enable me to flesh these issues out. I identified the three strands of theory comprising the theoretical framing of the current research (i.e. KCT, CoP and LoP perspectives) (see 1.1) as suitable for that purpose. However, I found myself unable to decide which one to adopt. My attempt to resolve this issue by consulting the extant literature sensitised me to how they interacted over the years. I became interested in the uneasy relationship between possession- (e.g. the KCT perspective) and practice-based (e.g. the CoP and LoP perspectives) theorising of organisational knowledge (see 2.3) to such an extent that it became the main focus of my research.

Nevertheless, I remained committed to the KIBS empirical context because I believed it was suitable for the realisation of my new research objective – to reinvigorate dialogue between possession- and practice-based theorising of organisational knowledge (see 1.4.1).

In short, there are two main reasons why I think this is the case. Firstly, KIBS firms are rarely homogeneous in terms of their members' knowledge. Consequently, they must continuously deal with divergent expectations, norms and practices, which may become the source of conflict (Larsen, 2001: 96). Secondly, in comparison with industrial goods, services, in general, are characterised by the inseparability of production and consumption (Gallouj & Weinstein, 1997: 540, 544; Tether, 2003: 483, 2005: 156; Miles, 2005: 40), which makes it necessary for service providers to maintain close contact with their customers and more often than not involve them in the service delivery process (Hipp, Tether & Miles, 2000: 420-421, 442-443; Tether & Hipp, 2002: 164; Hipp & Grupp, 2005: 520; Gallouj & Savona, 2009: 154, 158). This is the case regardless of whether the solution provided is standardised, customised or bespoke (see Bettencourt et al., 2002: 101; Berthoin Antal & Krebsbach-Gnath, 2003: 467; Lehrer et al., 2012: 504-505; Scarso and Bolisani, 2012: 22-23). Moreover, it is not unheard of for the KIBS firm and the client to hold different understandings of the problems at hand and solutions intended to resolve them (Lehrer et al., 2012: 505; Miles, 2012: 17). These two considerations led me to believe that KIBS delivery would be a highly contested activity as a result of knowledge-related differences between the people involved. Given the shared interest of KCT, CoP and LoP perspectives in tensions inherent in knowledge and learning in social contexts (see 1.1), the KIBS setting seemed to suit the current study.

1.4 Research objective and questions

1.4.1 Research objective

As aforementioned, the three perspectives (i.e. KCT, CoP and LoP) I bring together in this study emerged from a common agenda to consider issues that had been obscured by the view of organisational knowledge associated with strategic management research (see 1.1 and 2.2), including the tensions inherent in knowledge and learning in social contexts (Scarbrough et al., 2007: 261-262); the significance of context to knowledge, understanding, learning and practice (Handley et al., 2006: 643); and the social micro-

mechanisms through which knowledge becomes valuable to organisations at large (Hecker, 2012: 425). Although they developed against the backdrop of a call for interdisciplinary discourse among the perspectives challenging the theorisation of knowledge in strategic management literature (Easterby-Smith et al., 1998: 261-262) (see 2.3.3.1), dialogue between them has been somewhat selective.

On the one hand, the CoP and LoP perspectives are part to a vibrant and intellectually stimulating debate within practice-based theorising of organisational knowledge (see 2.3.3.2), which can still be described as an open conversation with multiple voices (Corradi et al., 2010: 267; Gherardi, 2006: 18; also Gherardi, 2000a: 220). Even when practice theorists point out the strengths of the approaches they advocate in relation to the limitations of others, this is done in the spirit of theoretical complementarity by recognising they elucidate different aspects of practices (e.g. Blackler et al., 2000; Miettinen, 1999; Swan, Bresnen, Newell & Robertson, 2007). In fact, it has been argued that the differences and similarities between the various strands of practice-based theorising can be used productively (see Nicolini, 2009; 2012).

On the other hand, while there have been rare instances where practice scholars have to some extent acknowledged the contribution of possession-based theorising or even drew on it to a limited extent (e.g. Carlile, 2002; Mengis, Nicolini & Swan, 2018; Swan et al., 2007), this has been done without the necessary level of theoretical scrutiny. Simultaneously, the most radical practice-based scholars have sought to dismiss possession-based theorising (e.g. the KCT perspective) by undermining its conceptual foundations and portraying it as dangerous as the view of knowledge promulgated by strategic management scholars (see Gherardi, 2000a; Collins, 2001; Tsoukas, 1996; Turner, 2001). Although other practice theorists have not been as hostile (e.g. Blackler, 1995; Engeström, 1995; 2000, Giroux & Taylor, 2002), they also sought to demonstrate the superiority of practice-based theorising, thus contributing to the overall alienation of the two approaches to the study of organisational knowledge (see 2.3.3.3).

In light of the above, my aim in this research is to reverse these alienating tendencies and reinvigorate dialogue between possession- and practice-based theorising. I attempt this by arguing that from an interpretive epistemological standpoint the latter's empirically-grounded claims to superiority are unsubstantiated on the basis that such claims cannot be made when the empirical material is not regarded to be static, complete and representational, but is believed to undergo a continuous process of becoming as it is

attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273). I believe that greater dialogue between possession- and practice-based theorising is desirable for two reasons. Firstly, it could prove to be as intellectually stimulating as the debate within practice-based theorising (see 2.3.3.2). Secondly, by clarifying the distinctions and complementarities between possession- and practice-based scholarship, the combined influence of the two approaches could increase relative to that of the strategic management view they criticise. The reason for the latter is that the main practical insights the critique as a whole conveys, which pertain to the limited susceptibility of organisational knowledge to intentional and deliberate managerial control (Gherardi, 2000a: 213; Lee & Cole, 2003: 634; Spender, 1996b: 47; also Nicolini & Mezner, 1995: 731), is likely to be ‘both unfamiliar and perplexing’ to practitioners (Blackler, 1993: 866). Arguably, presenting them with a multitude of alternative explanations as to why this is the case without fully charting the relationships between them (i.e. within practice-based theorising and across possession- and practice-based theorising) is likely to exacerbate their confusion, which could negatively affect the translation of ideas associated with either form of theorising into practice.

1.4.2 Research questions

The manner in which I realise the above objective builds on the idea I introduced in the immediately preceding section – from an interpretive epistemological standpoint, empirical material is not static, complete and representational but is undergoing a continuous process of becoming as it is attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273). With this being the case, one way to engage in dialogue between possession- and practice-based theorising is to reflect on how KCT, CoP and LoP perspectives elucidate different understandings of the same empirical phenomenon, which in case of the current research is the organisation of service delivery at MonTech, and consider the complementarities and differences between the theoretical explanations based on them. The inclusion of two practice-based perspectives in this process is warranted on the basis that since a single, unified practice theory does not exist (Corradi et al., 2010: 267; Gherardi, 2006: 13; Miettinen et al., 2009: 1312; Nicolini, 2007: 892; Nicolini et al., 2015: 3; Schatzki, 2001: 2; Tsoukas, 1996: 17-18) inclusion of multiple strands of practice theorising adds credibility to the notion that dialogue between possession- and practice-based theorising is possible. Building on this argument, the first question I set for the current study is:

- (1) *How is service delivery at MonTech organised from:*
 - (a) *a KCT perspective;*
 - (b) *a CoP perspective; and*
 - (c) *a LoP perspective?*

As the phrasing indicates, the purpose of the first question is to produce three alternative theoretically-informed interpretations of the organisation of service delivery at MonTech. In reflecting on the relationships, complementarities and differences between them, as well as the theories that transpire through them, it is necessary to acknowledge that theoretical interpretations of empirical material do not simply force the latter into the frame provided by the former (Langley, 1999: 698-699, 707). Rather, such interpretations push both of them beyond their limits and open them up (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271-272; also Kvale & Brinkmann, 2009: 238-239; Langley, 1999: 699, 706). Drawing on this argument, I set the following further questions for this research:

- (2) *How is each theoretical perspective engaged with in its associated theoretical reading?*
- (3) *How do the theoretical foundations of each perspective affect what is revealed and concealed in its associated theoretical reading?*
- (4) *How do the three perspectives together facilitate attaining a more comprehensive understanding of the organising of service delivery at MonTech?*

The purpose of the second question is to reflect on how the KCT, CoP and LoP perspectives were engaged with in course of each theoretical reading. The aim of the remaining two questions is to reveal the multiplicity of meanings, emergent differences and suppleness of each interpretation (Davies, 2014: 740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271, 274-275; Mazzei, 2014: 742-744) and thus engage in dialogue between KCT, a possession-based perspective, and the two practice-based approaches to the theorising of organisational knowledge (i.e. CoP and LoP).

Before concluding the discussion in this section. I must emphasise that the analysis of the empirical material itself can only provide an answer to the first research question.

Answering the remaining questions is a matter of theoretical deliberation. Reflective of this, I provide the answer to the first question in the chapter I devote to the three interpretations of service delivery at MonTech (see Chapter 4), with the remaining questions addressed in the immediately following chapter in which I discuss the results of my analysis (see Chapter 5).

1.5 Overview of research methodology

1.5.1 Research philosophy and strategy

As pointed out by Easterby-Smith et al. (1998: 266), while the strategic management view of organisational knowledge and learning (see 2.2.1) lends itself to positivist methodologies emphasising measurement, research associated with its critique is better served by methods associated with interpretive epistemology. Reflective of this, the key consideration influencing the choices I made with regard to devising the methodology of the current study was to ensure that the overall strategy adopted, as well as the particular methods used, were consistent with an interpretive epistemology (see 3.2.2). In light of its close association with practice-based theorising (see Yanow, 2006: 1746; also Feldman & Orlikowski, 2011: 1249; Nicolini, 2012: 218), an ethnographic strategy would have been the preferred choice for the current study. However, the substantial difficulties I encountered in securing the level of access required to conduct extensive observations (see 3.3.1.2 and 3.5.3) eventually led to the adoption of an interpretive case study research strategy (e.g. Flyvbjerg, 2006; Thomas, 2010; 2011; Stake, 1978, 1995, 2008) in its stead.

One of the fundamental differences between the strategic management view of organisational knowledge (see 2.2.1) and its critique (see 2.2.2-2.2.3) is that the latter emphasises that knowledge is not stored in organisations, but is constructed, negotiated, organised and utilised through primarily social means (Blackler, 1993: 864; Pentland, 1995: 2). Consequently, scholars associated with it attempt to unravel the complex intra-organisational processes of knowledge construction, highlight the importance of social practices and social interactions (Charreire Petit & Huault, 2008: 76-77; Tsoukas, 2009: 941), as well as elaborate on the relationship between thought and action, limits of articulation, indeterminacy of knowledge and the active nature of its organising (Blackler, 1993: 864). Arguably, interpretive case study research is suitable for all of these purposes since it intends to capture holistic, experiential understandings and multiple realities

inhabiting the specific case (see Dyer & Wilkins, 1991: 614-615, 617; Flyvbjerg, 2006: 223-224, 239-240; Stake, 1978: 6-7; 1995: 1, 7-9, 12, 43-44, 50; 2008: 128, 135-136; Thomas, 2010: 575-578; 2011: 22-30, 32).

Typically of interpretive case study research (see Flyvbjerg, 2006: 237-238), I collected qualitative data of multiple types to better familiarise myself with MonTech, focusing on its service delivery process and its organising. Recognition of the active role of non-humans in the construction of organisational knowledge in the LoP perspective (see 1.1.3, 2.4.3.3 and 2.5.2.3) necessitated collection of data which would elucidate both the social and the material dimensions of service delivery. As a result of the aforementioned access restrictions, which prevented collection of extensive observational material, I relied primarily on qualitative phenomenological-contextualist interviews (e.g. King, 2004a; King & Horrocks, 2010; Kvale & Brinkmann, 2009) (see 3.5.4) to capture the former. As for the latter, I developed my understanding on the basis of documentary data (see 3.5.5) and the limited non-participant observational data (see 3.5.3) I was able to collect during my time at MonTech. Finally, I produced detailed research notes from each of my on-site visits to record my observations and preserve non-verbal features of my interview interactions with MonTech's members, as well as to document the research process (see 3.5.6).

1.5.2 Diffractive analysis

Diffractive analysis² (e.g. Davies, 2014; Jackson & Mazzei, 2012; 2013; Lenz Taguchi, 2012; Mazzei, 2014) is central to my attempt to reinvigorate dialogue between possession- and practice-based theorising of organisational knowledge (see 1.4.1). Consequently, it merits a more detailed consideration as part of my overview of the methodology I had devised for the current study.

Diffractive analysis emerged from the critique of coding-based approaches to analysing qualitative data (see Jackson & Mazzei, 2013; Lenz Taguchi, 2014; Mazzei, 2014; St. Pierre & Jackson, 2014). It entails asking analytical questions, which are based on extant theoretical concepts, of the data and developing alternative explanations by providing answers to them (Davies, 2014: 740; Kvale & Brinkmann, 2009: 236-237; Jackson &

² A number of terms have been proposed as a label for this approach, including 'thinking with theory' (Jackson & Mazzei, 2012), 'plugging in' (Hook, 2015; Jackson & Mazzei, 2012, 2013) and 'diffractive analysis' (Davies, 2014; Lenz Taguchi, 2014; Mazzei, 2014). I chose to use the last one as it best reflects the knowledge it produces.

Mazzei, 2012: 13; 2013: 264; Mazzei, 2014: 744). The aim of asking theory-imbued questions is to produce diffractions – understandings that push research, theory and data beyond their limits and open them up beyond their ordinary, easy sense while preventing the analysis from straying away from either (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271-272). Consequently, the knowledge and meaning that emerges from diffractions is never exhaustive but only irruptive in the sense that it is transformed through subsequent readings of the data with additional theoretical lenses rather than confined to a fixed, organised system (Jackson & Mazzei, 2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269).

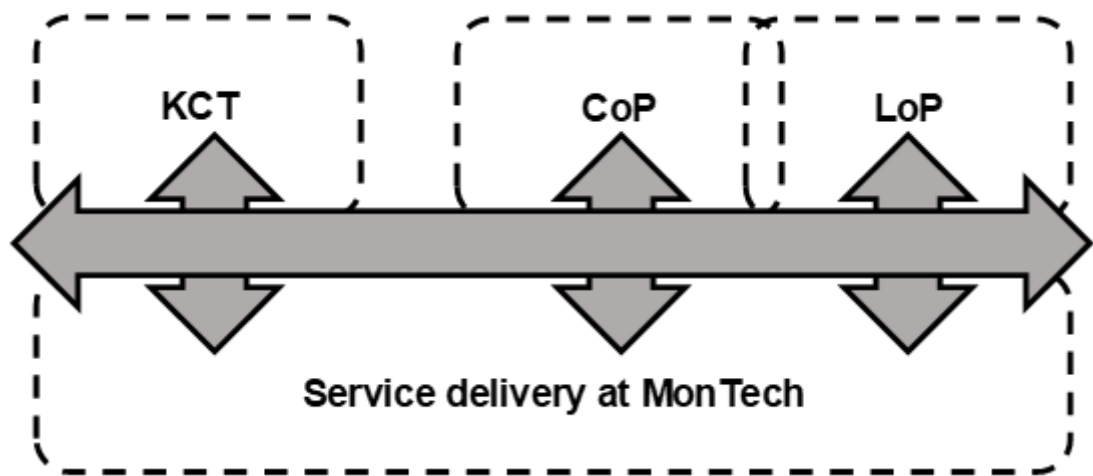


Figure 1.1 Diffractive analysis of service delivery at MonTech

The utility of diffractive analysis to the current study is depicted in Figure 1.1. The upper row of rectangles represents the three approaches to the theorising of organisational knowledge it brings together (i.e. the KCT, CoP and LoP perspective). The overlap between the rectangles representing the CoP and LoP perspectives indicates their familial resemblance (Miettinen et al., 2009: 1312; Nicolini, 2009a: 1394; 2012: 1) and, more generally, dialogue within practice-based studies of organisational knowledge (see 1.4.1 and 2.3.3.2). The rectangle at the bottom of the figure represents the empirical material collected on service delivery at MonTech. The dashed borders of every rectangle indicate that in diffractive analysis, the relationship between theory and the empirical material is not one of interaction between two separate entities, but one of mutual constitution, interdependence and mutual influence (see Jackson & Mazzei, 2012: 4-5, 11, 137-138; Lenz Taguchi, 2014: 271). The vertical arrows linking each theoretical perspective with the empirical material correspond with individual interpretations, which collectively provide the answer to the first research question (see 1.4.2). With regard to the horizontal

arrow, it indicates that diffractive analysis accentuates multiplicity of meaning and emergent differences between alternative explanations and suppleness of each one of them (Davies, 2014: 740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271, 274-275; Mazzei, 2014: 742-744). As such, it can be regarded as representing the theoretical deliberation required to answer the remaining three research questions (see 1.4.2).

1.6 Outline of remaining thesis structure

Chapter 2 comprehensively reviews the extant KCT, CoP and LoP literatures. It begins with an exploration of their intellectual heritage, highlighting their shared origin in the critique of the view of organisational knowledge promulgated by strategic management research. As part of this, it explains that due to their shared socio-constructionist ontology there are no metatheoretical obstacles to engaging in inter-disciplinary dialogue between possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) approaches to the theorising of organisational knowledge. The review continues with a review of past interactions between them, which is followed by an in-depth examination of the conceptual foundations of each of the three perspectives. Finally, KCT, CoP and LoP theories are compared across a set of three dimensions pertaining to how considerations of the social, the material and power feature in their explanations of organisational knowledge.

Chapter 3 provides details of the methodology of the current research. It begins with a consideration of its underlying philosophical assumptions, including a socio-constructionist ontology and an interpretive epistemology. It then explains the rationale and access restrictions which influenced the choice of an interpretive case study as the research strategy for the current study. The ethical issues raised by the research are addressed next. Finally, the chapter explains the choices I made with regard to data collection, including selection of case study organisation, and describes the procedures I followed in analysing the empirical material.

Chapter 4 consists of two parts. The first part is a vivid description of service delivery at MonTech. It is provided to ensure transparency of the subsequent diffractive analysis, which forms the second part of the chapter, by showing how the same data is transformed through its subsequent interpretations with different theoretical lenses (Jackson & Mazzei,

2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269; also Davies, 2014: 734-735, 740; Lenz Taguchi, 2014: 274-275; Mazzei, 2014: 742-744) based on concepts from the KCT, CoP and LoP literatures. In doing this, the chapter provides an answer to the first research question.

Chapter 5 discusses the results of the study. Drawing on the idea that diffractive analysis generates understandings that retain and go beyond what was originally ‘plugged in’ in terms of data and theory (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271), it begins with an examination of how each diffractive reading in Chapter 4 engaged with and extended the reasoning associated with its corresponding theoretical perspective, thus providing an answer to the second research question. Building on these insights, it then scrutinises how well the three perspectives grasped the knowledge involved in and the organising of service delivery at MonTech, thus providing an answer to the third research question. It then proceeds with a discussion of the complementarity of the three interpretations, thus answering the fourth research question.

Chapter 6 brings the thesis to a conclusion. It briefly summarises the research findings and the insights that emerged from their discussion. It subsequently outlines the theoretical, empirical and methodological contributions made. Finally, it reflects on the limitations of the study and offers some directions for future research.

2 Literature review

2.1 Introduction

This chapter explores the similarities and differences between the theorising of organisational knowledge in KCT, CoP and LoP perspectives; it also discusses how they have interacted with one another over the years. Because of the abductive nature of the current study (see 3.2.3.2, 3.3.2, 3.6.1.2 and 3.6.2), it can also be viewed as a repository of concepts and ideas I could have drawn upon in my analysis (see Chapter 4).

I begin with a brief summary of the view of organisational knowledge associated with strategic management literature (see 2.2.1) and its critique (see 2.2.2). I explain that the latter constituted a call for a new, socio-constructionist ontology of organisational knowledge (see 2.2.3) to which the development of the three perspectives I bring together in this thesis can be traced even though the ontological assumptions of the two practice-based approaches (i.e. CoP and LoP) and KCT are not entirely the same. In light of this and having explained the major differences between possession- and practice-based views of organisational knowledge (see 2.3.1-2.3.2), I argue that the hostile attitude of some leading practice scholars towards KCT and other possession-based perspectives (e.g. Gherardi, 2000a; Tsoukas, 1996) is unwarranted. In fact, I believe that there is an opportunity for much more extensive dialogue between possession- and practice-based theorising that could potentially be as intellectually stimulating as the one between the various strands of the latter (see 2.3.3). I continue with a discussion of the conceptual foundations of the KCT, CoP and LoP perspectives (see 2.4). I conclude my literature review with their comparison across three dimensions, which pertains to how the social, the material and issues of power-conflict feature in their analysis of organisational knowledge (see 2.5). I must explain that I did not devise these dimensions prior to the empirical study I discuss in the subsequent chapters (see Chapters 4 and 5). Rather, their final form emerged from my engagement with the empirical material during my analysis of the organising of service delivery at MonTech (see 4.5.1-4.5.3).

Before proceeding with the discussion of the extant literature, I must elaborate on two issues – the logic I have followed in selecting publications for this review and the approach I had taken in classifying various publications across the three perspectives.

Regarding the former, the literature included in my discussion of the KCT perspective is not limited to publications on KCT alone (e.g. Nonaka, 1994; 1994; Nonaka & Takeuchi, 1995; Nonaka & von Krogh, 2009). It also includes other research which adopts a primarily subjectivist conceptualisation of knowledge and displays similar analytical concerns – exploration of the relationships between tacit-explicit and individual-collective aspects of knowledge, as well as the processes through which knowledge becomes embedded in symbolic and technological artefacts (e.g. Hargadon & Fanelli, 2002; Hecker, 2012; Spender, 1996a, 1996b). Thus, it is more appropriate to think of what I define as the KCT perspective and, to a lesser extent, the CoP and LoP perspectives as constructions within the context of this particular research, rather than black-boxed, ready-made theories I bring in without much consideration (Latour, 1987: 4-9). Simultaneously, my review of the KCT literature excludes a vast number of publications that draw on KCT but are not faithful to its conceptual foundations and attempt to redefine it in a manner consistent with the strategic management perspective (e.g. Chou & Wang, 2003; Kao, Wu & Su, 2011; Vick, Nagano & Popadiuk, 2015). Furthermore, while my summary of practice-based theorising and discussion of its relationship with possession-based theorising is not limited to CoP and LoP publications, my discussion of practice-based literature does not fully capture the diversity of this scholarly tradition. In particular, I give no consideration to research examining the corporeal dimension of knowledge (e.g. Gärtner, 2013; Gherardi, Meriläinen, Strati & Valtonen, 2013; Strati, 2007) since it did not inform my analysis of the organising of service delivery at MonTech.

As for the latter, there is a handful of publications which I reference in relation to more than one of the three perspectives. There are two reasons for this. Firstly, the inclusion of the same publications in my discussion of CoP and LoP perspectives reflects the familial relationship between different strands of practice-based theorising (Nicolini 2012: 1, 9, 214) and the existence of publications which bring them together (e.g. Gherardi, 2006, Miettinen, 1999; Nicolini, 2012; Nicolini et al., 2012). Secondly, while some practice-based publications attempt to dismiss possession-based scholarship, including KCT, on conceptual grounds (Collins, 2001; Gherardi, 2000a; Tsoukas, 1996; Turner, 2001), others adopt a more moderate stance and outline its limitations without necessarily advocating its absolute rejection (Blackler, 1995; Blackler et al., 2000; Engeström, 1995; 2000; 2001; Gherardi & Nicolini, 2002a; Giroux & Taylor, 2002). There have even been instances where scholars associated with practice-based theorising have to a varying extent acknowledged (Carlile, 2002; Swan et al., 2007; Tsoukas & Vladimirou, 2001),

expanded on (Mengis et al., 2018; Tsoukas, 2009) or drawn upon (Mittendorff, Geisel, Hoeve, de Laat & Nieuwenhus, 2006) the contributions of possession-based research without subjecting it to any conceptual scrutiny. In light of this, I consider it appropriate to refer to the latter two groups of publications in my discussion of the KCT perspective (see 2.4.1, 2.5.1.1, 2.5.2.1 and 2.5.3.1), provided the ideas they express resonate with its internal debates.

2.2 The strategic management perspective and its critique

2.2.1 Development

The increase in academic interest in knowledge in organisations can be traced back to the re-emergence of the resource-based view (RBV) of the firm (Penrose, 1959), which challenged the view that a firm's competitive advantage was derived from its positioning in its competitive environment (e.g. Porter, 1980). Instead, it argued that competitive advantage stemmed from a firm's unique endowment of resources and capabilities that could be attained by combining them (e.g. Eisenhardt & Martin, 2000; Hall, 1993; Teece, Pisano & Shuen, 1997).

In the early iterations of the RBV, knowledge was not mentioned explicitly, but was considered indirectly through reference to human resources and employee skills since it did not possess any unique characteristics that set it apart from other resources (Kogut & Zander, 2003: 509; also Spender, 1996a: 66). Correspondingly, having more experienced or skilful employees and managers than competitors conferred advantages on the firm (Barney, 1991: 101; Grant, 1991: 118-119; Wernerfelt, 1984: 174). After knowledge was distinguished from other resources, including intellectual property (Winter, 1989: 160), on the basis of its socially-constructed origins, strategic management scholars focused their efforts on exploring its unique characteristics (e.g. imperfect codifiability, context-specificity, dispersion and competence-relevance) (Galunic & Rodan, 1998: 1195-1200; Kogut & Zander, 1992: 386-388; Metcalfe & James, 2000: 33; Zollo & Winter, 2002: 341-343) and explaining how organisational principles affected learning, creation, synthesis and application of knowledge (Grandori & Kogut, 2002: 224; Kogut & Zander, 1992: 384-390; Kogut & Zander, 2003: 505) in pursuit of competitive advantage (e.g.

Cepede & Vera, 2007; Dyer & Singh, 1998; Galunic & Rodan, 1998; Metcalfe & James, 2000; Rothaermel & Hess, 2007; Zollo & Winter, 2002). For some authors, knowledge became a 'critical input in production' and a 'primary source of value' (Grant, 1996: 112).

This intellectual movement spawned a proliferation of articles exploring how sharing, learning and combining knowledge affected capability development, rent generation and competitive advantage (e.g. Cepede & Vera, 2007; Dyer & Singh, 1998; Galunic & Rodan, 1998; Metcalfe & James, 2000; Rothaermel & Hess, 2007; Zollo & Winter, 2002). Their common feature is that knowledge-related activities within and across organisations are still viewed as predominantly managerially-coordinated, if not contingent on the very existence of an organisation (e.g. Cepede & Vera, 2007; Dyer & Nobeoka, 2000; Dyer & Singh, 1998; Eisenhardt & Martin, 2000; Metcalfe & James, 2000; Rothaermel & Hess, 2007; Zollo & Winter, 2002). Correspondingly, the manner in which managers unlock knowledge from their employees in order for it to become organisational is a key concern (Newell, 2015: 2). As a consequence of this logic, the social dynamics of organisational knowledge remain theoretically underdeveloped. A possible explanation for this limitation is that scholars associated with this perspective generally refrain from incorporating insights from sociology in their analyses (Grandori & Kogut, 2002: 230). When conceptual borrowing does occur, ideas and constructs are appropriated in accordance with a managerialist orientation. For example, the distinction between tacit and explicit knowledge, which originated in a thesis on personal knowledge (see Polanyi, 1966: Chapter 1), is used to describe organisational knowledge (see Galunic & Rodan, 1998: 1195-1200; Zollo & Winter, 2002: 341-343; also Winter, 1989: 170-171).

2.2.2 Critique

Critics of the strategic management perspective on organisational knowledge represent a multitude of often competing theoretical perspectives (Easterby-Smith et al., 1998: 260; Friedman, Lipshitz & Popper, 2005: 20-22; Nicolini & Meznar, 1995: 729, 733). Nonetheless, they agree that not only does the strategic management view not grasp the phenomenon of organisational knowledge in its full complexity, it also simplifies it because of dubious conceptual foundations. Their negative assessment revolves around two related issues – the commoditisation and the anthropomorphisation of organisational knowledge and learning (see Gherardi, 2000a: 213).

Commoditisation of organisational knowledge entails perceiving knowledge as a transferable resource (Gherardi, 2006: 11; Marabelli & Newell, 2012: 18-19; Newell,

2015: 7; also Alvesson, 2004: 42-43, 50, 53) or, more specifically, a timeless body of truth used to solve social and material issues (Spender, 1996a: 66; 1996b: 45; Styhre, 2003: 15-16, 21). This conceptualisation is based on the assumption that people can know the world directly. However, this is not the case. People can only interpret the world (Blackler, 1993: 865). Knowledge is always a construction of reality (Giroux & Taylor, 2002: 511) and its constructive processes never cease (Larsen, 2001: 87). Failure to acknowledge this, renders organisational behaviour a simple matter of breaking down complex problems into smaller ones that can be readily solved by individuals who possess the necessary information. This results in a static portrayal of organisational life whereby knowledge is concerned with problem depiction and resolution rather than ongoing processes of problem definition (Easterby-Smith et al., 1998: 263; Engeström, 2001: 137-138; Nonaka, 1994: 14; Nonaka & Toyama, 2003: 3-4; Nonaka et al., 2006: 1180-1181). This is evident in strategic management's preoccupation with organisations' knowledge bases (e.g. Cepede & Vera, 2007; Metcalfe & James, 2000; Rothaermel & Hess, 2007).

Anthropomorphisation of organisational knowledge and learning entails bestowing the capacity to know and learn on organisations themselves (Cook & Yanow, 1993: 356, 358-359; Friedman et al., 2005: 22-23). If the organisation can know on its own or, at least, irrespective of its members' reasoning (Nicolini & Mezner, 1995: 730; Spender, 1996b: 51), it can be treated as if it were a container for knowledge and learning, resulting in no consideration being given to how either of them actually occurs (Araujo, 1998: 1998: 317-318; Gherardi, 2000b: 1059; Lee & Cole, 2003: 634; Scarbrough et al., 2007: 260). This 'unwarranted simplification' (Friedman et al., 2005: 23) enables strategic management scholars (e.g. Dyer & Nobeoka, 2000; Dyer & Singh, 1998) to locate organisational knowledge in firm and inter-firm routines (Araujo, 1998: 319), which are to organisations what skills are to individuals (Miettinen & Virkunen, 2005: 439-440). When organisational knowledge is equated first and foremost with organisational routines, it remains largely susceptible to deliberate managerial control, while the role of employees is reduced to that of rule followers (e.g. Gherardi, 2000a: 213; 2006: 13-14; 2009: 353; Giroux & Taylor, 2002: 497-498; Spender, 1996b: 47). I must point out that the opposite notion whereby organisational knowledge and learning are an aggregate of individual knowledge and learning is equally problematic since challenges associated with the former cannot be solved by the latter (Cook & Yanow, 1993: 360; Engeström, 2001: 140).

Taken together these two conceptual flaws prevent strategic management explanations of organisational knowledge and learning from acknowledging: 1) the tensions and issues of power inherent in learning in social contexts (Gherardi, 2006: 12; Scarbrough et al., 2007: 261-262); 2) the significance of context to understanding, learning and practice (Handley, et al., 2006: 643); and 3) the important social micro-mechanisms through which knowledge becomes valuable at large (Hecker, 2012: 425). Overcoming these limitations requires acknowledging several issues. Firstly, knowledge does not exist independently of people and their actions (Essers & Schreinemakers, 1997: 25; Blackler, 1993: 881; Nonaka, 1991: 97, 99, 1994: 17). Secondly, organisational knowledge is constructed, negotiated, organised and utilised through primarily social means (Blackler, 1993: 864; Pentland, 1995: 2). As such, it is distributed throughout the entire organisation rather than contained within its managerial function (Larsen, 2001: 84, 86; Pentland, 1995: 2). Thirdly, the settings in which activities are carried out are not defined and provided *a priori* but emerge in action (Blackler, 1993: 868) and are characterised by a multiplicity of meanings and interests (Easterby-Smith et al., 1998: 263). In light of this, the very concept of knowledge management is an oxymoron since knowledge is fluid and processual whereas management is about control and order (Kalling & Styhre, 2003: 25 in Gherardi, 2006: 12). Thus, the management is unable to exercise complete control over it (Larsen, 2001: 85-86, 88; Spender, 1996a: 75). Interventions which fail to recognise this may have unintended, negative consequences (Marabelli & Newell, 2012: 21). Accounting for these issues necessitates a shift in attention from what organisations know to how they know (Blackler, Reed & Whitaker, 1993: 1017; Larsen, 2001: 101) or how knowing happens (Gherardi, 2001: 134) through the analysis of social practices and social interactions (Charreire Petit & Huault, 2008: 76-77; Tsoukas, 2009: 941) rather than the results of the application of rules, blueprints and plans by the management (Nicolini, 2012: 2). Each of the three perspectives I bring together in this research (i.e. KCT, CoP and LoP) achieves this in a distinct manner and offers a unique explanation (see 2.4 and 2.5).

2.2.3 Towards a new ontology of organisational knowledge

Arguably, an important preliminary step in any attempt to engage in a deeply theoretical discussion between divergent perspectives, is to establish that they describe what is ontologically the same phenomenon. Unless this is done, the possibility of productive dialogue can be challenged on grounds of ontological incommensurability of the perspectives being brought together (see Burrell & Morgan, 1979: 23; Jackson & Carter, 1991: 109-110, 116-117; 1993: 721-723; Schultz & Hatch, 1996: 533). As far as my

attempt to engage in a theoretically productive dialogue between a possession-based (i.e. KCT) and two practice-based views of organisational knowledge (i.e. CoP and LoP) is concerned, this can be avoided by acknowledging that the critique in which they originate (see 2.2.2) constituted a call for a new ontology of organisational knowledge rooted in socio-constructionism. Cunliffe's (2011) objectivist-subjectivist-intersubjectivist spectrum of research problematics in organisation, business and management studies, supplemented by additional publications I refer to in this section and throughout Chapter 3, enables exploring this argument in greater detail by providing a systematic means of comparing research philosophies on the basis of several assumptions, including those pertaining to the adopted ontology (see Cunliffe, 2011: 653-656) (see Table 3.1).

Although the strategic management literature increasingly acknowledges the socially-constructed nature of knowledge (see 2.2.1), its ultimate aim remains to be the development of an understanding of organisational knowledge as an empirical, measurable construct, explicable in terms of organisational structures, rules and designs (Grandori & Kogut, 2002: 224; Kogut & Zander, 2003: 505). This indicates its commitment to a research agenda which corresponds with the moderate variety of Cunliffe's (2011) objectivist problematic. Its associated ontology recognises that at least some aspects of reality are perceived as emergent, subject to change, contested and lacking clear boundaries (Bechara & van de Ven, 2011: 348; Cunliffe, 2011: 655-656; Langley, 1999: 691-692; Langley, Smallman, Tsoukas & van de Ven, 2013: 1, 4-6, 9-11). However, people are still regarded as acting rather deterministically as part of and in accordance with the governing principles of the macro-world (Cunliffe, 2011: 656; Morgan & Smircich, 1980: 495).

In comparison, critics of the strategic management view of organisational knowledge adhere to a socio-constructionist ontology (Engeström, 2000a: 301; Charreire Petit & Huault, 2008: 74; Easterby-Smith, Crossan & Nicolini, 2000: 787; Gherardi, 2000b: 1074; Gherardi & Perrotta, 2014: 136), which in Cunliffe's (2011) framework is associated with the subjectivist problematic. Traditionally, socio-constructionism assumes a participatory reality in which individuals are believed to be both responding to and jointly shaping the context of their existence (Cunliffe, 2008: 124; Karataş-Özkan & Murphy, 2010: 458-459; Newton, Deetz & Reed, 2011: 18-19). Its more recent forms further recognise that the act of social construction is partially delegated to the material world itself rather than being a human prerogative (Latour, 1987: 125-127, 130; 1996b: 369; Latour & Woolgar, 1986: 64-65, 68-69; Rheinberger, 2005: 409).

Arguably, the above indicates that there are no ontological counterindications to dialogue between possession- (i.e. KCT) and practice-based (i.e. CoP and LoP) views of organisational knowledge and that the hostile attitude of some leading practice scholars towards KCT and other possession-based perspectives (e.g. Gherardi, 2000a; 2000b; Gherardi et al., 1998; Tsoukas, 1996) (see 2.3.3) is unwarranted. Nonetheless, I must acknowledge that the ontologies of these two forms of theorising are not entirely the same. In comparison with the former, the latter adheres to a of reality in which 'the world is socially constructed through our practices rather than our practices being the product of our social construction' (Marabelli & Newell, 2012: 19; Miettinen et al., 2009: 1313). In other words, practice precedes knowledge, subjects, objects, cognition, norms and representations, and itself 'constitutes an explanation of social life' (Gherardi, 2001: 132; Miettinen et al., 2009: 1312).

2.3 Possession- and practice-based theorising

The three perspectives I bring together in this thesis are associated with two distinct forms of theorising of organisational knowledge and learning to which Cook and Brown (1999) refer to as the 'epistemology of possession' and the 'epistemology of practice'. The KCT perspective (see 2.4.1, 2.5.1.1, 2.5.2.1 and 2.5.3.1) is part of the former, whereas the CoP (see 2.4.2, 2.5.1.2, 2.5.2.2 and 2.5.3.2) and LoP (see 2.4.3, 2.5.1.3, 2.5.2.3 and 2.5.3.3) perspectives are associated with the latter. In light of this, Cook and Brown's (1999) distinction is an excellent means for framing the discussion of how CoP and LoP, as strands of practice-theorising, differ from KCT.

2.3.1 Possession-based theorising

Possession-based theorising views knowledge as an entity, or a substance, which can be possessed and stored in some form of memory from which a learner can acquire it in order to store it in their brain for future use (Cook & Brown, 1999: 382; Gherardi, 2006: 1). Relatedly, agents and their actions are regarded as two distinct units of analysis (Marabelli & Newell, 2012: 26). Because this form of theorising often employs knowledge typologies and devotes considerable attention to the relationship between different aspects of knowledge (e.g. Hargadon & Fanelli, 2002; Nonaka & Takeuchi, 1995; Spender, 1996a; 1996b) it has also been referred to as the taxonomic perspective (Orlikowski, 2002: 250; Tsoukas, 1996: 13-14).

2.3.2 Practice-based theorising

In comparison, practice-based theorising rejects the notions that knowledge exists and awaits to be discovered (Gherardi, 2006: 19) and that it resides in individual heads or is externally embedded in artefacts (Gherardi, 2001: 133; 2006: 41; 2009: 354; 2016: 681; Marabelli & Newell, 2012: 19). Instead, it argues that knowledge is fabricated by situated practices (Gherardi, 2006: 19) and is ‘manifest in and through’ those practices (Marabelli & Newell, 2012: 19). Correspondingly, knowing and learning are portrayed not as cognitive activities but as social and participatory ones (Blackler, 1993: 881; Gherardi, 2000a: 215; 2000b: 1060; Nicolini et al., 2015: 8; Orlikowski, 2002: 249; also Nicolini, 2011: 603, 610-611). Thus, practices constitute ‘a foundation for social order and institutions’, as well as ‘an explanation of social life’ on the basis that they precede knowledge and cognition (Miettinen et al., 2009: 1312-1313; also Nicolini, 2012: 13-14; Schatzki, 2001: 53). Their analysis elucidates the epistemic work done as the world is engaged in practice (Cook & Brown, 1999: 382-383, 388, 392-393; Tsoukas, 2002: 422) by highlighting what people do and how they accomplish it rather than what they know (Blackler, 1995: 1039; Blackler et al., 2000: 281; Gherardi, 2001: 134; Nicolini et al., 2015: 8; Whittington, 1996: 732).

Because of the above characteristics, practice-based explanations focus on people, routine and situated activity rather than organisations, change and abstract processes (Whittington, 2003: 118; also Chia & Holt, 2006: 640). In doing this, they focus on micro activities rather than whole processes (Chia & Holt, 2006: 636). In effect, the social, material, historical and structural contexts in which knowledge is fabricated are brought to our attention (Corradi, Gherardi & Verzelloni., 2010: 267).

While the above description offers a good summary of how practice-based perspectives distinguish themselves from more conventional forms of theorising of organisational knowledge, it must be recognised that a single, unified theory of practice does not exist (Corradi et al., 2010: 267; Gherardi, 2006: 13; Miettinen et al., 2009: 1312; Nicolini, 2007: 892; Nicolini et al., 2015: 3; Schatzki, 2001: 2; Tsoukas, 1996: 17-18). In fact, the practice label has not been unilaterally embraced by practice-oriented theorists (see Nicolini, 2012: 11). Regardless, the most widely recognised approaches to theorising practice include: cultural perspectives (e.g. Cook & Yanow, 1993; Knorr-Cetina, 1999; Yanow, 2015), aesthetic perspectives (Gärtner, 2013; Gherardi et al., 2013; Strati, 2007), SLT (e.g. Brown & Duguid, 1991; 2001; Lave & Wenger, 1991; Wenger, 1998), cultural-historical

activity theory (CHAT) (e.g. Blackler, 1993; 1995; Engeström, 1995; 2000b; Miettinen & Virkunen, 2005) and actor-network theory (ANT) (e.g. Callon, 1984; Latour & Wolgar, 1986; Law, 1992; Nicolini, 2010) (for summaries, see Gherardi, 2006: 15-17; Nicolini, 2012; Nicolini et al., 2015: 17-19). They differ from one another with regard to how they 'understand practice, conceptualise agency, and approach development and change' (Blackler & Regan, 2009: 161, 172). However, despite such fundamental differences, they 'share a series of family resemblances' (Nicolini, 2012: 9; also Corradi et al., 2010: 277-278; Miettinen et al., 2009: 1312), which must be elaborated on.

2.3.2.1 Composition and consistency of practices

There is no unilaterally accepted definition of practice (e.g. Gherardi, 2006: 34; Miettinen et al., 2009: 1312; Nicolini, 2011: 603-605; Schatzki, 2006: 1836-1864) and practice theorists differ with regard to how they conceptualise the relationship between knowing and practice (Gherardi, 2006: 36-39; Marabelli & Newell, 2012: 19-20; Nicolini, 2011: 603-604) (see 2.3.3.2). Nonetheless, there is agreement with regard to the basic composition of practices and their temporal durability. With regard to the former, practices are not equivalent to individual activities. Rather, a practice comprises multiple interlinked actions (i.e. sets of doings, sayings, task performances) (Blackler & Regan, 2009: 172; Engeström, 2000b: 964; Gherardi, 2006: 34; Knorr Cetina, 1999: 9-10; Nicolini, 2012: 10, Schatzki, 2001: 56; 2005: 471; 2006: 1863-1864). Individual activities cannot be understood without consideration of the practices they are part of (Blackler & Regan, 2009: 172; Engeström, 2000: 964; Gherardi, 2006: 34). As for the latter, singular events do not constitute practices no matter how complex they are (Nicolini, 2012: 227). For a set of actions to be recognised as a practice (i.e. 'a habitual mode of doing') it must be repeated multiple times (Chia & Holt, 2006: 637; Gherardi, 2006: 34).

2.3.2.2 The language of practice theorising

Perhaps the most easily noticeable feature of practice-based theorising is the use of verbs (e.g. doing, being, knowing) and nouns, which indicate performativity (e.g. activity, alignment, construction and enactment) (Nicolini et al., 2015: 21). For example, the interest of practice scholars in what people do rather than what they know (see 2.3.2) is reflected in their preference to discuss 'knowing', rather than 'knowledge'. The latter invokes the notions of abstraction, permanency, mentalism (Blackler, 1995: 1035) and institutionalisation of ways of acting associated with descriptions of how something is done. The former pertains to the actual doing (Nicolini et al., 2015: 3, 11), which is

understood as an active process (Blackler, 1995: 1023) occurring within an emergent reality (Corradi et al., 2000: 274), within which knowledge is dynamic, emergent and provisional (Nicolini et al., 2015: 11). Thus, it captures ‘the epistemic work that is done as part of action or practice’ (Cook & Brown, 1999: 387). Overall, such vocabulary ‘signal[s] the constructive nature of the social and material world and convey[s] an image of knowing as materiality, fabrication, handiwork, the craftsman’s skill, conflict, and power struggle’ (Nicolini et al., 2015: 21). In simpler terms, knowing is not stable and enduring, but enacted in the moment, virtual and provisional (Orlikowski, 2002: 252-253).

2.3.2.3 *Rejection of dualisms*

Practice-based explanations of organisational knowledge often employ the term ‘knowing’ as part of a broader concept of ‘knowing-in-practice’, which was introduced by Orlikowski (2002: 252) to convey the idea that ‘knowing is an ongoing social accomplishment, constituted and reconstituted in everyday practice’. The concept resonates with a similar argument that learning is not a separate process from practice (Araujo, 1998: 317-318, 322; Blackler, 1995: 1038; Lave & Wenger, 1991: 35-38). In fact, the more recent interpretations of ‘knowing-in-practice’ are an amalgam of these two ideas. ‘Knowing-in-practice’ means that in everyday practices knowing and learning are not separate activities, but ‘take place in the flow of experience, with or without our being aware of it’ (Gherardi, 2006: 14; also Gherardi, 2001: 133, 2016: 691; Nicolini et al., 2015: 26). The related concept of formativeness, which is defined as “doing” such that while it does, it invents the “way of doing”, expresses the idea that knowledge is created as the object of practice is realised (Gherardi & Perrotta, 2014: 145-146; also Blackler & Regan, 2009: 164; Blackler et al., 2000: 279-281; Engeström, 1995: 397). The treatment of knowing and learning as inseparable from doing is indicative of another major feature of practice-based theorising – the rejection of dualisms in its descriptions of the world (Gherardi, 2009: 355; Miettinen, 1999: 171; Miettinen et al., 2009: 1313; Nicolini, 2012: 2). Practice theorists argue that the rigid distinctions dualisms imply only arise when breakdowns are experienced in people’s ordinary, pre-reflexive engagement with the world. In such, circumstances, reflexive understanding takes over and distinctions are drawn (Nicolini et al., 2015: 9-10; Sandberg & Tsoukas, 2011: 344-348; Yanow & Tsoukas, 2009: 1351-1353; also Bruni, Gherardi, Parolin, 2007: 99).

The concept of ‘knowing-in-practice’ can be unravelled further to highlight additional dualisms which practice-based theorising avoids. Firstly, it does not consider stability and

change to be opposing concepts (Baumann, 1999 in Nicolini et al., 2015: 27; Feldman & Orlikowski, 2011: 1249). Instead, it recognises the mutual constitution of the reproduction of existing knowledge and its extension as the world is engaged with in practice (Araujo, 1998: 322; Gherardi, 2001: 137; 2006: 35; Nicolini, 2012: 227; Nicolini et al., 2015: 8, 26). Secondly, practice theorising upsets the traditional dichotomy between order and disorder. Instead, uncertainties, conflicts, incoherencies, paradoxes and tensions are considered to be inherent in practical activity (Blackler et al., 2000: 281; Nicolini et al., 2015: 23). This notion is particularly important to CHAT, in which tensions and contradictions, which are suppressed in normal situations, may be revealed and acted upon, thus resulting in changes in activity systems (Engeström, 1999: 67-68; 2000b: 964; 2001: 135-137). Thirdly, practice theories reject the distinction between context and action. Situatedness of practice means that the context is not a pre-given backdrop shaped by socio-economic relations against which knowledge and learning take place (Gherardi, 2001: 134-135). The context is not a container for action but 'a situation in which the interests of the actors and the opportunities furnished by the environment meet and are reciprocally defined (Gherardi & Perrotta, 2014: 136). Understanding that informs action does not reside in the head, but is implicit in the activity itself (Tsoukas, 1996: 16; Nicolini, Mørk, Masovic & Hanseth, 2018: 314). Fourthly and relatedly, when knowing and doing are no longer perceived as separate, 'there is no distinction between subject and object'. Thus, the subject and the object are not in opposition to each other (Nicolini et al., 2015: 9, 26) but mutually constitute one another (Sandberg & Tsoukas, 2011: 347). They are both absorbed in practice, which their relationship holds together (Knorr-Cettina, 2001: 185, 187). Fifthly, practice theorists consider the distinction between individual, organisational and inter-organisational levels of analysis to be arbitrary (Gherardi, 2001: 132). Correspondingly, studies conducted from a practice perspective span multiple analytical levels (i.e. micro, meso and macro), which are not considered independently. Consequently, the local-global (Miettinen et al., 2009: 1309-1310) and individualism-societism distinctions are abolished. In relation to the latter, the mistake of attributing excessive influence to either individuals or social forces at the expense of the other is avoided (Whittington, 2006: 614-615; also Pickering, 1993: 561). The final dualism rejected in practice-based theorising is characteristic of more recent research (see Nicolini et al., 2018: 308-309), which adopts a post-humanist orientation whereby humans are decentred as the sole subject with agency and, thus, are no longer at the centre of practice (Fenwick, Nerland & Jensen, 2012: 6-7; also Gherardi, 2006: 36; 2017: bq). Simultaneously, material and symbolic artefacts are elevated from their

background role and become actively involved in sociality and the accomplishment of practice (Gherardi, 2009: 353-354; Nicolini, 2012: 4; Nicolini et al., 2015: 22; Orlikowski, 2007: 1436-1437; Pickering, 1993: 562-563). In effect, the distinction between humans and non-humans (i.e. the social and the material) is abandoned as both are perceived to be carriers of knowledge in practice (Nicolini et al., 2012: 26; also Knorr-Cetina, 1999: 11-12). While in case of some theorists this results in a symmetrical treatment of human agency and material performativity, others believe that the two differ in their influences (Blackler & Regan, 2009: 162-163; Gherardi, 2016: 692-693; Miettinen, 1999: 177-179; Orlikowski, 2005: 184-185; Pickering, 1993: 557, 565-567, 580).

2.3.2.4 Relationality

The general reluctance of practice-based theorising towards describing phenomena in terms of dualisms and the rejection of the subject-object and human-non-human dualisms, in particular, can be associated with a more fundamental feature of the approach – the prioritising of relationships over entities (i.e. relationality) (Chia & Holt, 2006: 637; Fenwick et al., 2012: 7). Relationality denies the existence of discrete entities with well-defined boundaries and fixed characteristics (Barad, 2003: 815; Feldman & Orlikowski, 2011: 1246, 1248; Latour, 1996b: 374; Sandberg & Tsoukas, 2011: 341; also Engeström, 2000a: 302), on the basis that being is only possible as part of a ‘meaningful relational totality’ with other beings (Sandberg & Tsoukas, 2011: 343, 347). Knowledge, subjects, objects, artefacts, rules, technologies, and other practice resources do not pre-exist practice (Gherardi, 2001: 132) but are mutually produced through their relations in its enactment (Bruni et al., 2007: 85; Gherardi, 2016: 689; Fenwick et al., 2012: 7; also Engeström & Blackler, 2005: 310; Blackler et al., 2000: 279, 296-297; Gherardi, 2017: bm, bq; Knorr-Cetina, 1999: 128-129; Nicolini, 2011: 604). More specifically, their boundaries, forms, qualities and agentic capacities are intra-actively (i.e. having never existed independently) constituted through those relations (Barad, 2003: 815; Gherardi et al., 2017: 3). The related concept of performativity conveys the idea that if the relations in which human and non-human entities are located ‘do not hold fast by themselves, they have to be performed in, by and through those relations’ (Gherardi, 2001: 135; also Gherardi, 2006: 226). Reality as a whole is conceived as an ‘ongoing routinised and recurring accomplishment’ and even its most durable aspects (e.g. organisations and social structures) may cease to exist if the practices that keep them in existence cease to be performed (Feldman & Orlikowski, 2011: 1250; Nicolini, 2012: 3). This has implications for considerations of individual identity, meaning and agency.

From a relational standpoint, neither the individual nor the system is the source of identity (Nicolini, 2012: 178). Rather, people derive their identities and knowledge from practices in which they engage (Gherardi, 2006: 36; Marabelli & Newell, 2012: 19). Likewise, objects receive their meaning from their entwinement in specific practices (Sandberg & Tsoukas, 2011: 343). The former is one of the central issues in CoP literature (Brown & Duguid, 2001: 202; Lave & Wenger, 1991: 53; Orr, 1996: 1, 6). The latter is manifested particularly prominently in the concept of boundary objects (e.g. Carlile, 2002; Star & Griesemer, 1989; Wenger, 1998), which features prominently in it (see 2.5.2.2).

Regarding agency, in practice-based research agency is not a prerogative or inherent attribute of any actor, human and non-human alike. Rather, it is enacted in practice in the field of interactions or intra-actions comprising them (Barad, 2003: 826-827; Blackler & Regan, 2009: 163; Gherardi, 2006: 36; 2017: bq; also Engeström, 2000a: 304; Latour, 1996a: 237-238; 1996b: 373; Pickering, 1993: 564, 566). I must emphasise that a relational understanding of agency does not render the individual mindless. There is ‘space for initiative, creativity, and individual performance’ (Engeström, 2000a: 305; Nicolini, 2012: 4) as practical performances require adaptation to changing local circumstances, which does not amount to either mindless repetition or complete invention (Nicolini, 2012: 5). Rather, it leads to acknowledging that agency and knowledge are always shared (Nicolini, 2012: 178), distributed (e.g. Blackler et al., 2000: 278; Gherardi, 2006: 41; 2009: 353-354; 2016: 684; 2017: br; Gherardi & Nicolini, 2002a: 210, 218; Knorr Cetina, 1999: 242; Nicolini, 2007: 900; Nicolini et al., 2018: 309) and/or fragmented (Bruni et al., 2007: 84; 86-87; Gherardi, 2006: 41) among human and non-human entities entangled in practice. According to Bruni et al. (2007: 86), ‘fragmentation’ is the preferable term since it does not create the impression of a harmoniously shared reality. This understanding of the constitution of agency is particularly evident in the concept of epistemic objects, which are objects which actively participate in their own exploration by continuously posing problems for and asking questions of those attending to them (Ewenstein & Whyte, 2009: 22; Knorr Cetina, 1997: 13; Rheinberger, 2005: 408) (see 2.5.2.3).

2.3.3 Interaction between possession- and practice-based theorising

2.3.3.1 Towards inter-disciplinary dialogue

With the key features of possession- and practice-based theorising outlined, I can proceed with an exploration of how the two approaches have interacted over time. The most

suitable point of departure is the support for inter-disciplinary dialogue that coincided with the critique of the strategic management-based view of organisational knowledge (see 2.2.2). Specifically, Easterby-Smith et al. (1998: 261-262), commented that even though differences in the underlying assumptions of its constituent perspectives made it inappropriate to pursue their integration, authors contributing to the critique should relate to other disciplinary approaches and possibly borrow concepts from them, provided their underlying assumptions were observed. As I will demonstrate in the next two sections, this agenda has been realised to a progressively greater extent among practice-based scholars. In comparison, interaction between possession- and practice-based theorising has been sporadic, alienating and lacking in theoretical depth.

2.3.3.2 Familial resemblance of practice-based theorising

When the first issue of the *Organization* devoted specifically to practice-based theorising was published in 2000, the ‘practice turn’ (Schatzki et al., 2001) has not yet spread across the social sciences. In light of this, scholars associated with this emergent movement in organisation studies focused their efforts on defining their ‘turn to practice’ rather than distinguishing its constituent strands (Gherardi, 2016: 680-681). In fact, earlier publications did not necessarily describe the emerging movement using the word ‘practice’ whatsoever. For example, Blackler (1995: 1035-1036) described the CoP perspective as one of the contemporary versions of activity theory alongside what is now commonly referred to as CHAT (e.g. Blackler et al., 2000; Engeström, 1995; 2000b; Miettinen & Virkunen, 2005). The amount of effort that has been put into defining a practice-based perspective is reflected in the richness of its definition, as well as the amount of text required to summarise it (see 2.3.2).

With practice theorising having established its foothold, efforts were redirected towards greater appreciation of differences among its various strands (Gherardi, 2016: 692). This movement manifests in the development of typologies based on differences in: 1) whether the concept of practice is deployed as an ‘empirical object’ or a ‘way of seeing’ (Corradi et al., 2010: 268-276); 2) conceptualisations of the relationship between knowing and practice (Nicolini, 2011: 603-604; Marabelli & Newell, 2012: 19-20); 3) whether an approach focused primarily on arrangements of practices or more bounded-units such as communities (Marabelli & Newell, 2012: 20; Nicolini et al., 2015: 24); 4) what an approach can reveal about local practices and wider practice arrangements (Nicolini, 2012:

219-238); and 5) the degree of symmetricity in the treatment of humans and non-humans (Gherardi, 2016: 692-693; Nicolini et al., 2018: 309).

Despite the above development, the various strands of practice theorising did not grow apart. On the contrary, their family resemblance has been increasingly accentuated (Miettinen et al., 2009: 1312; Nicolini, 2009a: 1394; 2012: 1) and the flourishing discourse within practice-based theorising can still be described as an open conversation with multiple voices (Corradi et al., 2010: 267; Gherardi, 2006: 18; also Gherardi, 2000a: 220). In fact, some scholars speak with multiple voices themselves by publishing research which is not associated with one particular strand of practice theorising but bridges multiple complementary approaches (e.g. Gherardi, 2006; Nicolini, 2006; 2007; 2010; 2011; 2012). Even when practice theorists point out the strengths of the approaches they advocate in relation to the limitations of others, this is done in the spirit of theoretical complementarity by recognising they elucidate different aspects of practices (see Blackler et al., 2000: 297-298; Miettinen, 1999: 171, 174-179, 181-182; 185, 191-192; Swan et al., 2007: 1833). In fact, the differences and similarities between the various strands of practice-based theorising can be used productively (Nicolini, 2012: 1) to produce thicker descriptions of everyday life. This can be achieved by examining phenomena from multiple perspectives (*ibid.*: 9-10) by differentially ‘zooming in’ on local practices and ‘zooming out’ to capture their wider arrangements (*ibid.*: 213).

Relatedly, some conceptual borrowing has occurred, albeit sometimes without sufficient consideration of the potential tensions between host and native perspectives, which arise out of differences in their underlying assumptions. For example, Nicolini et al. (2012) and Barley (2015) both deployed the concepts of boundary objects and epistemic objects in their analyses. However, although they outlined their theoretical origins, they did not problematise whether this posed any problems for their combined use. In comparison, Ewenstein and Whyte (2009: 8-10) and Scoles (2018: 274-278, 284) have considered the transposition of the concept of boundary objects into other strands of practice-based theorising with much greater scrutiny.

2.3.3.3 *Alienation of possession- and practice-based approaches*

While the preceding section demonstrates that dialogue, which largely corresponds with the one called for by Easterby-Smith et al. (1998: 261-262), is taking place within practice-based theorising, interactions between proponents of possession- and practice-based views of organisational knowledge have been radically different. One possible

explanation for this is that the former presented their work as complementary with the strategic management view (Nonaka & von Krogh, 2009: 636; Spender, 1996b: 47, 49-50) instead of attempting to legitimise a radically different approach to the study of organisational knowledge (see 2.3.3.2) like their practice-oriented peers. This might have made it necessary for the most radical practice theorists to distance themselves as much from possession-based theorising as from the strategic management conceptualisation of organisational knowledge (Newell, 2014: 8) by portraying them as equally dangerous (Gherardi, 2000a: 211) and undermining the former's foundational concepts pertaining to the distinction between tacit and explicit knowledge (Collins, 2001: 122-123; Tsoukas, 1996: 13-15; Turner, 2001: 138) (see 2.4.1). In comparison, those adopting a less militant stance, focused on the limitations of possession-based theorising without necessarily calling for its dismissal, albeit without much appreciation of its contributions (Blackler, 1995: 1033-1035; Blackler et al., 2000: 298; Engeström, 1995: 410-411; 2000: 967-968; 2001: 151; Gherardi & Nicolini, 2002a: 192-194; Giroux & Taylor, 2002: 499-503). Regardless, in both cases the ultimate goal was to demonstrate the superiority of practice-based theorising (Blackler et al., 2000: 298; Gherardi, 2001: 134-135; 2016: 685; Nicolini, 2012: 176), which effectively contributed to the alienation of the two approaches. This effect can be attributed to the rhetoric employed across both standpoints, which invariably comprised a critique of the conceptual foundations of possession-based theorising, a proposal of a better set of concepts and a compelling empirical or fictitious narrative illustrating their superiority.

In principle, there is nothing inherently wrong with criticising an existing set of concepts and introducing an alternative. However, in case of this particular debate, this must be done in accordance with the principles of interpretive epistemology, to which both possession- and practice-based theorists must adhere (see 3.2.2). Specifically, it must be recognised that the empirical material is not static, complete and representational, but undergoing a continuous process of becoming as it is attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273). In simpler terms, different theoretical lenses enable seeing a phenomenon from a different angle rather than seeing its different parts or a different phenomenon altogether. Consequently, just because a narrative demonstrates the utility of a particular set of concepts; it does not automatically render other constructs incorrect or irrelevant. Nonaka and von Krogh (2009: 644-646) allude to this in their response to the accusations

made against KCT by practice theorists when they rightfully argue that it is inappropriate to criticise KCT for failing to achieve what it never sought to achieve.

I must emphasise that practice-based scholars have not always been critical towards possession-based research. In fact, there have been instances where they have acknowledged its contributions (Carlile, 2002: 444; Swan, et al., 2007: 1821; Tsoukas & Vladimirou, 2001: 974-976), implicitly contributed to it (Mylonopoulos & Tsoukas, 2003: 140), presented themselves as expanding on it (Mengis et al., 2018: 598; Tsoukas, 2009: 941-943) and borrowed concepts from it (Mittendorff et al., 2006: 301-303). However, in all cases this has occurred without addressing the fundamental differences between possession- and practice-based theorising.

Finally, there has been one comprehensive attempt to integrate possession- and practice-based theorising (Cook & Brown, 1999). However, the extent to which the authors have succeeded can be questioned on two grounds. Firstly, the authors controversially included seminal works in the CoP perspective (Lave & Wenger, 1991; Orr, 1996) in their discussion of possession-based theorising (Cook & Brown, 1999: 385-386). Secondly, they reinterpreted the tacit-explicit duality (Nonaka, 1991: 98; 1994: 15; Nonaka & von Krogh, 2009: 636, 640-641, 647), which is fundamental to possession-based theorising (see 2.4.1), as a dichotomy (Cook & Brown, 1999: 384-385). In effect, rather than bridging the two approaches to theorising organisational knowledge, they have developed their own perspective. In fact, their work has been recognised by some practice-based scholars as a variant of practice theorising rather than an attempt to integrate possession- and practice-based approaches (Nicolini, 2011: 603-604; Marabelli & Newell, 2012: 19-20).

2.3.3.4 Reinvigorating dialogue between possession- and practice-based theorising

Summarising the preceding discussion in this chapter, despite shared origin in the critique of the strategic management view of organisational knowledge (see 2.2.2), shared socio-constructionist ontological foundations (see 2.2.3) and a favourable climate for interdisciplinary discourse (see 2.3.3.1), dialogue between possession- (e.g. KCT) and practice-based theorising (e.g. CoP and LoP) has been rather limited, alienating and often lacked theoretical depth (see 2.3.3.3). In comparison, debates within practice-based scholarship have been vibrant and theoretically insightful (see 2.2.3.2).

I have previously suggested that the poor quality of dialogue between possession- and practice-based theorising could be explained by the former's need to establish itself as a legitimate approach to the study of organisational knowledge (see 2.3.3.3). Arguably, with this goal having been realised (Corradi et al., 2010: 276-277), an important obstacle to inter-disciplinary interaction has vanished.

Greater dialogue is desirable for two reasons. Firstly, it could prove to be as intellectually enriching as the debate within practice-based theorising (see 2.3.3.2). Secondly, by clarifying the distinctions and complementarities between possession- and practice-based scholarship, the combined influence of the two approaches could increase relative to that of the strategic management view they criticise. The reason for the latter is that the main practical insights the critique as a whole conveys, which pertain to the limited susceptibility of organisational knowledge to intentional and deliberate managerial control (Gherardi, 2000a: 213; Lee & Cole, 2003: 634; Spender, 1996b: 47; also Nicolini & Meznar, 1995: 731), is likely to be 'both unfamiliar and perplexing' to practitioners (Blackler, 1993: 866). Arguably, presenting them with a multitude of alternative explanations as to why this is the case without fully charting the relationships between them (i.e. within practice-based theorising and across possession- and practice-based theorising) is likely to exacerbate their confusion, which could negatively affect the translation of ideas associated with either form of theorising into practice.

The approach I propose to reinvigorating the dialogue between possession- and practice-based theorising draws on the criticism I expressed in relation to the rhetoric used to alienate them (see 2.3.3.3) – empirical material is not static, complete and representational but undergoes a continuous process of becoming as it is attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273). With this being the case, one way to explore the relationships, complementarities and tensions between possession- and practice-based theorising is through the use of diffractive analysis – an approach to qualitative data analysis which entails interpreting the same empirical material across multiple theoretical perspectives (Kvale & Brinkmann, 2009: 236) by 'plugging the theory and the data into one another' (Jackson & Mazzei, 2013: 261) to reveal the multiplicity of meanings, emergent differences and suppleness of each interpretation (Davies, 2014: 740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271, 274-275; Mazzei, 2014: 742-744) (see 1.4., 3.6.1.2 and 3.6.2).

In itself, my diffractive analysis of service delivery at MonTech enables answering the first question I set for this research:

- (1) *How is service delivery at MonTech organised from:*
 - (a) *a KCT perspective;*
 - (b) *a CoP perspective; and*
 - (c) *a LoP perspective?*

The subsequent scrutiny and discussion of each theoretical reading facilitates answering the next three questions:

- (2) *How is each theoretical perspective engaged with in its associated theoretical reading?*
- (3) *How do the theoretical foundations of each perspective affect what is revealed and concealed in its associated theoretical reading?*
- (4) *How do the three perspectives together facilitate attaining a more comprehensive understanding of the organising of service delivery at MonTech?*

Before concluding this discussion, I must point out the main similarities and differences between the diffractive analysis-based approach I employ and Nicolini's (2009a, 2012) 'toolkit approach'. Firstly, as in the 'toolkit approach' (Nicolini, 2012: 213, 216), diffractive analysis entails the use of multiple theoretical lenses (Davies, 2014: 740; Kvale & Brinkmann, 2009: 236-237; Jackson & Mazzei, 2013: 264; Mazzei, 2014: 744). Naturally, the latter does not limit the choice of theories to those associated with practice-based theorising. Thus, my study brings together the CoP and the LoP perspectives, which enable me to differentially 'zoom in' on the local accomplishment of practice and 'zoom out' to examine connections within the wider practice networks (Nicolini, 2009a: 1392, 1401-1402, 1407; 2012: 213, 219-220), alongside a possession-based perspective (i.e. KCT). Secondly, both approaches employ an abductive mode of reasoning (Kvale & Brinkmann, 2009: 238-239; Lenz Taguchi, 2014: 271; Nicolini, 2012: 217). Thirdly and finally, both facilitate consideration of the differences, similarities and connections between alternative theoretical perspectives (Davies, 2014: 740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271, 274-275; Mazzei, 2014: 742-

744; Nicolini, 2009a: 1400-1406; 2012: 221-239). Overall, it could be argued that the manner in which I use diffractive analysis in the current study constitutes an extension of Nicolini's (2009a, 2012) 'toolkit approach'.

2.4 Overview of the three perspectives

2.4.1 The KCT perspective

2.4.1.1 Knowledge as a subjective construct

In KCT literature, knowledge is believed to be constructed exclusively in human minds (Nonaka, 1994: 15; Nonaka & Takeuchi, 1995: 59; also Essers & Schreinemakers, 1997: 25). It is not synonymous with information, but refers to a person's ability to organise, interpret, assess (Balconi, 2002: 360; Cohendet & Steinmueller, 2000: 204; Cowan et al. 2000: 216) and integrate new experiences and information into knowledge they already hold (Tsoukas & Vladimirou, 2001: 974). As such, rather than a personal quality, it is a way of being (Nonaka, 1991: 97) and 'bringing forth a world' (von Krogh, 1998: 134).

The above definition highlights three related issues. Firstly, if extant knowledge is a prerequisite for the integration of new information then a person's knowledge must not have been acquired exclusively from information to begin with (Balconi, 2002: 360; Cowan et al. 2000: 217). Correspondingly, new knowledge can be generated without new information (Cohendet & Steinmueller, 2000: 204; Spender, 2003: 276). Naturally, this argument raises questions with regard to the ultimate origin of individual knowledge (see Spender, 1996b: 51), which are left unanswered. Secondly, knowledge is self-referential whereby it ties together past, present and future knowledge (Essers & Schreinamkers, 1997: 25; von Krogh et al., 1994: 58). Thirdly and most fundamentally, in order for information to become knowledge it must be interpreted by an individual (Nonaka, 1994: 15; Nonaka & Konno, 1998: 41; Nonaka et al., 2000: 7; von Krogh et al., 1994: 59).

Interpretation is related to the action-oriented nature of knowledge whereby to know is to be able to act (Nonaka et al., 2006: 1181-1182; Nonaka & von Krogh, 2009: 638, 642; Spender, 1996a: 64). Conversely, practices can be regarded as representations of the knowledge of the people carrying them out. Individually-held schemata are crucial to understanding how knowledge is put into action. They enable defining a situation and guide action by focusing a person's attention on particular aspects of the task at hand

(Dougherty, 1992: 195; Hargadon & Fanelli, 2002: 293; Tsoukas & Vladimirou, 2001: 976, 979, 983). These schemata are not objective but subjective because of the inherent emotionality of human beings (Spender, 2003: 268, 277, 280) and the active role they play in the constitution of their convictions (Essers & Schreinamkers, 1997: 25).

The concept of self-referentiality (Essers & Schreinamkers, 1997: 25; von Krogh et al., 1994: 58) captures the idea that the above schemata are influenced by past experiences, practical circumstances and a person's social milieu. Consequently, individuals are unlikely to take action which radically undermines their historically constituted beliefs. Relatedly, people who share past or present experiences may have similar schemata (Essers & Schreinamkers, 1997: 25; Hargadon & Fanelli, 2002: 294; also Dougherty, 1992: 182; Nonaka & von Krogh, 2009: 640). However, this does not alter the fact that interpretation is, fundamentally, a subjective process.

Subjectivity of knowledge is particularly accentuated in KCT itself where knowledge is conceptualised as a 'justified true belief', albeit the notion of absolute truth is rejected in favour of the human process of justifying one's belief in the quest for truth. In simple terms, if an idea works by enabling a person to take action, it is considered to be true (Nonaka, 1994: 15-16; Nonaka & Takeuchi, 1995: 58; Nonaka & von Krogh, 2009: 639-640). However, it is worth noting that Spender (1996a: 64; 2003: 273-274) is sceptical of excessively emphasising the truthfulness of knowledge claims by arguing that such reasoning diverts attention away from the pragmatic and action-oriented nature of knowledge.

2.4.1.2 Tacit-explicit duality

With knowledge conceptualised as a subjective construct, the process through which it transcends the confines of individual minds is a major point of interest for scholars within the KCT perspective, who frequently employ the distinction between tacit and explicit knowledge (Polanyi, 1966: Chapter 1) to examine it. I must clarify that the distinction is not used to identify two discrete types of knowledge, but to describe its aspects along a spectrum along which they move and interact (Nonaka, 1991: 98; 1994: 15; Nonaka & von Krogh, 2009: 636, 640-641, 647; also Alvesson, 2004: 45-46).

In short, explicit knowledge is sequentially created, context-free and often refers to past events or experiences (Nonaka, Toyama & Byosèrie, 2003: 494). It can be expressed through systematic language allowing it to be shared with ease (Nonaka, 1991: 98-99;

1994: 16; Nonaka et al., 2003: 494; Spender, 2003: 267, 271, 273, 275-276) and processed by computerised technologies (Nonaka, 1994: 19; Nonaka & Konno, 1998: 47). As the other end of the spectrum, tacit knowledge is essentially the opposite of explicit knowledge. Its embeddedness in action and commitment to a specific craft, profession, activity or human collective (Nonaka, 1991: 98; Nonaka & Konno, 1998: 42; Mylonopoulos & Tsoukas, 2003: 140) gives it a distinctively personal character (Nonaka, 1994: 24). On the one hand, it comprises cognitive elements such as individual schemata, beliefs and viewpoints. On the other, it includes technical skills (Nonaka, 1991: 98; 1994: 16; Nonaka et al., 2003: 494; Nonaka & Konno, 1998: 42). Overall, its inherently subjective, pre-conscious and experiential qualities render it difficult to articulate. This does not imply that it cannot be shared with others, just that this cannot be done via conventional linguistic means (Spender, 1996a: 67-68; 2003: 267, 271, 275). At the very least, some of it, presumably its technical aspects, can be revealed to others in action (Spender, 2003: 276; also Nonaka, 1991: 98-99).

The debate in KCT literature has traditionally focused on two issues. Firstly, it considered the extent to which tacit knowledge is a necessary component of all knowledge (Tsoukas, 1996: 14; Tsoukas & Vladimirov, 2001: 975) and the implications this has for knowledge sharing and emergence of collective understandings in interdisciplinary work (see 2.5.1.1). On the one hand, it has been argued that because individual knowledge is not acquired exclusively from information it cannot be reduced to symbolic and linguistic representations (Balconi, 2002: 360; also Cowan et al., 2000: 217). However, this is a simplistic understanding which equates tacit knowledge with residual, inexpressible knowledge (Cowan et al., 2000: 212). Moreover, it implies that interaction between the two types is that of conversion (see Nonaka, 1991: 99; 1994: 18-19; Nonaka & Takeuchi, 1995: 64-67; 69-70) rather than movement along a continuum (Nonaka & von Krogh, 2009: 642). The conversion thesis is considered to be a tautology because it assumes it is possible to capture in language what is presumably inexpressible (Spender, 2003: 273; Tsoukas & Vladimirov, 2001: 975; also Tsoukas, 1996: 14). In comparison, the movement thesis opens up the possibility of tacit presumptions underlying individual knowledge being at least partially expressible, albeit not directly into an explicit form. Rather, through the creative use of language in articulation efforts, a person becomes aware of their previously unarticulated and pre-reflexive tacit background (Tsoukas, 2009: 942-943). Secondly, the debate scrutinised the early proposition that technical artefacts embedded the knowledge of their creators or those they imitated (Hargadon & Fanelli,

2002: 290-291, 294-295, 298; Nonaka, 1991: 98-99), with later research arguing that this was not the case (Gourlay, 2006: 1420-1421; Ribeiro & Collins, 2007: 1418-1419, 1422-1427) (see 2.5.2.1).

2.4.2 The CoP perspective

2.4.2.1 Situated learning theory

The concept of a ‘community of practice’ originates in STL (Lave & Wenger, 1991), which has been referred to as ‘the antecedent that set the [practice] bandwagon in motion’ (Corradi et al., 2010: 267). Orr’s (1996) study of photocopier technicians, which drew on the works of van Maanen and Barley (1984) and Suchman (1987) rather than STL, was a second major influence on the development of the CoP perspective within organisation, business and management studies.

In comparison with cognitive accounts of learning, the concept of ‘situated learning’ portrays learners not as recipients of knowledge about the world, but as mutually constituted with the world in course of their participation in social practices (Gherardi, 2006: 67; Gherardi et al., 1998: 274-277; Lave & Wenger, 1991: 33, 50-54; also Gherardi & Nicolini, 2002a: 217). Correspondingly, learning is an integral aspect of social practice as a whole, rather than one of its constituent activities (Gherardi & Nicolini, 2002a: 196; Lave & Wenger, 1991: 37-38). In effect, expert practice ‘is necessarily an improvisation by the participants in a given situation’ (Orr, 1996: 5). Moreover, learning does not take place in isolation but through participation in the work of a CoP (Lave & Wenger, 1991: 29).

Newcomers join communities as their legitimate peripheral members and become increasing knowledgeable practitioners as they gradually move towards becoming full participants (Gherardi, 2001: 133; Lave & Wenger, 1991: 29) through increasing engagement in the everyday practice of a community (e.g. Gherardi & Nicolini, 2002: 197, 206-207; Gherardi, Nicolini, & Odella, 1998: 279-281; Lave & Wenger, 1991: 36-37, 93, 101), including its tools, definitions, discourses, artefacts, implicit relations, tacit conventions, underlying assumptions and values that serves as means of defining and interacting in the world (Brown & Duguid, 1991: 48; 2001: 200-202; Gherardi, 2006: 67, 97; Gherardi & Nicolini, 2002a: 196, 206; Gherardi et al., 1998: 278; Nicolini, 2012: 84). Regarding discourses, while it is useful to distinguish between discourse in practice and discourse on practice to better understand learning processes (see Gherardi, 2006: 85-88;

Gherardi et al., 1998: 275, 277, 283; Gherardi & Nicolini, 2002a: 206-210), both are integral to practice (Bechky, 2006: 1758, 1761; Boland & Tenkasi, 1995: 357; Lave & Wenger, 1991: 105, 108-109; Orr, 1996: 143; 2006: 1812-1813). On the one hand, they facilitate coordination among community members and development of their practice through the sharing of experiential knowledge, community memory and collective reflection (Brown & Duguid, 1991: 45-47; Gherardi, 2006: 71-72, 91; Handley et al., 2006: 645; Lave & Wenger, 1991: 109; Orr, 1996: 2-3, 125-126, 142). On the other, particularly in case of discourse on practice (e.g. war stories), they are a means of communal identity (re)construction (Orr, 1996: 3, 142, 161).

Summarising, learning through legitimate peripheral participation denotes a relational process of individual competence development and identity construction through one's involvement in a practice (Gherardi & Nicolini, 2002a: 197; Lave & Wenger, 1991: 53), as well as a process of reproduction and transformation of the CoP built around it (Gherardi et al., 1998: 279; Nicolini, 2012: 81).

2.4.2.2 Definition of a CoP

In the simplest of terms, a CoP is the result of people learning together (Omidvar & Kislov, 2014: 269). In its original conceptualisation, it is 'a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice' (Lave & Wenger, 1991: 98). From a CoP perspective, knowing resides in relations among practitioners, their practice, its artefacts, abstract accounts, situated demands, and the social organisation and political economy of CoPs (Brown & Duguid, 1991: 42; Carlile, 2002: 442-443, 445-446, 453; Gherardi et al., 1998: 278; Lave & Wenger, 1991: 122).

All but the smallest of organisations comprise multiple CoPs (Brown & Duguid, 1991: 53, 2001: 199, 203), which may extend beyond individual firm boundaries (Gherardi, 2006: 91; Giroux & Taylor, 2005: 502; Swan et al., 2002: 480; Wesley & Buysse, 2001: 118; also van Maanen & Barley, 1984: 314-315 in Orr, 1996: 151). Moreover, an individual can be a member of multiple communities within their organisation and its environment at the same time (Boland & Tenkasi, 1995: 32). Traditionally, CoPs have been perceived as self-organising and not corresponding with either the formal (e.g. work groups) or the informal structuring of organisations (e.g. friendship groups) (Barley, 2015: 1613; Gherardi & Nicolini, 2002a: 196). Reflective of this, they have been portrayed as the loci of non-canonical practice, which differs from the managements'

conceptualisation of practice and eludes its attempts to control it (Brown & Duguid, 1991: 40-41; Contu & Willmott, 2000: 272; Duguid, 2006: 1795; Orr, 1996: 82; 2006: 1807). While the CoP concept was first introduced to describe groups of people working in close spatial proximity (Lave & Wenger, 1991; Orr, 1996), advancements in communication technologies have opened up the possibility of shared practice being situated in virtual environments and the relational constitution of CoPs in digital spaces (Amin & Roberts, 2008: 363-367).

There is no unanimous agreement as to what are the defining features of CoPs (Cox, 2005: 527-528; Handley et al., 2006: 646) (see 2.4.2.3). However, the most comprehensive definition depicts them as bound together by ‘mutual engagement’ (i.e. relationships between members), ‘joint enterprise’ (i.e. communally negotiated purpose, mutual identification with it and its practice, as well as members’ mutual accountability through which they maintain the joint enterprise and recognise each other as members) and ‘shared repertoire’ (i.e. shared discourse, formal and informal tools, as well as techniques through which meaning is negotiated) (Wenger, 1998: 72-85; 2000: 229; also Brown & Duguid, 2001: 200; Gherardi, 2006: 136; Gherardi & Nicolini, 2002b: 421; Gherardi et al., 1998: 277-279; Koliba & Gajda, 2011: 102-103; Roberts, 2006: 625). It is unclear how long a group of people must participate in the above, how frequently they must interact with one another, how consistent their individually held schemata must be, and if there must be complete equality among community members before they can be considered a CoP (Handley et al., 2006: 646-651). However, participation in a joint enterprise must comprise both engagement in the same activities and shared negotiation of meaning (Wenger, 1998: 55, 57) for interdependencies among people engaged in the same practice to arise (Corradi et al. 2010: 267-268).

2.4.2.3 Two competing CoP perspectives

While the preceding summary outlines the key characteristics of CoPs, there is no universally accepted CoP perspective. While it is possible to distinguish between alternative strands of CoP theory on the basis of whether they are concerned with organically emerging or deliberately cultivated CoPs (see Kislov, Harvey & Walshe, 2011: 3; Kislov, Walsh & Harvey, 2012: 2-3, 11; Omidvar & Kislov, 2014: 267), such distinction perpetuates a much more fundamental division between scholars who have retained the original emphasis of SLT on practice and those who focus on the increasingly reified notion of a community (see Nicolini, 2012: 87-95). Arguably, depending on the

researcher's allegiance with either camp, their CoP analysis engages with different texts and interprets common concepts in a different light. Consequently, I consider it important to explain the difference between the two approaches and disclose my affiliation with the former rendition of CoP theory.

Placing the community at the centre of the analysis is associated with a reorientation of the perspective towards practitioner audiences (Contu & Willmott, 2003: 284, 293; Huzzard, 2004: 352; Nicolini, 2012: 93; Omidvar & Kislov, 2014: 266). However, this entails a managerialist distillation of the concept and its instrumental application as a knowledge management tool (Contu & Willmott, 2003: 289; Corradi et al., 2010: 268; Cox, 2005: 534; Amin & Roberts, 2008: 353-354; Nicolini, 2012: 91-92) – a new organisational form that complements already established structures to increase learning and creativity (Wenger & Snyder, 2000: 139-141; Swan et al., 2002: 478, 482; also Gherardi, 2006: 103; Roberts, 2006: 626). Correspondingly, the main concern of studies adhering to this approach is the empirical investigation of CoPs and means of cultivating them (see Hydle et al., 2014: 627; Kislov, 2014: 318, 320; Kislov et al., 2012: 11; Swan et al., 2002: 481-482, 487-491; Wenger & Snyder, 2000: 140, 143-145; Wesley & Buysse, 2001: 115, 118-122) within a broader project of designing organisations and technologies to support knowledge work (Gherardi, 2006: 109-110). The shift towards a more positivist rendition of the concept (Nicolini, 2012: 91) has three main implications. Firstly, the definition of a CoP is broadened to include any group of people mutually engaging in a task, sharing knowledge and being in some way mutually dependable on and accountable to one another (Hydle et al., 2014: 617-618; Wenger & Snyder, 2000: 139-142; Wesley & Buysse, 2001: 115-118). In effect, the concept of CoPs becomes virtually all-encompassing whereby anything from a casual group of high school teachers (Bridwell-Mitchell, 2016: 176) to managerially instigated project teams (Cox, 2005: 538; Huzzard, 2004: 353, 356; Marabelli, Rajola, Frigerio & Newell, 2013: 313; Mittendorff et al., 2006: 299; Roberts, 2006: 625) is considered a CoP. Interestingly, scholars who classify the latter as CoPs are aware of the controversy surrounding this (Kislov et al., 2011: 5; Kislov et al., 2012: 3). In more recent research, project teams are described as multi-professional CoPs, which emerge when participants develop some level of knowledge sharing and collaboration without necessarily resolving epistemic differences between their native communities (Kislov et al., 2011: 5-6; Kislov et al., 2012: 9). This entails development of knowledge brokering practices (Kislov et al., 2011: 4; Kislov, 2014: 310; Levina & Vaast, 2005: 337-339, 342, 350, Wenger, 2000: 234-238), which

are specific to the multi-professional CoP, albeit produced against the backdrop of members' native practices (Levina & Vaast, 2005: 337).

Scholars whose research continues to revolve around practices rather than communities are hostile towards any attempts to conflate CoPs with formal groups within organisations, irrespective of the extent of managerial authority exercised over them (Corradi et al. 2010: 267; Koliba & Gajda, 2011: 109; Pattinson, Preece & Dawson, 2016: 517). They emphasise the ontological primacy of practice over communities built around them whereby practice precedes community (Gherardi, 2006: 108, 110; Gherardi et al., 1998: 278-279; Nicolini, 2012: 94; Orr, 2006: 1807, 1814). In fact, consistently with practice-based theorising's commitment to a relational view of reality (see 2.3.2.4), 'narratives, learning, and communities all stem from the work' (Orr, 2006: 1813). Arguably, this list can be extended to include boundaries that enable distinguishing one CoP from another and the multi-professional CoPs that bring them together. This approach is more consistent with the early definition of a CoP as a set of relations, including those with 'other tangential and overlapping communities of practice' (Lave & Wenger, 1991: 98), rather than the later notion of reified communities with discernible characteristics, knowledge and boundaries (Gherardi, 2006: 103; Nicolini, 2012: 90-91) forming 'constellations of interconnected practices' in a systemic manner (Wenger, 1998: 127-128). Consequently, analysis does not revolve around distinctions between communities to be brokered and divisions between their native practices and those comprising the brokering itself. Instead, work involving multiple communities is portrayed as an ongoing accomplishment in which boundaries always remain open to (re)negotiation (Gherardi, 2006: 135; Gherardi & Nicolini, 2002b: 421; Mørk, Hoholm, Maaninen-Olsson & Aanestad, 2012: 267-268) and community identities associated with individual practices are continuously (re)constructed (Gherardi, 2006: 135, 136, 152; Gherardi & Nicolini, 2002b: 421, 431-432; Mørk, Hoholm, Ellingsen, Edwin & Aanestad, 2010: 582, 588-589). Relatedly, such work is no longer depicted as being facilitated by the pursuit of some shared goal. Rather, it is depicted as being guided by mutual action intelligibility, mutual accountability and assertion of one's perspective over those of others in an attempt to exercise influence (Gherardi, 2006: 135, 148, 150, 154, 156; Gherardi & Nicolini, 2002b: 428-429, 431, 433). These differences fuel arguments that the community-focused approach downplays conflict and completely ignores issues of power both within and across CoPs (see Contu & Willmott, 2000: 270-272, 2003: 283-284, 288, 290; Fox, 2000: 857, 860; Gherardi, 2006: 110; Roberts, 2006: 626-628; also Handley et al., 2006: 642).

This critique is somewhat disproportionate considering that politics and power are not entirely absent from community-focused analyses. They feature, albeit limitedly, as obstacles that hinder boundary spanning efforts (Kislov, 2014: 320; Kislov et al., 2011: 7; Levina & Vaast, 2005: 356).

Personally, I affiliate with the perspective described in the immediately preceding paragraph because, as I explained above, it is more consistent with the original conceptualisation of CoPs (Lave & Wenger, 1991), which in turn is more clearly aligned with the core tenets of practice-based theorising (see 2.3.2). As such, it is more appreciative of the unobtrusive, situated, ongoing, diverse and informal knowledge and learning that is integral to organisations but has been omitted by conventional theorising (Brown & Duguid, 1991: 40-41; Contu & Willmott, 2000: 272) and which its critique sought to uncover (see 2.2.2). Regardless, I will draw on concepts associated with the community-centred perspective in the remainder of this literature review (see 2.5.1.2, 2.5.2.2 and 2.5.2.3), as well as my interpretation of service delivery at MonTech from a CoP perspective (see 4.5.2), where relevant and provided they are either consistent with the approach I had adopted or can be adapted to it.

2.4.3 The LoP perspective

2.4.3.1 From local practices to practice landscapes

Over the years, the interest of practice theorising has gradually shifted away from individual practices towards multiplicities of practices (Gherardi, 2017: br), which stretch and intersect not only within organisations (Nicolini, 2012: 174; Nicolini et al., 2015: 10; Schatzki, 2005: 476; 2006: 1863-1864; Wenger, 1998: 127) but also beyond them (Nicolini, 2012: 3; Schatzki, 2005: 476). These multiplicities have been described as constellations (Wenger, 1998: 127; also Gherardi & Nicolini, 2002: 419-420), nets (Schatzki, 2005: 476), bundles (Schatzki, 2006: 1863), networks (Gherardi, 2006: 35, 194, 215), assemblages (Nicolini, 2012: 3), confederations (Nicolini, 2012: 3), nexuses (Schatzki, 2001: 63; Nicolini, 2011: 615; 2012: 3, 174; Marabelli & Newell, 2013: 23), landscapes (Omidvar & Kislov, 2014: 270-273), totalities (Nicolini et al., 2015: 8), textures (Gherardi, 2017: br) and rhizomes (Nicolini et al., 2018: 319). Arguably, the multitude of descriptive metaphors used demonstrates that it is not possible to think of a single, unilaterally-accepted approach to studying organisational knowledge as the effect of a multiplicity of intersecting practices.

Even though the metaphor of a landscape has previously been used in CoP literature (Omidvar & Kislov, 2014: 270-273), whereas the perspective I describe in this section draws mainly on the work of Schatzki (2001, 2005, 2006), I consider it to be the most evocative expression of the form of organising revealed in my analysis of service delivery at MonTech (see 4.5.3) because it conveys the image of an uneven terrain, in which different localities are not necessarily connected to one another in the simplest of ways. Thus, the manner in which I employ the metaphor of a landscape resonates with Schatzki's (2001: 51) conceptualisation of order not as a form of regularity, but an arrangement which accommodates 'manifolds of variably similar and divergent entities as ordered phenomena' and acknowledges 'the complex and variable connections that exist among things'. Relatedly, it also shares some similarities with the notion of a rhizome (see Nicolini et al., 2018: 319).

Before proceeding, I must explain that although the work of Schatzki (2001, 2005, 2006) provides the overreaching framework for this section, it is insufficient for the purposes of demonstrating the potential for dialogue between possession- and practice-based theorising on its own. Being neither an organisational theorist, a sociologist nor an economist (Schatzki, 2005: 465), his concerns are grander than those ordinarily considered in organisation studies. Thus, to ground the Schatzkian (2001; 2005; 2006) notion of a landscape of practices more firmly within this discipline, I expand on his ideas with the help of other scholars (e.g. Knorr Cetina, 1997; 1999; Nicolini, 2011; 2012; Sandberg & Tsoukas, 2011). This is particularly evident when I highlight the key considerations pertaining to the social, the material and power-conflict aspects of organisational knowledge in the LoP perspective (see 2.5.1.3, 2.5.2.3 and 2.5.3.3).

2.4.3.2 Site-ness and translocality

Practices do not exist in isolation but form connections when they share particular actions (Nicolini, 2012: 168; Schatzki, 2005: 474), form chains (i.e. provide each other with inputs), are performed in the same place (i.e. in the same material arrangements) or influence mental states of participants in other practices (Nicolini, 2012: 173; Schatzki, 2005: 474). Practices and their connections are much alike in the sense that they never fully stabilise and are susceptible to change (see Araujo, 1998: 317; Duff & Sumartojo, 2017: 424-425; Latour, 1996b: 369, 372; Schatzki, 2005: 475; Orlikowski, 2007: 1445). When the intersecting of practices is acknowledged, ordering of the world in local practices (Gherardi, 2006: 35) can no longer be understood without the consideration of

the network of practices in which they are embedded. Instead, activities, organisations and social orders must be viewed as ‘the outcome and effect or order-establishing nexuses of practices’ (Nicolini, 2012: 174; also Schatzki, 2001: 63). The concept of site (Nicolini, 2011; Schatzki, 2001; 2005) and the notion of translocality (Nicolini et al., 2018) allow us to better understand the relationship between local practices, the landscapes they form and knowing.

The concept of site denotes a field of intelligibility (Nicolini, 2012: 172). When it is applied to the study of organisational knowledge, it conveys the idea that although it is within local practices where entities (i.e. humans and non-humans) show up and can be made sense of, what makes a particular activity possible is not local, but pertains to ‘interconnected, mutually dependent instances of local knowings and practices’ (Nicolini, 2011: 603-605, 614-615; also Gherardi & Perrotta, 2014: 137; Schatzki, 2001: 51, 61; Nicolini et al., 2018: 319). Thus, the wider knowing transpires through the local work done by both humans and non-humans, alignment between them, concerns the former bring with them and how practices respond to changes in local and distant circumstances. All of them stem from the historic, provisional and contestable inter-practice arrangement that is continuously being formed and reformed (see Nicolini, 2011: 610-612, 615-616; Schatzki, 2001: 53; 2005: 471-474).

While the concept of site focuses on the relationship between local practices and the landscapes they form, translocality describes the implications this has for the understanding of expertise, and arguably, knowing in greater detail. Translocality conveys the idea that knowing exists ‘in many locales at the same time’ whereby the activities comprising local instances of knowing feed 'upon the connections established and maintained with other places where the activity is carried out' (Nicolini et al., 2018: 307, 310, 313-315, 319). However, translocality does not negate or oppose locality. On the contrary, expertise and, arguably, knowing are simultaneously locally unique and widely distributed (*ibid.*: 318-319).

Summarising, the concept of site on its own leads to a familiar conclusion whereby to understand knowing in a landscape of practices, we must ultimately analyse the connections between its local instances (Gherardi, 2006: 194, 215; Nicolini et al., 2015: 8; Schatzki, 2005: 476). However, translocality cautions us that we should not overlook the distinctiveness of local knowing-in-practice in pursuit of this agenda.

2.4.3.3 *Residual agential humanism*

An organisation is ‘a bundle of practice and material arrangements’ in the sense that it ‘consists in interrelated practices transpiring amid interconnected material orders’ (Schatzki, 2006: 1863-1864; also Schatzki, 2005: 471, 473). Practices are a human affair – ‘sets of doings and sayings’ (Nicolini, 2012: 164) or, more precisely open-ended and structured ‘spatial–temporal manifolds of action’ (Schatzki, 2005: 471; 2006: 1863-1864; also Schatzki, 2001: 56). Material arrangements are ‘assemblages of material objects’, which are referred to, used or causally support practices (Schatzki, 2006: 1864-1865, 1870; also Nicolini, 2011: 610-611). The clear distinction between human and non-human influences is characteristic of Schatzki’s (2001; 2005; 2006) post-humanist orientation (see 2.3.2.3), which stems largely from his consideration of practical intelligibility.

Practical intelligibility conveys the idea that people knowingly perform actions which performance makes sense to them (e.g. do x and not y) (Schatzki, 2001: 55). It is not confined to the immediate circumstances since practicing has a temporal dimension whereby practitioners anticipate how their actions unfold over time (Sandberg & Tsoukas, 2011: 344; Styhre, 2003: 18-20, 22, 24; also Miettinen, 1999: 189) and, consistently with an LoP perspective, being a practitioner is not an exclusively local affair (Nicolini et al., 2018: 306-307, 319). Practical intelligibility does not imply rational behaviour whereby the mind informs, causes and guides activity. Instead, the influence of mental states is that of ‘determining what makes sense to people to do’, which is not necessarily the same as what is rational to do. Specifically, a person’s mental state pertains to ‘how things stood and were going for this person who performed such and such behaviours in these particular circumstances’ (Schatzki, 2001: 55, 57-58). Rather than being an inherently subjective construct, a person’s mental state is a feature of practice itself. It emerges through the differential incorporation of its structure in the human mind (Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62; Shotter & Tsoukas, 2014: 383; Tsoukas, 1996: 20; Yanow & Tsoukas, 2009: 1349). Structure defines practice alongside its constituent actions (Schatzki, 2001: 56-57) through practical understandings of the actions constituting the practice, its rules, its teleological-affective structuring and general understandings (Schatzki, 2001: 61, 58; 2005: 471-472; 2006: 1864, 1868; also Nicolini, 2011: 165). Although practical intelligibility is primarily determined by the final two structuring elements (Schatzki, 2001: 55, 59), all of them are susceptible to change in

response to contingent events (*ibid.*: 61). Thus, it seems appropriate for me to outline all of them.

Firstly, practical understandings pertain to the somewhat non-explanatory, mutual understandings among practitioners with regard to how the actions comprising the practice link together and how they should be performed. Thus, they facilitate both taking competent action and recognising the performances of others as the relevant practice (Schatzki, 2001: 58-59; 2006: 1864; also Nicolini, 2009a: 1404; 2012: 165; Tsoukas, 1996: 17, 19). In other words, they are associated with proficient, unhampered performances, and mutual action intelligibility rather than rational explanations of behaviour (Schatzki, 2001: 58-59; also Nicolini, 2012: 166). Correspondingly, they cannot explain why a person had not taken a different action (Schatzki, 2001: 59). For practical understandings to continue structuring a practice, it is not necessary for it to be performed at any given time. It is enough that it remains intelligible to at least some people engaging in it (Schatzki, 2006: 1868). The existence of such understandings among practitioners does not deny the possibility of disagreement (Nicolini, 2012: 165).

Secondly, rules are not explicit formulations of understandings but laws, rules of thumb and norms, which school practitioners' actions (Schatzki, 2001: 59; 2006: 1864). Actions comprising a practice are linked through understandings of the rules that they express into chains of actions and more complex arrangements (e.g. projects) (Nicolini, 2012: 166; Schatzki, 2001: 60). They may be introduced by people with power and authority, who are not necessarily directly involved in the performance of the practice (Nicolini, 2012: 166, 184). However, rules may be misaligned with what makes sense for practitioners to do, in which case they may be circumvented (Schatzki, 2001: 59-60; 2006: 1864). Rules persist and continue to organise practice when 'rule-following actions that are intelligible as such to participants in the practice or to certain groups thereof' are continuously available (Schatzki, 2006: 1869).

Thirdly, the teleological-affective structuring of a practice encompasses a range of acceptable means and ends that are deemed acceptable to practitioners and instruct them how to act on the basis of their beliefs, hopes, emotions, moods with regard to how a practice should proceed (Nicolini, 2012: 166; Schatzki, 2001: 60-61; 2006: 1864; also Tsoukas, 1996: 17, 19). Teleological-affective structuring has a number of implications. Firstly, it bestows practices with their prefigured qualities whereby they follow an established and recognisable pattern (Manidis & Scheeres, 2013: 1239; also Tsoukas &

Shotter, 2014: 378). Secondly, it may lead to disagreements with regard to what is acceptable in a practice, which may become the engine of change (Nicolini, 2011: 167). Thirdly and relatedly, it may be a source of inertia whereby practitioners' teleological-affective attachments are likely to discourage them from acting in a different way from what is appropriate (Manidis & Scheeres, 2013: 1231, 1243, 1248). Fourthly, it can divert people away from doing what is rational, particularly when moods, hopes and emotions are at play. Overall, this highlights that the teleological-affective determination of practical intelligibility is, in fact a mental determination (Schatzki, 2001: 55-56, 58, 60), thus further accentuating the importance of the differential incorporation of the structure of practice in mental states to action (Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62).

Fourthly and finally, general understandings include conventions about the nature of work, such as what constitutes appropriate conduct between participants in the practice (Nicolini, 2012: 167; Schatzki, 2006: 1864). These considerations are not contained in the organisation of the practice people are performing and may, for example, lead practitioners to act beyond what is necessary to impress others (Schatzki, 2001: 62).

Overall, the notion of practical intelligibility is crucial to understanding why Schatzki (2001; 2005; 2006), alongside Pickering (1993: 566), Miettinen (1999: 177-179) and Orlikowski (2005: 184-185), refuses to treat human agency and material performativity as entirely symmetrical (Blackler & Regan, 2009: 162-163). Instead, his theorising is characterised by a 'residual agential humanism' which recognises that even though practices are not reducible to humans, only humans can carry them out because of their intelligibility, intentionality and affectivity (Schatzki, 2005: 480; Nicolini, 2012: 164, 169-170). Moreover, practical intelligibility renders human action the primary source of change in both local practices and their wider nets (Schatzki, 2005: 476).

2.5 Comparison of the three perspectives

Having outlined the conceptual foundations of the KCT, CoP and LoP perspectives, in this section, I compare them across three dimensions which pertain to how humans (i.e. the social), non-humans (i.e. the material) and considerations of power and conflict feature in analyses based on each approach. The purpose of this is twofold. On the hand, it provides a means of systematically comparing the three approaches by outlining key

concepts relevant to each dimension. On the other hand, it serves as a repository of constructs that I subsequently draw upon in my theoretical interpretations of the organising of service delivery at MonTech (see 4.5).

Before proceeding I must explain that, as a matter of consistency, the distinction between the social and the material I employ is based on the argument that the latter includes tools, technologies, bodies, actions and objects, as well as texts albeit ‘not in ways that over-privilege linguistic, intertextual and cultural circulations’ (Fenwick et al., 2012: 6). While analytically distinguishing between the social and the material in this manner does not pose major problems with regard to the two practice-based approaches (i.e. CoP and LoP), it is inconsistent with the rhetoric of the KCT perspective. This is a consequence of how collective knowledge is conceptualised. Specifically, it comprises shared understandings and meaning (Hecker, 2012: 427-429, 432, 434; also Mylonopoulos & Tsoukas, 2003: 139), as well as knowledge embedded in representations such as documents, procedures, machines and tools (Hecker, 2012: 430; Massey & Montoya-Weiss, 2006: 101). In other words, the manner in which I carry out my argument departs from ordinary KCT logic to better accentuate differences between KCT and the two practice-based perspectives (i.e. CoP and LoP).

I must also stress that, in my exploration of the three dimensions (i.e. social, material and power-conflict) in the CoP perspective, I remain committed to its practice-focused variety (see 2.4.2.3). Consequently, the forthcoming discussion, as well as my CoP-based interpretation of service delivery at MonTech (see 4.5.2), makes limited use of the rich body of literature on boundary spanning, which focuses on it as a somewhat distinct activity from the ordinary practices of the people working together (e.g. Levina & Vaast, 2005; Kislov, 2018; Kislov et al., 2011, 2012; Oborn & Dawson, 2010; Wenger, 1998; 2000).

2.5.1 Social dimension

2.5.1.1 KCT: Collective knowledge

With regard to considerations of the social aspects of knowledge, debate within the KCT perspective revolves around the relationship between individual and collective knowledge. Having already explained the notion of individual knowledge (see 2.4.1), it is necessary for me to explain the concept of collective knowledge before discussing how they are related.

Collective knowledge comprises complementary and shared knowledge. The former is distributed among multiple individuals and irreducible to any single one of them because, despite their mutual interactions through which they influence one another's meaning, they retain their own rationality. In effect, knowledge never becomes shared. In comparison, the latter is held in common by people working together. It pertains to 'how particular bodies of knowledge relate to specific tasks and interrelate with each other'. Thus, it provides collaborators with a shared frame of reference and as such is deemed instrumental to the coordination of activity (see Hecker, 2012: 427-429, 432, 434; also Mylonopoulos & Tsoukas, 2003: 139). Collective knowledge of the latter type has traditionally received almost exclusive attention. Arguably, this can be attributed to the idea that the human mind is the origin of all knowledge (Nonaka, 1994: 15; Nonaka & Takeuchi, 1995: 59; also Essers & Schreinemakers, 1997: 25).

Despite being referred to as a distinct type of knowledge, collective knowledge is not separate from individual knowledge. On the contrary, they are considered to be intertwined and mutually irreducible (Hargadon & Fanelli, 2002: 300; Spender, 1996a: 69-70, 74; 1996b: 53; also Alvesson, 2004: 46). While knowledge originates in individual minds, people's consciousness and thinking are fashioned socially (Spender, 1996a: 69). In other words, the collective mind can be said to precede the individual mind (Weick & Roberts, 1993: 366-367). Conversely, people's constructive processes and the meaning they attach to their knowledge are constrained or, at the very least, influenced by the context they continuously create in collaboration with others, including their managers and potentially even distant parties from outside their organisations (Kodama, 2005: 896; 2007: 116-117; Nonaka & Toyama, 2003: 6-8; 2005: 429-431; Nonaka et al., 2000: 14-15; Nonaka et al., 2003: 499, 505; also Nonaka, 1994: 31; Hargadon & Fanelli, 2002: 300). A further implication of this is that individuals do not act entirely independently but are mindfully attentive to others. They work towards what they believe is collectively understood as the 'right thing' and exercise mutual care, account for others' expectations and even subordinate their individual behaviours to an envisioned social system of joint actions, whilst simultaneously perpetuating it through their own actions (see Weick & Roberts, 1993: 358, 360-363, 366, 368, 374; also Nonaka & Konno, 1998: 40, 43-44; Spender, 1996a: 69).

While the above description may create the impression that collective knowledge ensures complete harmony among collaborators, this is not the case at the onset of interdisciplinary work. In fact, it is not uncommon for people to have different

worldviews and pursue disparate goals (Kodama, 2005: 896; 2007: 116; Nonaka & Toyama, 2003: 2-3; 2005: 421). With regard to the latter, it must be highlighted that differences in interpretive schemata make it possible for collaborators to view one another as working towards conflicting objectives even though each one of them is convinced they are pursuing a mutually agreed goal (Dougherty, 1992: 191, 196). Regardless, this does not deny the existence of collective knowledge as a social referent of individual thinking and actions (Weick & Roberts, 1993: 364, 373). On the contrary, KCT scholars believe that even in times of conflict, collaborators' thinking resonates around the same fundamental values and goals, propelling them to seek at least temporary synthesis of contradictory perspectives through dialogue (Kodama, 2005: 904-905; 2007: 127, 129; Nonaka & Toyama, 2005: 422). In other words, collective knowledge conveys the idea that people are naturally inclined to expose themselves to the influence of others, and, thus, transcend who they are in search of a shared sense of meaning, which due to its underlying heterogeneity and often provisional status should not be confused with a universally accepted objective rationality (Nonaka & Konno, 1998: 47; Nonaka & Toyama, 2003: 2-5; 2005: 421, 426). They are considered to be willing to do this even though justifying one's knowledge in public is regarded to be a highly fragile and potentially harmful process to the individual (Nonaka & von Krogh, 2009: 640; Nonaka et al., 2006: 1183; von Krogh, 1998: 135). For contradictions to be synthesised through dialogue, interlocutors must recognise they are mutually responsible for improving their joint situation and pursue self-distanciation from their customary and unreflective ways of thinking rather than attempt to establish intellectual superiority over one another (Kodama, 2007: 129-130; Tsoukas, 2009: 942-945, 499; also Mengis et al., 2018: 604-605, 608; von Krogh, 1998: 135; 139-142).

The above argument has been criticised, both within and from outside the KCT scholarly community, for not recognising that tacit knowledge is a prerequisite for both articulation and interpretation of explicit knowledge (Cohendet & Steinmueller, 2000: 206; Cowan et al., 2000: 225; also Nonaka & von Krogh, 2009: 637, 640, 641; Mylonopoulos & Tsoukas, 2003: 140), making at least some tacit knowledge inherently inexpressible (Gourlay, 2006: 1422, 1430). Moreover, even if it is assumed that all tacit knowledge can be linguistically expressed (Tsoukas, 1996: 14), the precondition for sharing such deep knowledge in pursuit of synthesis of contradictions is the existence of a commonly accepted language through which competing rationalities can be expressed and mutually understood (Cohendet & Steinmueller, 2000: 204-205; Cowan et al., 2000: 225; von Krogh, 1998:

135; also Balconi, 2002: 360). However, if conflicting justifications are based on different tacit premises which enable people to express their ideas in the first place, articulations alone cannot convey a universally understood narrative (Bechky, 2003a: 327; Giroux & Taylor, 2002: 500-502). Writing from a CoP perspective, Carlile 2004: 558, 562-563) argues that when a shared lexicon capable of representing interpretive differences between individuals, is absent or the vocabulary that had previously facilitated mutual expression and coordination is no longer adequate, new common language must be developed as a precondition for agreeing on more substantial issues. Other practice-based scholars are even more sceptical and question the very need for a synthesis of contradictions. Because tacit knowledge is personal, context-specific, changeable, politically sensitive and valuable to a specific individual or group, attempts to articulate it may be futile. The resulting explicit knowledge can be too difficult to explain, too uncertain, unimportant or irrelevant to collaborators, as well as politically naïve, redundant if it continuously changes and potentially inaccurate if individual concerns result in some of it being withheld (Swan, Newell & Scarbrough, 1999: 270). Moreover, sharing the underlying tacit premises of one's knowledge for the purpose of traversing knowledge boundaries in search of shared understanding may be excessively time consuming (Majchrzak, More & Faraj, 2012: 954). All that is necessary is a mutually accepted set of distinctions rather than agreement in absolute terms (Mengis et al., 2018: 604-605, 609; Tsoukas, 2009: 944-945).

2.5.1.2 CoP: Practice boundaries

Discussions of the social aspect of organisational knowledge in the CoP literature revolve around the idea that, due to the situated nature of learning in CoPs (see 2.4.2.1), knowledge can be shared within them with relative ease, whereas flow of knowledge across CoPs is obstructed (e.g. Bechky, 2003a: 313-314, 317-320 ; Brown & Duguid, 2001: 202, 205-206, 208-209; Carlile, 2002: 442-443, 446; Swan et al., 2002: 480-481, 491). This can be attributed to members of the same CoP sharing an understanding of how to act in the world together with its associated epistemic criteria, including means of assessing the value and validity of knowledge (Gherardi et al., 1998: 278; Mørk et al., 2008: 13; also Pentland, 1995: 7). Thus, when work brings together multiple CoPs, their members are faced with a coexistence of 'variable norms of justification, variations in tacit understandings and conflicts of interests' (Giroux & Taylor, 2002: 502; also Tsoukas, 2002: 421, 423; Wenger, 2000: 233). However, these issues do not absolutely preclude collaboration across pragmatic boundaries. At the very least, CoPs that work together

over a period of time are likely to develop shared practices facilitating their cooperation (Brown & Duguid, 2001: 209; Oborn & Dawson, 2010: 856).

The level of tensions between CoPs depends on local circumstances. In fact, they may arise even when their practices are relatively well aligned (e.g. clinicians and hospital technicians) (Bechky, 2003a; Mørk, Aanestad, Hanseth & Grisot, 2008: 19). Moreover, in circumstances where multiple CoPs work together, the manner in which knowledge flows across the boundary between any two CoPs varies (Kislov, 2018: 811, 828-829; Mørk et al., 2012: 268). Arguably, when practice rather than community is emphasised (see 2.4.2.3), this is not a consequence of structural characteristics of the interacting CoPs, their boundaries or their practices (*cf.* Kislov, 2018: 829), but a matter of how specific boundaries are enacted and negotiated in the actions of the people working together, which does not necessarily entail deliberate strategising (*cf. ibid.*: 828-829).

For members of multiple CoPs to work together, they must 'overcome the incommensurability between them [...] without sacrificing the integrity and distinctiveness of their own perspective' (Boland & Tenkasi, 1995: 355-356; Gherardi, 2006: 135). Individual communities are not aware of what exactly is required to achieve this in advance (Valentine, 2018: 571, 600). Consequently, it occurs through an ongoing process of representing one's knowledge and making it available to others in order to recognise, scrutinise and understand differences in ways of knowing (i.e. perspective-taking) (Boland & Tenkasi, 1995: 358-359; also Bechky, 2003a: 314). This does not amount to the adoption of the perspective of another community or the emergence of a universally shared perspective (Boland & Tenkasi, 1995: 362; also Gherardi, 2006: 135; Kislov, 2014: 318). It is a process of transformation rather than transfer whereby members of individual CoPs come to understand the knowledge of another CoP within the context of their own work, thus enriching, altering and expanding what they know and how they understand their work world (Bechky, 2003a: 321; Gherardi, 2006: 135), which results in mutual action intelligibility and mutual accountability (Gherardi, 2006: 135, 154; Gherardi & Nicolini, 2002b: 428-429, 431). Although this implies that it is sufficient for differences to be minimised to an extent which enables boundaries of practice to be traversed (Majchrzak et al., 2012: 952, 958-964), this process is not entirely straightforward for two three reasons.

Firstly, overcoming incommensurability between CoPs rests on the existence or development of a common language capable of representing differences between

knowledge embedded in the practice of each CoP (Carlile, 2004: 562-563; Swan et al., 2007: 1817). Community-specific discourses are unlikely to be able to fulfil this function since they are often unintelligible to outsiders (Orr, 1996: 60, 70) since the meanings of articulations depend on the context in which they are situated (Bechky, 2003a: 313-314, 320, 327). Development of a suitable language is the more difficult, the greater the distance between practices of individual CoPs (Carlile, 2002: 445-446). Even when a shared language exists or collaborators are able to understand each other's native languages, misunderstandings may still occur due to fundamental differences in the meanings attached to the object of work (Bechky, 2003a: 325; Carlile, 2004: 558).

Secondly, the gravity of tensions in work involving multiple CoPs is not reducible to differences in language (i.e. syntactic boundaries) and meaning (i.e. semantic boundaries) (Carlile, 2002: 444; 2004: 557-563). It may be necessary for practices of the individual communities to change in order for work to progress. In these circumstances, a person's knowledge, identity and the practice in which they are embedded are all 'at stake', which indicates the existence of a pragmatic boundary (Carlile, 2002: 446; 2004: 559-560, 563). Unsurprisingly, the difficulties associated with letting go of one's identity render individuals and their communities reluctant to change the way they work (Mørk et al., 2008: 17-18). Consequently, the inherently political nature of discourse among collaborating CoPs must be acknowledged (Gherardi, 2006: 155; Gherardi & Nicolini, 2002b: 433) (see 2.5.3.2). It invariably involves assessments of others' knowledge (Carlile, 2004: 555) and assertions of one's own point of view over theirs (Gherardi, 2006: 148) in a bid not only to understand differences in perspectives between CoPs, but to influence their practices and transfer elements of one's own practice into them (i.e. brokering) (Carlile, 2002: 445; Gherardi, 2006: 150; Mørk et al., 2012: 266, 268, 281-283). In the most dramatic scenarios, this may manifest in the adoption of antagonistic discursive positions (Gherardi, 2006: 156) and result in the legitimisation and reinforcement of boundaries between practices rather than their traversing (Kislov, 2014: 139; also Oborn & Dawson, 2010: 844).

Thirdly and finally, once established dependencies, which facilitate working across pragmatic boundaries may have to be renegotiated (Carlile, 2004: 557; Mengis et al., 2018: 604-605, 609). This is the more likely when they face 'deeply unsettling events [...] where hitherto-held understandings of the nature of problems appear unworkable' (i.e. epistemic breakdowns) (Mengis et al., 2018: 596, 607).

2.5.1.3 *LoP: Practical intelligibility and reflexivity*

Arguably, one of the limitations of Schatzki's (2001; 2005; 2006) theorising is that it falls short of describing how practical intelligibility translates into the daily lives of practitioners, their organisations and organisational knowledge. However, it is possible to overcome this shortcoming with the help of other scholars, particularly those who also draw inspiration from existential phenomenology of Martin Heidegger. These authors define ordinary action as an unconscious, pre-reflexive and non-rational engagement with the world (Chia & Holt, 2006: 237; Nicolini, 2012: 162; Sandberg & Tsoukas, 2011: 343, 345). Furthermore, they frequently draw a distinction between ordinary engagement with the world and engagement with the world when the usual ways of acting break down.

When practitioners ordinarily engage with the world, they are totally immersed in their surroundings and their performance (Chia & Holt, 2006: 640, 642; Sandberg & Tsoukas, 2011: 343) in the sense that they exist 'as part of a meaningful totality with other beings' (Knorr Cetina, 2001: 187; Sandberg & Tsoukas, 2011: 347; also Chia & Holt, 2006: 641). Following Heidegger (1962: 107-114 in Chia & Holt, 2006: 640), their awareness is characterised by 'availableness' or 'readiness-to-hand' whereby the world appears as unproblematic, thus allowing them to act without having to rely on mental representations or deliberate intentions (Chia & Holt, 2006: 640-641; Yanow & Tsoukas, 2009: 1350). This corresponds with Schatzki's notion of practical intelligibility, which conveys the idea that people, quite simply, perform actions which performance makes sense to them (e.g. do x and not y) (Schatzki, 2001: 55). What is important is that such action is not a form of 'blind obedience to orthodoxy, or conformity to internalised structural forces' (Chia & Holt, 2006: 645), such as mental states in which the structure of practice has been differentially incorporated (Schatzki, 2005: 480-481). This is due to the fact that unconscious predispositions must be activated in every local performance of a practice (Chia & Holt, 2006: 645; Tsoukas, 1996: 20).

Ordinary practice is characterised by purposiveness – acting towards an immediate goal without presumptions directed towards greater, longer-term outcomes (Chia & Holt, 2006: 648; also Sandberg & Tsoukas, 2011: 344). Purposiveness implies focal awareness of the task at hand, but only subsidiary awareness of the distinctions that make actions possible even though they manifest in the action itself (Shotter & Tsoukas, 2014: 384; Yanow & Tsoukas, 2009: 1349-1350). In fact, such awareness is sufficient in responding to very minor deviances in the performance of the practice via absorbed coping (Yanow &

Tsoukas, 2009: 1350). Such responses correspond with the notion of accommodation (Pickering, 1993: 569) with regard to the level of deliberation involved in corrective action. They are improvisational in the sense that they follow the pre-established and learned repertoire of practice and its collectively constructed distinctions and norms (Yanow & Tsoukas, 2009: 1345-1347). Essentially, practice proceeds as usual (Yanow & Tsoukas, 2009: 1353) and, arguably, remains guided by practical intelligibility whereby practitioners continue to act in a way which simply make sense to them (Schatzki, 2001: 55).

In comparison, in moments of breakdown practitioners are faced with 'thwarted expectations, the emergence of deviations and boundary crossings, and awareness of differences' (Sandberg & Tsoukas, 2011: 348-349; Yanow & Tsoukas, 2009: 1352). Practical intelligibility alone is no longer sufficient since it is no longer possible to do what makes sense, thus rationality is required (Schatzki, 2001: 55). The practitioner opens himself to the 'backtalk' of the previously unproblematic material aspects of practice (Engeström & Blackler, 2005: 310; Yanow & Tsoukas, 2009: 1342, 1348-1349; also Nicolini et al., 2012: 621) (see 2.5.2.3) and, in the most extreme cases of breakdown, becomes a reflexive observer who 'intentionally assigns identities, meaning, functions and causes both to him/herself and to phenomena around' (Chia & Holt, 2006: 642; Sandberg & Tsoukas, 2011: 344-346, 348; Yanow & Tsoukas, 2009: 1352-1353) to understand the conditions of their work (Ewenstein & Whyte, 2007: 691). Reflection is necessary since it is no longer possible to proceed as usual (Yanow & Tsoukas, 2009: 1353) and, consequently, it is no longer possible to be (i.e. perform the being) a practitioner (Shotter & Tsoukas, 2014: 384). It illuminates the structure of practice through which practitioners ordinarily, pre-reflexively and non-deliberately engage with the world (Sandberg & Tsoukas, 2011: 343, 345), thus making them focally aware of its constitutive elements (Shotter & Tsoukas, 2014: 385). In these circumstances, corrective action is no longer characterised by purposiveness but by purposefulness whereby action is directed towards the particular predefined desired outcome (Chia & Holt, 2006: 648) of overcoming the obstacles to practicing identified through reflection. When practitioners devise new ways of working based on reflection, their practice and knowing changes (Orlikowski, 2002: 253). When in spite of extensive deliberation and reflection their practice cannot proceed, it may be necessary for them to dramatically revise it, which may entail abandoning a particular way of acting or pursuit of a particular outcome (Pickering, 1993: 571).

2.5.2 Material dimension

2.5.2.1 KCT: *Embedded knowledge*

Because the KCT perspective assumes that knowledge is created by individuals (Nonaka, 1994: 15; Nonaka & Takeuchi, 1995: 59; also Essers & Schreinemakers, 1997: 25) and that only humans are ‘capable of making and understanding meaning’ (Tsoukas, 2002: 421), elements of the material world are effectively reduced to being imperfect representations of human knowledge (Hecker, 2012: 430; Massey & Montoya-Weiss, 2006: 101). In other words, material artefacts are regarded to be nothing more than explicit knowledge embedded in a material form (Hargadon & Fanelli, 2002: 295; Hecker, 2012: 429; Nonaka & Toyama, 2005: 423) for the purpose of it being shared with or used by others (Hecker, 2012: 430; Massey & Montoya-Weiss, 2006: 101).

Initially, creation of all complex artefacts was considered to be a simple matter of combining various ‘pieces’ of explicit knowledge (see Nonaka, 1991: 98-99; Nonaka & Takeuchi, 1995: 103-105) regardless of whether they were comprehensive sets of rules, design plans or industrial goods with a more substantial material presence. Arguably, this created the impression of it being a seamless process as long as the necessary explicit knowledge had been articulated. However, this has since been questioned, at least as far as development of machines intended to mimic human action is concerned. The current position appears to be that material artefacts do not embed knowledge of the humans whose actions they replicate as much as that of their creators. In fact, automation inevitably involves loss of tacit knowledge in comparison with the original performance of an activity (Balconi, 2002: 358, 361) because it entails transformation of polymorphic tasks, which require human discretion, into mimeomorphic tasks that can be performed by a machine. As such, transformation can only be achieved through knowledge substitution (see Gourlay, 2006: 1420-1421; Ribeiro & Collins, 2007: 1418-1419, 1422-1427). On this basis, it can be concluded that at least as far as material artefacts that replicate work that had previously been done by human actors are concerned, the process of their creation is a creative endeavour involving designers’ tacit knowledge, discretion and problem solving skills rather than a simple case of mechanistically combining fairly readily available explicit knowledge (see Nonaka, 1991: 98-99; Nonaka & Takeuchi, 1995: 103-105).

Regardless of their type and how they are created, all material artefacts suffer from the same limitation – their inability to convey meaning that was involved in their creation,

which relates back to the difficulties involved in expression of tacit knowledge (see 2.4.1.2). Thus, they depend on the person interacting with them to reattach meaning to them in the context of their own practical circumstances (Ribeiro & Collins, 2007: 1430; Spender, 1996a: 64-65, 68, 71; Mylonopoulos & Tsoukas, 2003: 140; also Cowan et al., 2000: 230). However, as they do this, they become indirectly and partially exposed to a competing perspective of the world (Hargadon & Fanelli, 2002: 300). This is believed to promote self-reflection, which could potentially alter individual schemata and understandings (Hargadon & Fanelli, 2002: 295; Nonaka, 1994: 27; also Nonaka, 1994: 27; Nonaka & Toyama, 2005: 423). Moreover, if an artefact proves to be problematic, unclear and disruptive to the knowledge of the person interacting with it, it may prompt them to consult others and resolve the contradictions they are experiencing (Massey & Montoya-Weiss, 2006: 102). In either case, artefacts synchronise and, potentially, pave the way for a synthesis of potentially divergent understandings (Hecker, 2012: 435). Arguably, consistently with the understanding of collective knowledge, including shared negotiation of meaning that is integral to it (see 2.5.1.1) in the KCT perspective, this paints a utopian picture of interdisciplinary work whereby the natural instinct of individuals confronted with contrasting perspectives is to restore harmony via consensual means rather than to confront others (see 2.5.3.1).

The final role attributed to non-humans in the KCT perspective pertains to their role in coordination of activity. Specifically, knowledge embedded in artefacts such as procedures, roles, forms and physical infrastructures is believed to help coordinate collaborative efforts (Hecker, 2012: 435; also Tsoukas & Vladimirou, 2001: 979), provided those artefacts are mutually recognised and consistently understood by the participating individuals (Hecker, 2012: 429).

2.5.2.2 CoP: Reifications and boundary objects

CoP literature acknowledges that non-humans are instrumental to practice (Orr, 1996: 3; Lave & Wenger, 1991: 101; Wenger, 1998: 56) and that practitioner identities are invested in them (Orr, 1996: 93, 99). However, they are considered to be mere extensions of human interactions (Orr, 1996: 105). Although not acknowledging the active role of non-humans is widely regarded as major limitation of the CoP perspective (Fenwick et al., 2012: 5; Fox, 2000: 863-864; Nicolini, 2012: 86, 94-95), non-humans are not entirely absent from CoP theorising. Specifically, the extant CoP literature offers two concepts pertaining to non-humans which feature in its explanatory efforts – ‘reification’ and

'boundary object'. Although boundary objects simultaneously reify practices (Nicolini et al., 2012: 616; Wenger, 1998: 105-106; 2000: 236), the two concepts are more often than not discussed separately. Moreover, incomparably more attention has been devoted to boundary objects (e.g. Bechky, 2003b; Carlile, 2002; 2004; Star & Griesemer, 1989) than to the notion of reification (e.g. Cox, 2005; Gherardi et al., 1998; Wenger, 1998). The amount of text I devote to each of them in the discussion below reflects this.

Reification is the process of congealing experience into an object in order to organise and facilitate negotiation of meaning within CoPs. These objects do not necessarily have a concrete physical form but are treated as if they did (Wenger, 1998: 58). Arguably, the notion of reification is central to the argument that artefacts carry meaning associated with particular practices (Gherardi et al., 1998: 278) and their heritage (Lave & Wenger, 1991: 101). However, since they do not capture them in their entirety, they organise negotiation of meaning within CoPs rather than foreclose meaning (see Wenger, 1998: 59-65). What appears to have been largely overlooked in the extant literature is that reifications may originate from outside the practices they furnish (Cox, 2005: 531; Wenger, 1998: 206). Arguably, given that particularly strong reifications do not require much interpretive effort on part of the practitioner, thus significantly affecting how particular activities are performed (Wenger, 1998: 59, 67-70), it would seem advisable to consider how different practices are reified within objects used and created in work involving multiple CoPs. Speculatively, by reifying their practice in an object which is used also by another community, members of a particular CoP can impose its way of working and practical logic associated with it on others.

As aforementioned, boundary objects have received incomparably greater attention in CoP literature than the concept of reification. Although, they have not been consistently defined (Hawkins, Pye & Correia, 2017: 294), they are generally revered for their capacity to facilitate the flow of knowledge across practice boundaries by bringing an end to dissensus and conflict among CoPs (Fox, 2011: 80). Their mediatory capacity has been associated with interpretive flexibility whereby they simultaneously have specific uses and meanings within local practices and are mutually identifiable across intersecting practices (Lainer-Vos, 2013: 515-517, 529; Nicolini et al., 2012: 614, 616; Star, 2010: 602, 604-605, 608; Star & Griesemer, 1989: 388, 393; Wenger, 1998: 106-107). As such, they provide a common reference point, a shared problem-solving format, a shared means of representing differences in knowledge domains (Carlile, 2002: 451-453; 2004: 559-560; Fox, 2011: 72; Lainer-Vos, 2013: 515-516; also Star & Griesemer, 1989: 393). Thus,

they can support the process through which practitioners expand their understanding (Bechky, 2003a: 321; Gherardi, 2006: 135), as well as attain mutual action intelligibility and mutual accountability (Gherardi, 2006: 135, 154; Gherardi & Nicolini, 2002b: 428-429, 431) (see 2.5.1.2). Boundary objects, which have a material form, are particularly useful when discursive means alone prove inadequate. They ground divergent understandings in the physical world, thus bringing the loci of practice and conceptualisations associated with it to the fore (Bechky, 2003a: 324-327). While the extant literature generally portrays boundary objects in such a positive light, they may also inhibit the flow of knowledge across practice boundaries or incite conflict (Boland & Tenkasi, 1995: 362; Fox, 2011: 73-74; Kislov et al., 2011: 5; Scoles, 2018: 284; Swan et al., 2007: 1832).

While having sufficient but not excessive interpretive flexibility in the circumstances of the particular boundary interaction is a prerequisite for an object to perform a mediatory function (Hawkins et al., 2016: 305; Star, 2010: 604, 608), whether or not an object actually acts as a boundary object does not depend on its inherent characteristics or prefabricated properties but its local use (Bechky, 2003b: 731-733; Carlile, 2002: 452; Fox, 2011: 74; Hawkins et al., 2017: 293; Lainer-Vos, 2013: 518, 527-528; Levina & Vaast, 2005: 340; Star, 2010: 603). Consequently, although practitioners deliberately create boundary objects in anticipation of interactions with other CoPs (Barley, 2015: 1612-1613; 1624-1626) and managers designate boundary objects to facilitate cooperation between CoPs, there is no guarantee the objects they introduce will become boundary objects-in-use (Levina & Vaast, 2005: 341-342, 354-355; Kislov, 2014: 309-310). Relatedly, objects may lose or gain their status as boundary objects depending on how the relationship between the interacting CoPs changes (Hawkins et al., 2016: 299-304). Likewise, previously negative boundary objects may start performing a positive role (Fox, 2011: 74). The manner in which an artefact's status as a boundary object and mediatory function change is not explicable solely in terms of how collaborating parties differentially attribute meaning to it. It also rests on power relations between them (Hawkins et al., 2017: 293) (see 2.5.3.2).

While the emergence of boundary objects is a local affair, it is possible to distinguish between different types of boundary objects on the basis of the mediatory work they do (Carlile, 2002: 565; Swan et al., 2007: 1817, 1820-1822, 1825-1826). While there is no exhaustive list of, Star and Griesemer (1989: 410-411) have identified four distinct types of boundary objects. 'Repositories', such as databases, enable people from different CoPs

to use or borrow from the common repository for their own purposes without having to negotiate differences between them due to a low level of interdependencies between their practices (Star & Griesemer, 1989: 410; Swan et al., 2007: 1817-1820, 1822). ‘Standardised forms’ provide a common means of communication, but in doing so they do not capture richness of individual practices (Star & Griesemer, 1989: 411). However, due to these limitations, they can reveal discontinuities of meaning and pave way for the emergence of mutual understanding (Swan et al., 2007: 1821). ‘Ideal types’, including concepts, are highly inaccurate abstractions that simultaneously originate in multiple practices and serve as a common referent. Their relatively high vagueness enables them to be used within particular practices, but prevents them from serving as a roadmap for collaboration. Finally, ‘coincident boundaries’ are objects which differ in terms of their internal content despite having the same referent (e.g. different types of maps of the same geographical area) (Star & Griesemer, 1989: 410-411). The last two types of objects, which in organisational contexts include workplans, proposals, objectives and flowcharts, can aid translation of knowledge across CoPs and transformation of their practices (Swan et al., 2007: 1825-1826). In most circumstances, flow of knowledge across practice boundaries is not facilitated by a single object as much as a configuration of multiple boundary objects acting together (Nicolini et al., 2012: 617; Star, 2010: 602; Wenger, 1998: 107).

2.5.2.3 *LoP: Material performativity*

As aforementioned, Schatzki (2006: 1864-1865, 1870; also Nicolini, 2011: 610-611) argues that material arrangements (i.e. ‘assemblages of material objects’) are referred to, used in or causally support practices. However, as in the case of practical intelligibility (see 2.5.1.3), this idea is not developed to a desirable extent from the perspective of organisation studies. Nevertheless, the work of other scholars (e.g. Nicolini, 2006; Orlikowski, 1992; 2010), which focuses on the role technology plays in practice and organisational knowing, enables exploring it further.

While humans establish, carry out and drive change in practices (Schatzki, 2005: 476; 480; 2012: 164, 169-170), as well as their wider arrangements, material artefacts stabilise them (Nicolini, 2011: 614-615) by carrying with them the traces of their history including the intentions, desires, accumulated wisdom, ways of understanding the world, and approaches to formulating and solving problems of their creators (Nicolini, 2006: 2755, 2757; Nicolini et al., 2018: 313-314; Orlikowski, 1992: 405, 406, 421). This does not

imply that material artefacts, including technologies, determine social practices. Rather, they ‘constrain or set up particular possibilities for action’ within a practice (Manidis & Scheeres, 2013: 1243-1244; also Bruni et al., 2007: 92, 94, 97-98; Nicolini, 2012: 185; Orlikowski, 1992: 411, 416). Their users always have the choice to act otherwise (Orlikowski, 1992: 411) and are particularly likely to do this if the script embedded in the artefact conflicts with their daily practices. New technologies may require practitioners to adapt their practices, which may manifest in changes in activities, responsibilities and workloads. If the amount of work necessary to accommodate the innovation exceeds perceived benefits, it may be rejected altogether (Nicolini, 2006: 2756-2759). Ultimately, whether or not technologies and other material artefacts influence practice, as well as how they exert such influence depends on the practice itself since capacities for action are enacted in it (Nicolini, 2006: 2755; Orlikowski, 2010: 135).

While the above discussion provides relevant insights with regard to how ‘assemblages of material objects’ are used in or causally support practices (Schatzki, 2006: 1864-1865, 1870; also Nicolini, 2011: 610-611), its main limitation is that it does not explore how they are brought into existence in the first place in sufficient detail. In other words, it focuses on their material performativity as they already contribute to an established practice, but says little about how they are actively involved in their own creation. Understanding this is particularly relevant to this research since the empirical context I explore to highlight the potential for a more intellectually-stimulating dialogue between possession- (i.e. the KCT perspective) and practice-based (i.e. the CoP and LoP perspectives) theorising is that of an organisation which is in the business of designing new technologies (see 1.2.2 and 4.2). Fortunately, a number of practice-based scholars have explored such material performativity through the concept of epistemic objects (e.g. Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Nerland, 2018; Rheinberger, 1992; 2005).

Epistemic objects are characterised by an unfolding ontology (Ewenstein & Whyte, 2009: 9-12, 26; Knorr Cetina, 1997: 14; 2001: 191) whereby they are continuously ‘in the process of being materially defined’ as they are engaged with in practice (Knorr Cetina, 1997: 10-13; 2001: 190; Rheinberger, 1992: 310; 2005: 407). Practitioners engage with them through their multiple figurative, mathematical, technical and material instantiations, which serve as ‘stands-ins for a more basic lack of object’, as well as imagined objects, which represent a ‘a possibly more complete ideal, or in another sense extended object’. Both individual instantiations and imagined objects never fully comprise the actual

epistemic object. Rather, they help unfold it by defining it as much in terms of what is and what it is not. Thus, interacting with them, increases rather than reduces the complexity of the epistemic object (Knorr Cetina, 2001: 190-193). Consequently, rather than being ready-to-hand (see 2.5.1.3), they actively participate in their own exploration by continuously posing problems for and asking questions of those attending to them (Ewenstein & Whyte, 2009: 22; Knorr Cetina, 1997: 13; Miettinen & Virkunen, 2005: 438; Rheinberger, 2005: 408; also Pickering, 1993: 574-577). This sets them apart from technical objects, which having already been defined, no longer ask questions and serve as stable reference points around which practice is anchored (Ewenstein & Whyte, 2009: 9, 12-13, 23; Miettinen & Virkunen, 2005: 438; also Latour, 1987: 5, 21, 29, 91, 130-131), of which practitioners are not focally aware (see 2.5.1.3). Even when an object is declared finished, it may still be an epistemic object (e.g. a detector may be further improved) (Knorr Cetina, 2001: 191). A further quality of epistemic objects is that their incompleteness invokes emotions in the people (Knorr Cetina, 1997: 13, 17-20; Rheinberger, 2005: 406; also Knorr Cetina, 2001: 181-189, 194) who act towards them as if the former had senses, action capabilities, agency, autonomy, morality, physiological states and tendencies akin to human beings (Knorr Cetina, 1999: 114-116, 119-123). When objects are universally recognised as epistemic objects and are treated with affection (Knorr Cetina, 1997: 16-19; 2001: 194), they coordinate activity among practitioners who engage with them (Ewenstein & Whyte, 2009: 21; Nicolini et al., 2012: 619-620, 626) within local, spatially-distributed practices in which epistemic objects are 'further developed and temporarily stabilised' (Nerland, 2018: 246-247). Thus, epistemic objects are defined as much by their unfolding ontology, as by their 'meaning-producing and practice-generating' qualities (Knorr Cetina, 2001: 192-193).

2.5.3 Power-conflict dimension

2.5.3.1 KCT: Consensus

A major limitation of the KCT perspective, which is even acknowledged by some scholars affiliated with it, is that even though it claims to consider issues of power and conflict (Nonaka & Toyama, 2005: 420), it actually fails to do so. In effect, its scholarship significantly downplays the potential level of dissonance between individuals, collectives and organisations they are part of (Fong, 2003: 481).

Even if all collaborators believe that by serving their own knowledge they help achieve collective goals (Dougherty, 1992: 191, 196; Essers & Schreinemakers, 1997: 29-30), it

is unrealistic to expect them to readily abandon their convictions (Essers & Schreinemakers, 1997: 29; Giroux & Taylor, 2002: 501-502; Gourlay, 2006: 1416). On the contrary, in course of dialogue power struggles might ensue over which justification should prevail (Contu, 2014: 311), thus exacerbating conflict rather than resolving it (Carlile, 2002: 444; 2004: 559; Majchrzak et al., 2012: 954). Alternatively, those in positions of power may try to take advantage of any attempts to develop language that could facilitate expression of competing rationalities to impose their meaning on others (Carlile, 2004: 559, 565). Overall, as this critique highlights, if power was indeed considered, collaboration in the KCT perspective would not be depicted as a fundamentally consensual process (Blackler et al., 2000: 298; Engeström, 2000: 967-968; 2001: 151; Gourlay, 2006: 1420).

2.5.3.2 *CoP: Power as performance*

Power relations and the tensions in which they manifest most clearly are virtually omnipresent in the seminal texts of Lave and Wenger (1991: 36, 58, 64, 76, 92, 98, 115-116) and Orr (1996: 6, 76, 82, 106; 114, 117-118, 142, 147, 152, 160). However, they have not been given adequate consideration within them (Contu & Willmott, 2003: 284-287; Lave & Wenger, 1991: 42, 86). Reflective of this, the early CoP literature was characterised by an underdeveloped conceptualisation of power (Fenwick et al., 2012: 5). However, it is increasingly acknowledged that power relations are inherent in learning through legitimate peripheral participation in CoPs (Gherardi et al., 1998: 276; Gherardi & Nicolini, 2002a: 197; Nicolini, 2012: 81-82; also Lave & Wenger, 1991: 98) and interactions between CoPs (Gherardi, 2006: 146, 156; also Mørk et al., 2008: 21; Mørk et al., 2010: 576). The latter can be attributed to the notion that membership in a CoP entails a belief in the primacy of its practice over others (Coakes & Smith, 2007: 77).

While there is no overall agreement among CoP scholars as to how power should be conceptualised, there appears to be consensus that the traditional view of power in organisation studies whereby power is a means of domination derived from control over a scarce and distributed resource, such as knowledge, is 'ill at ease with practice-based theorising' because it ignores how resources are enacted in practice (Contu, 2014: 289-290; also Fox, 2000: 858). While Huzzard (2004: 355-356) adopts a hybrid critical realist-post-structuralist conceptualisation of power in which power is performative, but power resources exist and can be controlled, others adhere to a purely performative view of power (Contu, 2014: 292-293, 311-312; Fox, 2000: 858-862; Swan et al., 2002: 482).

From this perspective, '[t]he exercise of power perpetually produces knowledge and conversely, knowledge constantly induces effects of power' (Foucault, 1980: 52). In short, within CoP literature this is interpreted to mean that power is a relational, local, continuously produced, unstable, active, resistive or reactive multiplicity of force relations that work with or without human intention. Through power, actors' being, functioning, identity and relations with others become possible and practical activity at large is constituted and becomes intelligible (Contu, 2014: 290, 292-294, 310-312; Fox, 2000: 858-862).

The omnipresence of power, whereby 'practices perform power effects within and across CoPs' (Mørk et al., 2010: 587; also Lave & Wenger, 1991: 36), implies its internalisation by individual practitioners who make themselves act in specific ways to continuously produce and reproduce their practices, identities, communities and their relations with other CoPs (Contu, 2014: 293, 311-312; Fox, 2000: 859-860; also Lave & Wenger, 1991: 58). Correspondingly, changes in practice are often a controversial process which involves 'a redefinition of configuration, power relations and ways of knowing'. In other words, they have empowering and disempowering effects (Mørk et al., 2010: 577, 588-589).

Thinking about power in the above categories yields two major insights with regard to interactions between multiple CoPs (see 2.5.1.2), which revolve around the idea that efforts to establish and maintain CoPs constitute 'contests of power' (Mørk et al., 2010: 576). Firstly, in preserving and maintaining their identities, communities and practices, practitioners may enrol, challenge, control or betray other CoPs (Fox, 2000: 863; Mørk et al., 2010: 587; Mørk et al., 2012: 281-283; Orr, 2006: 1809). Enrolment is a political effort which may involve presenting one's community 'as conforming to an organisational intention' even though the ultimate aim is to inflect it by translating the understanding of a particular community into a language that appeals to all interested CoPs (Giroux & Taylor, 2002: 503-504; also Star, 1989: 388-391; Tsoukas, 2002: 425). It may also entail the leveraging of existing hierarchies and relationships of obligation (Valentine, 2018: 599). Enrolment may require careful timing in order not to appear threatening (*ibid.*: 582) and, in some cases, it may even necessitate altering one's own practice (Mørk et al., 2012: 282). Secondly and relatedly, such exercises of power negotiate boundaries between practices (Mørk et al., 2010: 58), leading to their stabilisation or destabilisation (Mørk et al., 2012: 264, 267-268; also Mørk et al., 2008: 20). The latter may trigger a reactionary response among those affected whereby they

start acting in a manner which preserves their practice, status and identity (Mørk et al., 2010: 582, 588).

The performative conceptualisation of power has also enriched our understanding of boundary objects (see 2.5.2.2). When boundary objects are used in work involving multiple CoPs, they contribute to the ongoing construction of power relations among them by privileging certain kinds of knowledge at the expense of others in joint problem solving (Bechky, 2003b: 722-725, 737-738, 745-746; 2006: 1762-1763; Hawkins et al., 2017: 295-297). This entails abusing their interpretive flexibility to justify the interests of one CoP over those of others (Hawkins et al., 2017: 295). Participation in their creation and reshaping is in itself an exercise of power (Boland & Tenkasi, 1995: 362; Huvila, 2011: 2528, 2530, 2535; Swan et al., 2007: 1826) oriented towards establishing control over other CoPs (Bechky, 2003b: 725, 728, 735-736; Huvila, 2011: 2536; also Gherardi, 2006: 205; Orr, 1996: 106-107). In the longer term, creators of boundary objects may mobilise them to shift responsibility and reaffirm the status of their practice (Bechky, 2003b: 733-735, 739). Overall, due to the fact they are often mutually accepted by collaborating CoPs, they constitute a particularly effective and inconspicuous means of exercising power, influence and authority (Huvila, 2011: 2536-2537).

2.5.3.3 LoP: Empowerment and disempowerment

As with the CoP perspective (see 2.5.3.1), a Schatzkian (2001; 2005; 2006) LoP perspective adopts a performative view of power (i.e. 'power is one person's actions structuring other people's possible actions'). However, the manner in which such structuring occurs depends on the organisation of practice and the material arrangements that causally support them. Thus, it is practice that defines regimes of possibility and impossibility, autonomy and dependence within its local performances (Schatzki, 2005: 478-479). Knowing-in-practice requires knowing what others know, working around it and continuously negotiating boundaries with other knowings. Rather than consensus, there is cacophony and dissonance (Nicolini, 2011: 613; also Blackler, 1995: 1307-1038; Blackler et al., 2000: 281; Engeström, 1995: 400; 1999: 65, 68; 2001: 137; Gherardi, 2006: 135; Gherardi & Nicolini, 2002b: 420, 429, 434; Holt & Morris, 1993: 99-100). When it is recognised that practices do not exist in isolation of other practices, inequalities in knowing also become a product of the temporal and spatial ordering of a landscape of practices (Gherardi, 2017: br; Marabelli & Newell, 2013: 23; Nicolini, 2012: 6). This

does not preclude the possibility of differences between local practices and their associated ‘regimes of empowerment and legitimation’ (Nicolini, 2011: 613).

As aforementioned (see 2.4.3.3), the stability and change of both local practice-arrangement bundles and their wider landscapes depends on human action (Schatzki, 2005: 476). The teleological-affective structuring of practice affects how practitioners perceive and react to other local knowings. They may ignore them altogether, challenge them or alter their own knowing and practice in response to them (Manidis & Scheeres, 2013: 1243-1244, 1247-1248). Among others, this may occur when breakdowns in practicing are experienced differently across practices, resulting in conflicting attempts to respond to them (Yanow & Tsoukas, 2009: 1359). In such circumstances, rule inscription whereby practitioners formulate and affirm rules, persuade others to obey them (Schatzki, 2006: 1869) is one means of influencing ‘historically situated, provisional and contestable’ configurations of interests (Nicolini, 2011: 616). Alternatively, artefacts may be used as intermediaries to exert control over other practices. The less flexible they are, the greater their influence (Gherardi, 2006: 205). Intriguingly, introduction of new entities into material arrangements can have incidental effects on existing regimes of empowerment at both the level of local practices and the landscape of practices at large (see Nicolini, 2006: 2761-2765).

2.6 Summary

I began this chapter with a brief summary of the view of organisational knowledge associated with the strategic management literature (see 2.2.1) and its critique (see 2.2.2). This enabled me to argue that the three perspectives brought together in this research (i.e. KCT, CoP and LoP) share a common origin in a call for an understanding of organisational knowledge, which acknowledges the tensions and issues of power inherent in learning in social contexts (Gherardi, 2006: 12; Scarbrough et al., 2007: 261-262), the significance of context to understanding, learning and practice (Handley, et al., 2006: 643), and the important social micro-mechanisms through which knowledge becomes valuable at large (Hecker, 2012: 425). As I further explained, the adoption of a socio-constructionist ontology was paramount to this endeavour (see 2.2.3).

Recognising that possession- (i.e. KCT) and practice-based (i.e. CoP and LoP) approaches to the theorising of organisational knowledge adhered to the same ontology,

albeit with the former perceiving the world as 'socially constructed through our practices' rather viewing practice as a mere 'product of our social construction' (Marabelli & Newell, 2012: 19; Miettinen et al., 2009: 1313), provided the necessary justification for my research objective of reinvigorating the dialogue between them (see 2.3.3.4). As I further suggested, such reversal of historical alienating tendencies (see 2.3.3.3) could potentially lead to an intellectually stimulating debate comparable the one ongoing within practice-based scholarship (see 2.3.3.2).

Having outlined the conceptual foundations of each perspective (see 2.4), I proceeded with their comparison across three dimensions – social, material and power-conflict. This revealed that the construction of organisational knowledge in the KCT perspective (see 2.5.1.1, 2.5.2.1 and 2.5.3.1) is portrayed as an almost exclusively human process characterised by an unproblematic and consensus-driven negotiation of collective understandings, in which non-humans only participate as carriers of human knowledge embedded in them. In comparison, the CoP perspective (see 2.5.1.2, 2.5.2.2 and 2.5.3.2) depicted organisational knowledge, or more appropriately knowing, as a contested process driven by concerns over the perpetuation of community practices and identities constructed within them, which involved the often-simultaneous use of boundary objects as means of both facilitating collaboration across pragmatic boundaries and exercising political influence. Finally, the LoP perspective (see 2.5.1.3, 2.5.1.3 and 2.5.3.3) projected the image of organisational knowledge as an ongoing accomplishment between equally active but differentially influential human and non-human actors, which is not explicable solely in terms of local practices but also the connections between them.

3 Research methodology

3.1 Introduction

In this chapter, I provide details of the philosophical considerations that influenced my choice of an interpretive case study as the research strategy for the current study before discussing the ethical concerns it had raised, as well as the data collection and analysis procedures I had followed.

As a matter of consistency, I develop my discussion of the first of the above issues using Cunliffe's (2011) framework of research problematics in organisation and management studies that I introduced in the previous chapter (see 2.2.3). The framework itself is a revision of an earlier model proposed by Morgan and Smircich (1980) that provided a detailed examination of the metatheoretical dimension of Burrell and Morgan's (1979) seminal four paradigm framework, which was subsequently revised by Hassard and Wolfram Cox (2013). Because assumptions about the nature of society, which comprise the second dimension along which paradigms are distinguished in both Burrell and Morgan (1979: 10-21) and Hassard and Wolfram Cox (2013: 1713-1714), have only negligible implications for scientific knowledge generation (Tsoukas, 1994: 761-762), I regard Cunliffe's (2011) typology to be more suitable for the current discussion than Hassard and Wolfram Cox's (2013) revised paradigms. Having already explained that the three perspectives I bring together all adhere to a socio-constructionist ontology, albeit with notable differences between KCT and the two practice-based approaches (i.e. CoP and LoP) (see 2.2.3), I limit my discussion to the subjectivist problematic with which that ontology is associated. Nonetheless, I provide a comprehensive summary of each problematic in Table 3.1.

I proceed with a discussion of the rationale behind my choice of research strategy starting with an explanation of the reasons why I rejected ethnographic (see 3.3.1.1), phenomenological (3.3.1.2), orthodox grounded theory method (GTM) (see 3.3.1.3), constructivist GTM (see 3.3.1.4) and theory-building case study (see 3.3.1.5) approaches. I proceed with a discussion of why I eventually adopted an interpretive³ case study

³ My labelling of this approach as 'interpretive' is not intended to indicate its exclusivity to interpretive epistemology, but to indicate that it is primarily associated with it (Dyer & Wilkins, 1991: 615).

strategy (e.g. Flyvbjerg, 2006; Stake, 1995; 2008; Thomas, 2010; 2011) (see 3.3.2), which is followed by an explanation of the ethical concerns raised by my research (see 3.4).

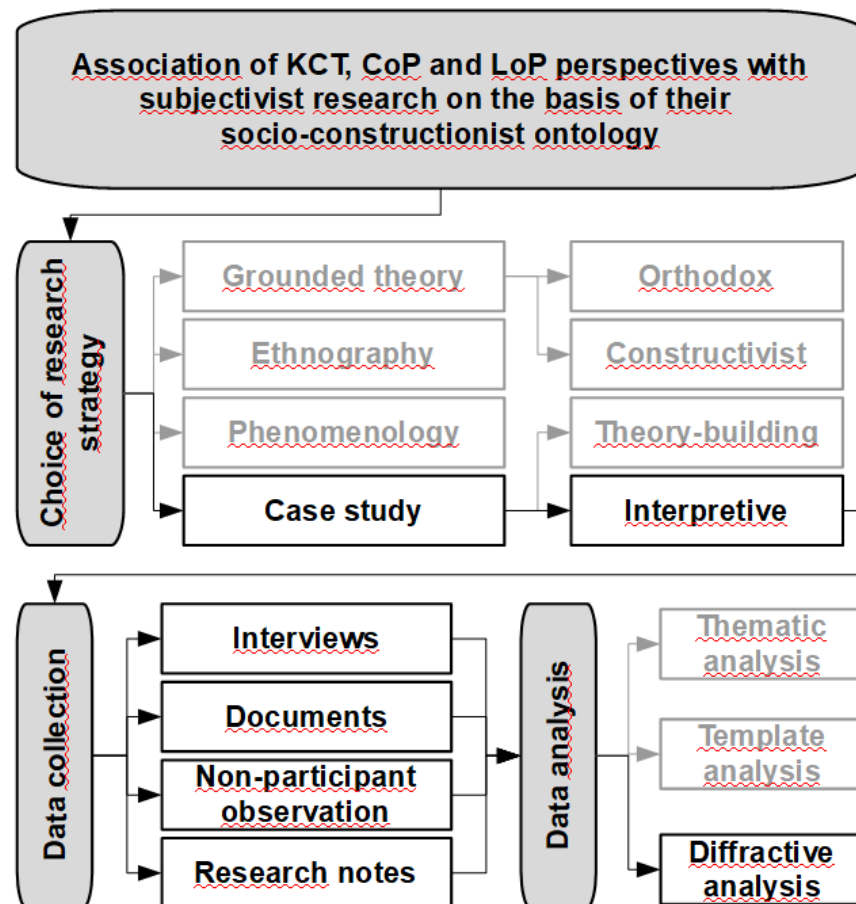


Figure 3.1 Overview of research methodology of the current study.

Recognising that the extant literature on interpretive case study research (e.g. Flyvbjerg, 2006; Thomas, 2010; 2011; Stake, 1995) provides virtually no methodological guidance beyond Stake's (1995) descriptive account of his primarily observation-based case, I continue with an explanation of the data collection (see 3.5) and analysis (see 3.6) procedures I devised for the current study. This discussion takes the metatheoretical assumptions of interpretive case study research (see 3.3.2.1) as a starting point, but also draws on general qualitative inquiry literature to identify techniques consistent with it. In discussing the adopted data collection processes, I explain how difficulties with access I had experienced throughout the study affected the amount and quality of the empirical material I had collected.

3.2 Research philosophy

Organisational research is always guided by an underlying research philosophy comprised of a set of interrelated metatheoretical assumptions. The researcher's often taken-for-granted views about the nature of the reality under investigation and humans inhabiting it (i.e. ontology) have implications for what constitutes valid knowledge about that reality and how it ought to be acquired, analysed and communicated (i.e. epistemology). This then determines the range of methodologies that can be employed in the inquiry and which aspects of the investigated phenomenon are ultimately revealed (Annells, 1996: 379, 383-384; Bechara & Van de Ven, 2011: 343, 349; Cunliffe, 2011: 647, 651, 659; Hook, 2015: 983; Newton et al., 2011: 7; Tsoukas & Chia, 2011: 3-12).

3.2.1 Socio-constructionist ontology


Socio-constructionism, assumes that even though individuals perceive reality as external, objectified and imposing itself on their consciousness (Berger & Luckmann, 1966: 35-36; Tsoukas, 1993: 324), they actually experience it subjectively and differentially (Gergen, 1985: 266, Guba & Lincoln, 2005: 197). Furthermore, through social interactions between them, their individual subjective realities overlap and interact with one another giving rise to a jointly constructed reality (i.e. a social construction) in which social phenomena are created and sustained (Alvesson & Sköldbberg, 2009: 15; Cunliffe, 2011: 656; Karataş-Özkan & Murphy, 2010: 456, 458; Prasad & Prasad, 2002: 6; Tsoukas, 1993: 324). Arguably, the claim that knowledge is not stored in organisations but constructed, negotiated, organised and utilised by organisational members through primarily social means (Blackler, 1993: 864; Pentland, 1995: 2), which is central to the critique of the view of organisational knowledge associated with strategic management research (see 2.2.2), rests on socio-constructionist ontological assumptions.

It must be emphasised that socio-constructionism does not necessarily imply that reality is a purely social construct (Alvesson & Sköldbberg, 2009: 23). Most scholars adopting this ontology regard the natural world as existing prior to social constructions (Newton et al., 2011: 10), which give it its ultimate form (Alvesson & Sköldbberg, 2009: 33; Newton et al., 2011: 18-19). In particular, those influenced by post-humanist thought (e.g. Callon, 1984; Latour, 1996a; 1996b; Pickering, 1993; Schatzki, 2001; 2005; 2006)

Table 3.1 Overview of research problematics.

		Intersubjectivist problematic	Subjectivist problematic	Moderate objectivist problematic	Radical objectivist problematic
Ontology	Nature of reality	Fleeting and existing only in the immediate context of human relationality and discourse.	Socially-constructed and subject to change through actions of humans and, in some research, non-humans.	Dynamically changing, elusive, stratified and essentially mind-independent	Concrete, immutable, regular structures independent from human cognition.
	Human nature	Intersubjectivist action (i.e. people as selves-in-relation-to-others).	Voluntaristic action in relation to a reality perceived as external to human consciousness.	Limited scope for human subjectivity but predominantly deterministic response to external stimuli.	Involuntary deterministic responses to external stimuli.
Epistemology	Knowledge of reality	Limited to the research situation.	Partial, value-laden, subjective, context-specific.	Probabilistic and partial.	Accurate and measurable.
	Mediation	Embedded, embodied and value-laden story-maker researcher.	Embedded and value-laden story-teller researcher.	Detached, value-free, possibly critical truth-teller researcher.	Detached, value-free, truth-teller researcher.
	Scholarly contribution	Neither generalisable nor replicable, pragmatic knowledge co-authored by everyone involved in the research that pertains to dialogues, relationality, meaning-making between people and shared constructions of reality in living conversations. Focus on the micro level.	Neither generalisable nor replicable, generally pragmatic knowledge demonstrating understanding and wisdom through rich description. Some research approaches oriented towards generation of syntagmatic knowledge. Focus on the micro level with possible linkages to the macro level.	Replicable, syntagmatic knowledge of processual relations between constituent elements of reality expressed in the form of theory that follows an alternative set of quality criteria to the natural sciences. Focus on the macro level.	Nomothetic, syntagmatic knowledge of generalisable causal relations expressed through rational, mathematically parsimonious and free of human contamination theories resembling the natural sciences. Focus on the macro level.
Methodology	Data	Qualitative. Use of multiple sources of data to achieve in-depth understanding.	Qualitative with the possibility of quantitative data used mainly in supplementary capacity. Use of multiple sources of data to achieve achieving in-depth understanding.	Qualitative with the possibility of quantitative data used to varying extent depending on the particular study. Use of multiple sources of data to enhance accuracy of new theories.	Quantitative with the possibility of qualitative data being used in a manner mimicking quantitative analysis. Use of multiple sources of data to enhance accuracy of theories drawing on extant knowledge.
	Mode of reasoning	Abductive.	Abductive.	Inductive.	Deductive.
	Reflexivity	Co-constructive reflexivity.	Interpretive reflexivity.	Methodological reflexivity.	Methodological reflexivity.

Notes: Table represents ‘ideal’ types with dotted borders indicating the possibility of some research lying on the verge of two problematics. Typology based on Cunliffe (2011) supplemented by other sources referenced throughout the discussion (see 3.2).


Current study

account for the active role of non-human actors in the processes of social construction (Alvesson & Sköldbberg, 2009: 31-32; Rheinberger, 2005: 409). As aforementioned, this is the case in some strands of practice-based theorising of organisational knowledge (see 2.3.2.3, 2.4.3.3 and 2.5.2.3).

3.2.2 Interpretive epistemology

Research adhering to the strategic management view of organisational knowledge (see 2.2.1) lends itself to positivist methodologies emphasising measurement. In comparison, studies associated with its critique, including the KCT, CoP and LoP perspectives, are better served by methods associated with interpretive epistemology (Easterby-Smith et al., 1998: 266). Irrespective of this, empirical research associated with the latter has selectively conformed to positivist standards of knowledge generation (see Table 3.1) by positioning researchers outside their inquiries, as well as concerning itself with external validity and generation of normative insights (see Charreire Petit & Huault, 2008: 78-83). This is not only a philosophical inconsistency, but also a direct contradiction of one of the core arguments of the critique of the strategic management view of organisational knowledge – the notion that knowledge is jointly constructed by multiple actors (*ibid.*: 79-80) (see 2.2.2). For this reason, I consider it necessary for me to describe interpretive epistemology in detail, consider its implications for knowledge generation and demonstrate how they manifest in the current study.

Because socially-constructed realities are not composed of predictable structures but emerge (Boisot & McKelvey, 2010: 420) in meaningful actions in the context of people's everyday interactions (Berger & Luckmann, 1966: 33; Cunliffe, 2011: 656; Morgan & Smircich, 1980: 496; King & Horrocks, 2010: 13-14; Prasad & Prasad, 2002: 7), they cannot be known objectively or reduced to permanent, nomothetic truths (Bechara & Van de Ven, 2011: 347; Charreire Petit & Huault, 2008: 75; King & Horrocks, 2010: 12). Valid knowledge of these realities, people who inhabit them and meanings they attach to their actions can only be acquired by inquiring into people's subjective experiences (i.e. thoughts, emotions, actions and beliefs) (Bechara & Van de Ven, 2011: 347; Cunliffe, 2011: 656; Tsoukas & Chia, 2011: 11).

The notion that all human knowledge is developed, transmitted and maintained socially, often with the use of language (Berger & Luckmann, 1966: 15), extends to the research situation in the sense that the relationship between the researcher and the investigated phenomenon is no longer unproblematic but mediated through language that reflects the

assumptions of a particular community of observers, while the research effort as a whole is a socio-political act (Alvesson, Hardy & Harley, 2008: 481-485, 488-489; Alvesson & Sköldberg, 2009: 9; Boisot & McKelvey, 2010: 415; Calás & Smircich, 1999: 665; Cunliffe, 2011: 658; Karataş-Özkan & Murphy, 2010: 457; King & Horrocks, 2010: 20-21; Lave, 2012: 166). It follows from this that data is meaningful both to the researched and the researcher albeit in differing ways (St. Pierre and Jackson, 2014: 716). Consequently, researchers' interpretations are value-laden, partial, subjective, biased and context-specific, rendering them neither generalisable nor replicable (Cálas & Smircich, 1999: 652; Cunliffe, 2003: 995, 999; 2011: 656; King & Horrocks, 2010: 20-21; Lincoln, 2010: 4; Morgan & Smircich, 1980: 493, 496; Tsoukas & Chia, 2011: 6). The logic of the inquirer's scholarly community is not regarded as superior to that of the research participants (Czarniawska, 2004: 787; Deetz, 1996: 196; Nicolini, 2012: 63). Therefore, researchers' explanations are not unequivocal, but susceptible to questioning by research participants and readers alike (Alvesson et al., 2008: 488; Karataş-Özkan & Murphy, 2010: 462).

As a result of the above considerations, interpretive epistemology is characterised by a lack of concern for conventional theory building (Alvesson & Sköldberg, 2009: 15; Morgan & Smircich, 1980: 497). Interpretive methods cannot produce real pictures of organisations. They can only generate accounts that are made possible by the complex assumptions of the particular theoretical approach (Contu & Willmott, 2000: 273). Consequently, researchers are not truth-tellers but story-tellers (Cunliffe, 2003: 993) interpreting realities they are to a varying extent directly involved in (Cunliffe, 2008: 127). On the one hand, they seek insights, understanding, wisdom and practical knowledge that will benefit research participants rather than laws and regularities (Deetz, 1996: 196; Guba & Lincoln, 2005: 206; Schwandt, 2000: 191). In other words, they generate knowledge that is replete with human experience rather than purely rational (Lincoln, 2010: 6). On the other hand, they inevitably draw on extant theoretical constructs to aid them in their investigations, albeit always remaining open to new meanings, interpretations and conceptualisations originating in participants' accounts (Deetz, 1996: 196, 201; Guba & Lincoln, 2005: 209; also Alvesson, 2011: 1658). Overall, these features prevent their work from being evaluated using traditional criteria associated with positivism (see Guba & Lincoln, 2005: 206-209 for examples of alternative criteria).

Reflective of the above, I realise the objective of the current study (i.e. to reinvigorate dialogue between possession- and practice-based theorising of organisational knowledge)

with the help of detailed, context-specific insights about the organising of service delivery process at MonTech (see 2.3.3.4). In fact, one of the reasons why I eventually adopted an interpretive case study strategy is precisely because it is intended to generate such empirically-rich insights (see Dyer & Wilkins, 1991: 614-615; Flyvbjerg, 2006: 221; Thomas, 2010: 578, 580; 2011: 23-24, 30) (see 3.3.2). Consequently, my explanation of service delivery at MonTech (see Chapter 5), as well as the theoretical contributions I make on its basis towards knowledge in each perspective and the discourse between them (see Chapter 5) should not be regarded as absolutely truthful in any way. On the contrary, I personally consider all of them to be tentative and open to scrutiny. In fact, I would invite any reader of this thesis to believe me as little as possible, albeit not on the basis that I am trying to promote dialogue with the use of a single case study. As the above summaries of positivist and interpretivist epistemologies indicate, such critique is as inconsistent with the latter as any claims to truthfulness or representativeness on part of the researcher. Instead, I invite scrutiny of my interpretations of service delivery at MonTech based on the KCT, CoP and LoP perspectives, as well as the subsequent dialogue between them they allow me to engage in. Arguably, it is a dialogue within the confines of this research, which are delineated by the three perspectives I bring together and the empirical material they interact with throughout my analysis (see 4.5). As will become clearer when I discuss interpretive case study research in greater detail (see 3.3.2), this particular research strategy is excellent at facilitating such scrutiny because it combines carefully-crafted but value-laden interpretation intended to help readers extend their own understanding with detailed descriptions of research participants' experiential and contextual accounts (Dyer & Wilkins, 1991: 616-617; Flyvbjerg, 2006: 238; Stake, 1978: 5; 1995: 39, 77, 85, 102, 134; 2008: 134-137, 142; Thomas, 2010: 578-580; 2011: 31-33; Watts, 2007: 211-212), thus allowing academic and non-academic readers alike to make their own comparisons between the discussed case and other cases known to them (Flyvbjerg, 2006: 222, 238-239; Ruddin, 2006: 804-806; Stake, 1978: 6-7; 1995: 85-88; 2008: 134).

My commitment to an interpretive epistemology does not only manifest in the type of knowledge claims I make, but also in my self-recognition as a value-laden interpreter positioned with the inquiry. This is evident in my dedication to abductive reasoning (see 3.2.3.2). In fact, considering the extent to which the current study revolves around existing theory, I do not believe that its objectives could be realised otherwise than through abduction (see 3.2.3.2). Reflective of this, my choice of research strategy (see

3.3) and analytical method (see 3.6.1) was greatly influenced by considerations with regard to whether they facilitated abductive reasoning.

3.2.3 Methodological implications

3.2.3.1 Dominance of qualitative methods

With the exception of radical objectivist studies (see Table 3.1), research in the other problematics is characterised by the prevalence of qualitative methodologies (Cunliffe, 2011: 660-665). However, this does not mean that quantitative methods are not used at all. In fact, it is possible for ontologically socio-constructionist research to employ quantitative approaches to data collection and analysis (Alvesson & Sköldbberg, 2009: 15). As pointed out by Guba and Lincoln (2005: 200-201), certain issues in social sciences are best explained via quantitative means even within investigations that philosophically favour qualitative methodologies.

The overall purpose of qualitative research is to develop in-depth understandings of phenomena in terms of how they are meaningful to the people experiencing them rather than producing generalisable causal explanations. This is achieved through collection and analysis (i.e. interpretation) of various types of empirical material, including interviews and observations (Conklin, 2007: 276; Denzin & Lincoln, 2005: 3-5). Arguably, as a result of these qualities, qualitative methodologies are naturally suited to the exploration of the emergent and contested nature of organisational knowledge the critique of the strategic management perspective sought to elucidate (see 2.2.2-2.2.3). Thus, it is not surprising that all of the empirical publications I included in my literature review relied on qualitative methodologies.

Qualitative research is not associated with a particular set of metatheoretical assumptions. Correspondingly, the vast majority of research strategies employing qualitative methodologies is not associated with a specific ontology and epistemology (Cunliffe, 2011: 661). As the wide range of research strategies I considered for the current study (see 3.3) demonstrates, how they are used ultimately depends on the researcher's own philosophical stance and the objectives of the investigation (Cunliffe, 2011: 656-657; Denzin & Lincoln, 2005: 6-8, 12-13; Schwandt, 2000: 190). Deployed within a socio-constructionist ontology and interpretive epistemology, they are concerned with the micro-perspective of participants' subjective understandings, local meanings and practices (Cunliffe, 2011: 663-664; Morgan & Smircich, 1980: 498). Regardless, in all

circumstances, qualitative methodologies are considered to be less scientifically rigorous in the conventional (i.e. positivistic) sense than quantitative ones (Cunliffe, 2011: 666; Denzin & Lincoln, 2005: 8-10; Prasad & Prasad, 2002: 4), while simultaneously being more difficult due to time and effort that must be devoted to data collection and analysis (Fendt & Sachs, 2008: 432). This is particularly true of subjectivist and intersubjectivist research that employs increasingly flexible data collection and analysis techniques in order to remain open to people's experiences and generate authentic knowledge (Cunliffe, 2011: 668).

3.2.3.2 *Abductive reasoning*

Ontologically socio-constructionist research is characterised by abductive reasoning which entails an iterative interplay between theory and empirical material. This reflects that qualitative research data is rarely unequivocal, making it necessary for researchers to make judgments about its underlying meanings, which often involves drawing on extant theory and personal experience (Alvesson, 2011: 1658; Langley, 1999: 708; Rubin & Rubin, 2005: 56; Ryan & Bernard, 2000: 780; Thompson, Locander & Pollio, 1989: 140-141). Even phenomenologically-oriented subjectivist researchers, who believe that phenomena ought to be studied as purely as possible from the perspective of those experiencing them, are sceptical as to the extent to which they can free themselves from their past experiences and theoretical understandings to generate insights inductively (Creswell, 2007: 62; Conklin, 2007: 283-284; Holt & Sandberg, 2011: 219-220; Thompson et al., 1989: 140).

In abduction, existing theory is a source of inspiration that provides the basis for developing and explaining the empirical material. Inadequacy of what is already known for explaining the present situation leads to breakdowns in understanding that create opportunity for theoretical refinement. Theory may have to be revalidated multiple times through its engagement with the empirical material, with each explanation being superior to the previous, before a satisfyingly complete understanding of a phenomenon is achieved. The ultimate result of this iterative processes is neither discovery nor validation-falsification of a general rule, as is the case in induction and deduction, respectively, but development of an in-depth understanding of the particular (i.e. pragmatic knowledge) (Alvesson & Sköldberg, 2009: 3-6; Brinkmann, 2013: 56; 2014: 722-724; Cunliffe, 2011: 663-664). Arguably, this renders abduction consistent with the conception of a value-laden researcher in epistemologically interpretive research since it

enables taking advantage of and requires proactive engagement with what is already known.

In light of the objectives of the current research (see 1.4 and 2.3.3.4), abduction presents an opportunity to facilitate greater dialogue between possession- (i.e. KCT) and practice-based (i.e. CoP and LoP) theorising of organisational knowledge through their mutual engagement with the same empirical material – the data collected on service delivery at MonTech. By examining the ‘suppleness’ (Jackson & Mazzei, 2013: 264-266) of each theoretical interpretation it is possible to elucidate how they simultaneously complement and question one another (see 5.3.2). Arguably, even if ideal or ‘pure’ induction was possible (i.e. data spoke for itself) (Brinkmann, 2014: 721), abduction constitutes a much more proactive means of engaging in discourse between possession- and practice-based theorising. The reason for this is that attempting to realise the aims of the current study inductively would involve generation of new empirically derived constructs pertaining to knowledge and its organising in service delivery at MonTech that would only be juxtaposed *post factum* with those already existing in the KCT, CoP and LoP literatures. Arguably, such simplistic engagement with extant theory promotes redundancy and does not enable meaningful evaluation of already existing scholarly thought.

3.2.3.3 Reflexivity

Philosophical assumptions have implications for reflexivity – the manner in which researchers explore the relationships between existing knowledge, their own experience, their role in the inquiry and the surrounding world (King & Horrocks, 2010: 125; also Johnson & Duberley, 2003: 1280-1281) in order to account for how their often unacknowledged pre-understandings influence the research process (Johnson & Duberley, 2003: 1279). Both subjectivist and intersubjectivist researchers must remain mindful of their taken-for-granted assumptions derived from their socio-political context, past experiences and the adopted theoretical lenses. Furthermore, they must deliberate on their potential impact on the research process (Alvesson & Sköldbberg, 2009: 8-10, 271-274; Alvesson et al., 2008: 480, 483-484, 488; Calás & Smircich, 1999: 664; Cunliffe, 2003: 988-990; Guba & Lincoln, 2005: 210; Karataş-Özkan & Murphy, 2010: 455; King & Horrocks, 2010: 22-23, 126-127, 133-136; Kvale & Brinkmann, 2009: 242). In subjectivist research, such as the current study, reflexivity is directed at revealing how the researcher’s own conventions influence interpretation of research participants’ accounts and other empirical material (Cunliffe, 2003: 992, 995; 2011: 663). Considering

that reflexivity has been identified as one of the possible means of overcoming the often self-contradictory nature of KCT, CoP and LoP research (Charreire Petit & Huault, 2008: 83-84) and, more recently, recognised as integral to practice-based theorising (i.e. CoP and LoP) (Nicolini, 2009b: 197), it seems appropriate to outline what I did to achieve a reflexive attitude.

Table 3.2 Overview of reflexivity practices and their implementation in the current study.

	Purpose and means	Implementation in the current study
Multi-perspective reflexivity practices	Understanding of a phenomenon from multiple philosophical perspectives through multi-paradigm research.	Not implemented since the KCT, CoP and LoP perspectives are based on shared philosophical assumptions (see 2.2.3).
Multi-voicing reflexivity practices	Undermining of the privileged position of the researcher in favour of the research subjects through recognition of the former's active involvement in the inquiry, use of self-conscious writing techniques to enable readers and research subjects more active roles in the interpretation of meaning, and giving voice to research participants.	Articulation of researcher bias (see 3.2.3.3). Phenomenological approach to interviewing (see 3.5.4.2). Research participants were provided with the opportunity to review and discuss their transcripts (see 3.4.2, 3.5.4.3 and 3.5.4.4). Research notes detailing my on-site experiences at MonTech included details of how research participants interacted with me (see 3.5.6). MonTech were offered a presentation of the findings and an opportunity to review any publications produced from the study (see 3.4.1).
Positioning reflexivity practices	Awareness of the network of scholarly practices and interests that produce particular interpretations of knowledge through exposure of institutional constraints of the particular scholarly community.	Declaration of bias towards a non-managerial understanding of knowledge and its organising in the KCT, CoP and LoP perspectives (see 3.2.3.3). Consideration of the methodological programme of practice-based theorising throughout my discussion of the data collection processes employed in the current research (see 3.5.3-3.5.6)
Destabilising reflexivity practices	Deconstruction of the work of other authors.	Not implemented since these practices are typically used to challenge other researchers' unreflective work.

Notes: Based on Alvesson et al. (2008) and Johnson and Duberley (2003).

My efforts to act reflexively (see Table 3.2) in the current research drew on the four strategies identified by Alvesson et al. (2008) (i.e. multi-perspective, multi-voicing, positioning and destabilising), as well the notion that the manner in which reflexive scrutiny of one's preconceptions is attempted is itself grounded in ontological and epistemological commitments (Johnson & Duberley, 2003: 1281-1282, 1292). Reflective of the latter, by positioning themselves within the inquiry, subjectivist researchers are concerned primarily with identifying and accounting for their personal biases (Cunliffe, 2003: 992, 995; 2011: 663). Correspondingly, I relied primarily on positioning and multi-voicing practices to account for my embeddedness in the scholarly community that

developed around the critique of the strategic management view of organisational knowledge (see 2.2.2-2.2.3) and undermine my privileged position in favour of the research subjects by exposing my taken-for-granted assumptions (Alvesson et al., 2008: 483-484, 488; see also Conklin, 2007: 282-283). Taken together, these movements indicate an ontological rejection of an independent reality and the epistemological recognition of the multiplicity of meanings and susceptibility of all knowledge claims to scrutiny (Johnson & Duberley, 2003: 1286-1287) (see 3.2.1-3.2.2). With positioning being a pre-emptive and defensive strategy, and multi-voicing being a creative and emancipatory one, I followed Alvesson et al.'s (2008: 494) recommendation to establish a dialectic between the two approaches.

With regard to positioning-based reflexivity (see Alvesson et al., 2008: 484-485, 488-489; also Cunliffe, 2000b: 992; Johnson & Duberley, 2003: 1289, 1291-1296), I must begin by highlighting that this form of reflexivity is fundamental to my attempt to engage in dialogue between possession- (i.e. KCT) and practice-based (i.e. CoP and LoP) approaches to the theorising of organisational knowledge. Arguably, it would not be possible for me to engage in such dialogue without appreciating, outlining and remaining aware of the concerns and agendas driving the three perspectives I bring together. I must also explain how my positioning within the wider community developed around the critique of the strategic management view of organisational affects my research. Specifically, I recognise that the shift in emphasis in the KCT, CoP and LoP perspectives away from predictable organisational principles towards emergent processes of knowing and organising (see 2.2.2), leads not only to the generation of explanations that managers might find perplexing (Blackler, 1993: 866), but generally is prejudicial towards them. The reason for this is that the only means of gaining insights into these processes is by investigating organisational activities, such as service delivery at MonTech, from the perspective of people who are directly involved in them. Arguably, had I conducted the study in a large organisation as initially intended (see 3.5.2), this might have become a source of anti-managerial bias in the sense that respondents in a large, fragmented organisation could have been unable to link the work done in course of participating in KIBS client projects to the overall commercial context of their organisation. However, with MonTech being a small company, in which people in managerial positions are actively involved in service provision, this was not the case.

Turning to multi-voicing-based reflexivity (see Alvesson et al., 2008: 483-484, 488; also Cunliffe, 2003: 995-996; Johnson & Duberley, 2003: 1296), as aforementioned, my initial

motivations for conducting this research were the result of dissatisfaction with the inadequate consideration of tensions arising out of knowledge-related differences in the extant accounts of KIBS delivery processes (see 1.3). With hindsight, I believe I sought to give voice to my friends and acquaintances, as well as other people working in KIBS firms in non-managerial roles. While my motives have subsequently become primarily theoretical, I am convinced that I have always remained at least subconsciously committed to my original cause. In fact, had it not been for it, it is unlikely I would have considered drawing on the KCT, CoP and LoP perspective at all, not to mention attempting to promote dialogue between possession- (i.e. KCT) and practice-based theorising of organisational knowledge (i.e. CoP and LoP).

3.3 Research strategy

A research strategy positions the research in the empirical world by linking the interpretive frame constructed on the basis of its metatheoretical assumptions with the phenomenon under investigation through a careful selection of research techniques and practices (Denzin & Lincoln, 2005: 25). Drawing on Cunliffe’s (2011) typology of problematics in organisational and management research, *The SAGE Dictionary of Qualitative Management Research* (Thorpe & Holt, 2008) and *Qualitative Inquiry & Research Design* (Creswell, 2007), I identified six potential research strategies for the current study – ethnographic, phenomenological, orthodox GTM, constructivist GTM, theory-building case study and interpretive case study. I then considered whether they were consistent with the interpretive epistemology of the current research (see 3.2.2), which resulted in the rejection of three approaches – orthodox GTM, constructivist GTM and theory-building case study. I subsequently rejected ethnographic and phenomenological research on pragmatic grounds (see Table 3.3).

Table 3.3 Considered research strategies and their underlying epistemological assumptions.

Research strategy	Epistemological assumptions
Ethnography	Interpretive
Phenomenology	Interpretive
Orthodox GTM	Positivist
Constructivist GTM	Positivist
Theory-building case study	Positivist
Interpretive case study	Interpretive

Notes: Bold font indicates the eventually selected approach.

3.3.1 Rejected approaches

3.3.1.1 *Ethnographic approach*

Ethnographic research in organisation studies intends to yield accurate insights about both overt and tacit aspects of workplace realities, organisation, management and people's subjective experiences (Linstead, 1997: 85; Watson, 2011: 206-207). Although ethnography is not associated with a particular set of metatheoretical assumptions (Atkinson & Hammersley, 1994: 257-258; Creswell, 2007: 69; Cunliffe, 2011: 657, 661), most modern ethnographers adhere to an interpretive epistemology (see Atkinson & Hammersley, 1994: 248-249, 252; Bate, 1997: 1154-1155, 1160; Creswell, 2007: 72; Goulding, 2005: 300; Linstead, 1997: 86; Putnam, Bantz, Deetz, Mumby & Van Maanen, 1993: 223-224; 228, 233; Van Maanen, 2006: 15-16; 2011: xiii, 2, 4, 20-21, 34-35; Watson, 2011: 212). While ethnographies may employ collection of various forms of data, participant observation is essential, with interviews, documents, statistics and other types of data regarded as supplementary material (Atkinson & Hammersley, 1994: 251; Bate, 1997: 1152; Brewer, 2004: 312; Creswell, 2007: 72; Goulding, 2005: 299-300; Linstead, 1997: 86-87; Van Maanen, 2011: 14; Watson, 2011: 206).

Ethnography would have been the preferred research strategy for the current study. This is due to the close association of practice-based theorising with methodologies relying primarily on observational data (see 3.5.3). Specifically, studying practices as situated phenomena 'requires methods that can access that situatedness', namely observations (Yanow, 2006: 1746; also Feldman & Orlikowski, 2011: 1249; Nicolini, 2012: 218) of both interactions among people and interactions between people and the material world (Yanow, 2006: 1748). This is due to the fact that even though discourses are part and parcel of practices (see 2.4.2), participation in practice and its articulation are neither the same, nor entail the same point of view (Nicolini, 2009b: 202-203; 2012: 63; also Tsoukas, 1996: 16-17; 2009: 942-943; Yanow & Tsoukas, 2009: 1349-1350). Without deep knowledge of the investigated phenomenon gained through participation in its constituent activities, it is not possible for a description of practice to be sufficiently thick to adequately represent it (Bechky, 2003: 1758-1759, 1761). Correspondingly, documentary and interview data should be used to supplement observations rather than as primary sources of insight (Miettinen et al., 2009: 1315; Nicolini, 2009b: 199).

In spite of the above, I ultimately had to abandon an ethnographic approach as a result of access-related difficulties. KIBS firms are notorious for refusing and restricting access to

researchers (Gill, 2015: 311). The organisation which pledged to host my research in 2014, which was the UK-based office of a global provider of IT services I contacted through a personal connection, exemplified this. While they were open to the possibility of observational data being collected, they insisted on interviews being carried out first. The explanation I was given as to why that was the case rested on concerns over client confidentiality. While being required to conduct interviews first was undesirable given the primacy of observational data in practice research (Miettinen et al., 2009: 1315), it would have not prevented me from observing practices comprising its service delivery process first-hand. In light of this, as well as scepticism with regard to whether it would have been possible for me to secure better access at another organisation, which my search for a replacement organisation validated (see 3.5.2), I agreed to the organisation's terms. However, I felt that it was no longer appropriate for me to refer to my planned research strategy as an ethnography as it was more consistent with interpretive case study research (see 3.3.2).

3.3.1.2 Phenomenological approach

A phenomenological approach merited consideration on the basis that phenomenology helped shape the metatheoretical foundations of subjectivist organisational research (Cunliffe, 2011: 656), of which this study is an example. In general terms, phenomenological research studies lived experiences from people's own perspectives (Gill, 2015: 311; Stablein, 2002: 2; Thompson et al., 1989: 137) to deepen our understanding of how individuals experience their taken-for-granted reality through the conscious processes of meaning ascription and construction (Gubrium & Holstein, 2000: 489; Fendt & Sachs, 2008: 432; Goulding, 2005: 302; King & Horrocks, 2010: 175; Thompson et al., 1989: 139). Ontologically socio-constructionist research, such as the current study, is associated with the existential variant of phenomenology (Cunliffe (2011: 654) pioneered by Martin Heidegger and further developed by Maurice Merleau-Ponty and Jean-Paul Sartre (for summary, see Smith, Flower & Larkin, 2009: 18-21). Recognising that being conscious in relation to something is not an individual and private mental process, but one situated in the human and social arrangements people have been thrown into (Holt & Sandberg, 2011: 221; Stablein, 2002: 5; Smith et al., 2009: 21; Thompson et al., 1989: 136; 1990: 346-347), existential phenomenology considers social practice rather than individual consciousness to be at the centre of the constitution of meaning (Holt & Sandberg, 2011: 228; Thompson, Locander & Pollio, 1990: 347). Notwithstanding its interest in social practices, as with other varieties of phenomenology,

its aim is to arrive at an essential, invariant meaning structure (i.e. essence) (Creswell, 2007: 62; Englander, 2012: 22; Kvale, 1983: 184) which describes what was common and necessary to the participants' experience of a particular phenomenon (Conklin, 2007: 277; 279; Creswell, 2007: 62). Arguably, this objective was inconsistent with my study's emphasis on tensions, which implies concern with multiplicity of experience. Therefore, I rejected the approach.

3.3.1.3 Orthodox GTM

Orthodox GTM draws on the original conceptualisation of the methodology (Glaser & Strauss, 1967). I rejected it because contrary to its creators' pledges it failed to legitimise epistemologically interpretive research, instead nurturing post-positivism (see Annells, 1996: 385-389; Charmaz, 2000: 510, 512-513; 2005: 509; 2006: 9, 179). This transpires most prominently in the researcher being positioned outside the inquiry (Alvesson & Sköldberg, 2009: 71; Charmaz, 2000: 510, 513; 2006: 509) and commitment to rather conventional theory-building (Charmaz, 2000: 524; 2006: 8; Creswell, 2007: 68; Fendt & Sachs, 2008: 446-447) emphasising analytical clarity, neutrality and objectivity of generated insights (Alvesson & Sköldberg, 2009: 66; Charmaz, 2000: 521-522, 524-525; 2005: 509-510; Fendt & Sachs, 2008: 440-447).

3.3.1.4 Constructivist GTM

In comparison with orthodox GTM, constructivist GTM (Charmaz, 2000; 2005; 2006) aims to develop interpretive understandings of people's subjective meanings, experiences, first-hand knowledge of empirical worlds, processes of reality construction and relationships between individual agency and social structure (Charmaz, 2000: 510, 521-526; 2005: 508, 522-525; 2006: 10). At first instance, its purported ontological and epistemological assumptions (see Charmaz, 2000: 514; 2005: 509-511; 2006: 10, 15, 27; 179-180, 184; Fendt & Sachs, 2008: 439, 450; Länsisalmi, Peiró & Kivimäki, 2004: 242; O'Reilly, Paper & Marx, 2012: 255) appear consistent with the current study and subjectivist research in general (see 3.2). However, on closer investigation it becomes clear that this is not entirely the case. Constructivist GTM continues to utilise a mechanistic, rigid analytical process (Charmaz, 2000: 510, 525-526; 2005: 509, 511; 2006: 2, 9, 178, 184) which must be meticulously followed to ensure high quality of research findings (Charmaz, 2005: 528; 2006: 182). Moreover, its concern with theoretical saturation (Charmaz, 2005: 529; 2006: 26; O'Reilly et al., 2012: 257) indicates that it remains committed to the production of decontextualised, abstract and somewhat

predictable theory associated with positivist epistemology (see Table 3.1). Therefore, I rejected it on philosophical grounds.

3.3.1.5 Theory-building case study research

I rejected the theory-building case study research strategy on several grounds that indicated its commitment to a positivist epistemology (see Table 3.1), thus rendering it incongruent with the philosophical assumptions of the current study (see 3.2). Firstly, as the name suggests, it is committed to the generation of objective theoretical constructs that can be extended to other cases from both singular and multiple cases, with the latter being favoured because they result in greater construct accuracy and generalisability (Eisenhardt, 1989: 542, 545-547; Eisenhardt & Graebner, 2007: 25-30; Gerring, 2004: 341-342, 347-350; Yin, 2009: 15, 38, 53-54, 61-62). Secondly, it is modelled after positivist hypothesis-testing methodologies (see Dyer & Wilkins, 1991: 613, 616; Eisenhardt, 1989: 532, 536, 538, 541-543, 547; Gerring, 2004: 342-345, 350; Yin, 2009: 41-42, 56). Thirdly, it assumes analysis is conducted by a value-free researcher (Eisenhardt & Graebner, 2007: 25). Finally, the positivist heritage of this variety of case study research is evocative in its prescribed rigorous analytical procedures (see Yin, 2009: 130-162) and the assimilation of evaluation criteria from deductive hypothesis-testing based research (i.e. parsimony, testability and logical coherence) in the assessment of theories built from case studies (see Eisenhardt, 1989: 548).

3.3.2 Interpretive case study approach

The term ‘case’ refers to any bounded system, including but not limited to: a single individual, a group of people, an organisation, a particular activity or an event (Creswell, 2007: 74; Gerring, 2004: 342; Stake, 1978: 7; 1995: 2, 133; 2008: 120; Yin, 2009: 29). Even though cases have ‘boundaries’, they may also be significantly affected by external influences that must be accounted for (Gibbert & Ruigrok, 2010: 712; Stake, 2008: 120-121; Yin, 2009: 18, 56). Thus, it is perhaps more appropriate to describe cases as relatively bounded at best (Gerring, 2004: 341-342). While most case studies deal with contemporary phenomena, it is possible to carry out historical case studies (Eisenhardt & Graebner, 2007: 25).

Singular-case strategies can be distinguished on the basis of the rationale for investigating the case. An intrinsic case is researched because its own peculiarities are of interest, whereas an instrumental case is investigated because it is the locus of the phenomenon of

interest (Creswell, 2007: 74; Stake, 1995: 3, 16; 2008: 122-123). Although both designs require in-depth examination of the case, in the former this is motivated by the goal of achieving a thorough understanding of the phenomenon as it manifests in the case rather than the case itself (Stake, 2008: 123). In light of this, the current study can be regarded as an instrumental case on the basis that it is primarily motivated by my desire to examine knowledge and its organising for the purpose of reinvigorating discourse between the KCT, CoP and LoP perspectives, with service delivery at MonTech simply providing the context in which I attempt this (see 1.3).

3.3.2.1 *Epistemological considerations*

Based on the argument that case studies are ill-suited for generation of generalisable knowledge (see Dyer & Wilkins, 1991: 614-615; Stake, 1978: 7; Thomas, 2010: 575; 2011: 22-29, 32), interpretive case study research intends to capture holistic, experiential understandings and multiple realities of the specific case rather than arrive at rational causal explanations (see Dyer & Wilkins, 1991: 614-615, 617; Flyvbjerg, 2006: 223-224, 239-240; Stake, 1978: 6-7; 1995: 1, 7-9, 12, 43-44, 50; 2008: 128, 135-136; Thomas, 2010: 575-578; 2011: 22-30, 32). Consequently, interpretive case study research produces particularistic, context-dependent knowledge (Dyer & Wilkins, 1991: 614-615; Flyvbjerg, 2006: 221). Thomas (2010: 578, 580; 2011: 23-24, 30), whose terminology this discussion will follow, labels this type of knowledge ‘exemplary’ and traces its origin to Aristotelian *phronesis*, which emphasises the practical reasoning individuals apply in concrete circumstances (Thomas, 2010: 578; 2011: 23-24, 30; also Ruddin, 2006: 801, 807).

Exemplary knowledge is not a-theoretical. It is theoretically-informed albeit it only offers the level of certainty afforded by abductive reasoning – the best explanation of the particular circumstances – a tentative ‘theory’ (Dyer & Wilkins, 1991: 615; Thomas, 2010: 576-577) or an interpretive assertion (Stake, 1995: 9). Correspondingly, all interpretive case study researchers recognise that they enter cases with theoretically-infused expectations, but let particularities of the case take precedence over extant constructs (Dyer & Wilkins, 1991: 614, 617; Flyvbjerg, 2006: 235-237; Stake, 1978: 7; 1995: 20, 55, 133; 2008: 126, 137). Thus, the knowledge that is ultimately produced is a combination of detailed descriptions of research participants’ experiential and contextual accounts and the inquirer’s carefully-crafted but value-laden interpretation intended to help readers extend their own understanding (Dyer & Wilkins, 1991: 616-617; Flyvbjerg,

2006: 238; Stake, 1978: 5; 1995: 39, 77, 85, 102, 134; 2008: 134-137, 142; Thomas, 2010: 578-580; 2011: 31-33; Watts, 2007: 211-212). By making their own comparisons between the case represented in the report and other cases experientially known to them, non-academic readers are able to arrive at their own naturalistic generalisations that are intuitive and empirical rather than purely rationalistic (Flyvbjerg, 2006: 222, 238-239; Ruddin, 2006: 804-806; Stake, 1978: 6-7; 1995: 85-88; 2008: 134). In other words, they develop an understanding of the case in the context of their own *phronesis* (Thomas, 2011: 31-32; also Ruddin, 2006: 804; Thomas, 2010: 579-580). As for academic readers, the insights provided are intended to help them expose limits of extant theories and further their understanding of the phenomenon (Flyvbjerg, 2006: 223, 227-228; Stake, 1995: 7-8; 2008: 141).

In light of the immediately preceding discussion, it can be argued that, as its name suggests, interpretive case study research is consistent with the interpretive epistemology of the current study and, more generally, subjectivist research (see 3.2.2). Firstly, it displays a complete lack of concern for conventional theory building, instead valuing particularistic insights. Secondly, it appreciates that knowledge of a phenomenon can only be generated on the basis of lived experiences. Thirdly, it recognises researchers' influence on the inquiry, including the theoretical insights they bring with them which transpire through their interpretations. Fourthly and relatedly, it employs abductive reasoning.

3.3.2.2 *Pragmatic considerations*

Because adopting a case study research strategy is the result of choosing an object of inquiry rather than methodology (Stake, 2008: 119; also Gerring, 2004: 341, 353), a specific set of methods to be followed is not prescribed. Nevertheless, case studies of both theory-building and interpretive varieties ordinarily entail collection of in-depth data from multiple sources (e.g. interviews, observations, documents, questionnaires, etc.) that are used to generate a detailed case description (Creswell, 2007: 73, 75; Eisenhardt, 1989: 534-535, 537; Eisenhardt & Graebner, 2007: 28; Gibbert & Ruigrok, 2010: 712; Stake, 1995: 44; Yin, 2009: 98-99). In comparison with ethnographic research (see 3.3.1.1), observational data is not necessarily privileged, albeit attainment of a high level of familiarity with the case must still be demonstrated by the researcher (Flyvbjerg, 2006: 237-238). In fact, interpretive case study research appears to place observational and interview data on a slightly more even footing by recognising that interviews are more

suitable for capturing the multiple realities, subjective experiences and personal understandings of case inhabitants (Stake, 1995: 44, 64-67). Alongside the difficulties I encountered in conducting an ethnographic study (see 3.3.1.1), this argument provided a further justification for the ultimate adoption of an interpretive case study research strategy in the current study.

3.4 Ethical considerations

3.4.1 Ethical responsibilities towards the participating organisation

Reflective of modern academic practice (see Bryman & Bell, 2011: 136; Kvale & Brinkmann, 2009: 63-66), the current study had to undergo an ethical review prior to the commencement of fieldwork that involved submission of a Participant Information Sheet (see Appendix A), Consent Form (see Appendix B) and an electronic form summarising research aims and data collection procedures. Because *Ethical approval for research involving human participants: Guidelines for postgraduate research students (Ethical guidelines for PGRs)* (Alliance Manchester Business School, 2016) dealt exclusively with the protection of human subjects (see 3.4.2), Bell and Bryman (2007) and Bryman and Bell (2011) were consulted to address ethical issues pertaining to the relationship between the researcher and the participating organisation.

Anonymity of the case study organisation was protected through the removal of corporate identifiers from all data collected from the organisation. Their removal did not negatively influence the analysis since they were not essential to conveying the meaning of the case (Bell & Bryman, 2007: 70). However, a broad description of the organisation, including size, industry and type of services provided was maintained as such information was instrumental to the analysis. Additionally, recognising that it may be possible for organisations to be identified on the basis of their descriptions (Bryman & Bell, 2011: 129), I obliged to provide advance notice and inspection copies of any publications arising from the research.

Even though the data collected did not include any information that was proprietary, I was required to sign a non-disclosure agreement (NDA) with the organisation. Following the advice of Bryman and Bell (2011: 129), I consulted my supervisory team before signing the agreement. Overall, I believe the steps describe above and the NDA were

sufficient to meet the expectation to safeguard the participating firm (Bell & Bryman, 2007: 69).

Finally, no conflicts of interests arose in the current study on the basis of receipt of external funding (see Bryman & Bell, 2011: 142) or a consultancy relationship with the participating organisation (see Bell & Bryman, 2007: 67). With regard to the former, no such funding was received. As for the latter, its lack was evidenced in the Customer Services Manager, who acted as the gatekeeper, describing the involvement of his organisation as 'helping'.

3.4.2 Ethical responsibilities towards individual participants

Ethical considerations arising from the involvement of individual participants in business research are typically concerned with informed consent, invasion of privacy, deception and personal harm, including physical and mental harm as well as diminished career prospects (Bryman & Bell, 2011: 128-129). As with as other research utilising interview data (see Kvale & Brinkmann, 2009: 62-63), case studies involve some level of intrusion into a person's life (Stake, 1995: 59), creating the possibility of them suffering some form of harm as a result of the elicited views and experiences (Stake, 2008: 140; Yin, 2009: 73).

In accordance with *Ethical guidelines for PGRs* (Alliance Manchester Business School, 2016) and following the advice in Bell and Bryman (2007: 69), Bryman and Bell (2011: 129-130) and Rubin and Rubin (2005: 98), the main measure adopted to protect participants in the current study from such harm was the anonymisation of interview transcripts. Recognising that some research participants may wish for their identity not to be anonymised, transcripts were anonymised unless the particular respondent requested otherwise. Participant identities were concealed through the use of pseudonyms and removal of most personal identifiers. However, descriptions of people's educational and professional backgrounds and roles in the organisation were retained for analytical purposes, but were sufficiently broad to prevent their identification by people from outside the case study firm. Due to the small size of the organisation and universal awareness of who participated in the research, it was not possible to conceal respondents' identities from their colleagues.

Mirroring Bryman and Bell's (2011: 133, 136-137) advice, *Ethical guidelines for PGRs* (Alliance Manchester Business School, 2016) required participant privacy to be protected

by providing them with the rights to refuse to answer intrusive or sensitive questions, withdraw from the research at any point in time and without detriment to them, review notes taken during interviews and clarify, alter or retract answers both during the interview and when reviewing their transcripts. Incidentally, the latest measure also enabled addressing issues raised by the use of verbatim (i.e. word-for-word) transcription (i.e. stigmatisation and embarrassment due to poor language use) (Kvale & Brinkmann, 2009: 186-187) by ensuring that participants had influence over how they would be represented in the research (see Stake, 2008: 140). Following the advice of Bryman and Bell (2011: 133, 137) participants' privacy was further protected by informing that interviews would be audio-recorded unless they requested otherwise. To counteract the possibility of some respondents feeling uncomfortable about being recorded (Rubin & Rubin, 2005: 110-111), it was clarified that its purpose was to ensure that their accounts would be accurately preserved for transcription and analysis (Kvale & Brinkmann, 2009: 178-179).

The Participant Information Sheet (see Appendix A) and Consent Form (see Appendix B) required were the primary means of ensuring informed consent was obtained. They were prepared in accordance with *Ethical guidelines for PGRs* (AMBS, 2016) supplemented by recommendations from Bell and Bryman (2007: 65), Bryman and Bell (2011: 139-141), King and Horrocks (2010: 46-47); Kvale and Brinkmann (2009: 70-72), Rubin and Rubin (2005: 94), Stake (1995: 57) and (Yin, 2009: 73). Both were written in a non-technical language and made it clear that the research was a doctoral project. In addition to informing respondents of all the measures described above, The Participant Information Sheet included descriptions of the purpose of the study, participant selection, dissemination plans, secure storage of data and who would have access to it. It also stated that the data collected could be used in future research involving other academics and informed participants of their rights under Data Protection Act 1998. It also incorporated the principle of reciprocity by informing respondents that they could request a summary of the research, albeit not for the purpose of providing feedback on the findings of the research since that would take precedent over the researcher's interpretation of an ultimately ambiguous narrative (Brinkmann, 2013: 23-24; King & Horrocks, 2010: 163).

To counteract the possibility of interviewees being discouraged as a result of the two documents giving the interview a legal and formal appearance (Rubin and Rubin, 2005: 105), I advised the respondents in advance of their interviews that the sole purpose of the two documents was to conform to ethical research practice. Following the advice of

Bryman and Bell (2011: 136) and King (2004: 17), before the commencement of each interview assurances of confidentiality were repeated, main features of the research were re-explained and confirmation that permission to use audio-recording equipment had been granted was sought.

3.5 Data collection

3.5.1 Case selection

Recognising that case selection is one of the most challenging and important decisions to be made in case study research (Creswell, 2007: 75-76; Eisenhardt & Graebner, 2007: 27), I carefully considered what organisation would be suitable for my study. Since case representativeness is not a concern in any variety of single-case research (Eisenhardt & Graebner, 2007: 27; Gerring, 2004: 348; Stake, 1995: 4-6), I relied on purposive sampling⁴ to attain a thorough understanding of the phenomenon within the case and maximise its learning potential (Eisenhardt, 1989: 536-537; Eisenhardt & Graebner, 2007: 27; Stake, 1995: 4; 2008: 129-130; Yin, 2009: 91). The use of an instrumental interpretive case study strategy required further consideration whether a critical, paradigmatic or extreme case should be selected (Flyvbjerg, 2006: 229-231) (see Table 3.4).

Table 3.4 Types of singular interpretive case studies and their selection logics.

Type of singular interpretive case study	Selection logic
Critical case	Strategic selection of a case where a more general phenomenon is the most or the least likely to occur with the findings likely to extend to other contexts.
Extreme case	Selection of a problematic, unusual, dramatic or exceptionally good manifestation of a phenomenon.
Paradigmatic case	Selection of prototypical or metaphorical case that illustrates a novel or previously not investigated phenomenon.

Notes: Based on Flyvbjerg (2006: 229-234).

⁴ 'Purposive sampling' is the term used by Stake (2008). Eisenhardt (1989) and Eisenhardt and Graebner (2007) use the term 'theoretical sampling' in reference to the same selection strategy. The former is used to avoid confusion with 'theoretical sampling' in GTM and because Stake (2008) is an author associated with interpretive case study research.

It must be reiterated that my decision to research the KIBS context preceded selection of the theoretical framing for the current study (see 1.3). Thus, the case selection process was distorted in the sense that selection was narrowed down to a particular group of organisations before the phenomenon to be investigated was precisely defined. Incidentally, this exemplifies that abductive research is driven by breakdowns in understanding in situations of uncertainty (Brinkmann, 2014: 722-724), with the source of bewilderment inspiring the current study being the unknown consequences of knowledge diversity on KIBS delivery, the tensions it created and their implications for organising. What occurred is rather than me selecting a case of a specific type based on limitations of the extant literature, the theoretical framing provided by the KCT, CoP and LoP literatures influenced what type of case a potential KIBS firm could have been in the context of the research (see 1.3).

Effectively, the considerable influence that the extant literature played in defining the precise aims of my study (see 1.3-1.4) prevented any KIBS firm from becoming a paradigmatic case (see Flyvbjerg, 2006: 232). Having interpreted the qualities attributed to KIBS firms in the context of the theoretical framing of the research, I anticipated that service delivery was likely to be a highly contested activity as a result of knowledge-based differences among participants (see 1.3). Recognising the shared emphasis of the KCT, CoP and LoP perspectives on tensions inherent in organisational knowledge and its organising (see 1.1 and 2.2.2), I concluded that within this theoretical framing the KIBS context overall could be regarded as an extreme case.

In light of the above, I deemed it appropriate, as a matter of consistency, to select the most atypical or extreme firm from the wide variety of organisations falling underneath the KIBS umbrella (see 1.2.1) for the study. Drawing on Miles's (2012: 22) distinction between technology-oriented (T-KIBS), professional (P-KIBS) and creative KIBS (C-KIBS), I decided to select an organisation from the first category on the assumption that technology-based services can only be scrutinised by people with the necessary technical expertise, while being continuously used by non-technical members of the client organisation to address everyday business problems. In contrast, I anticipated that the aesthetic basis of C-KIBS would render them more susceptible to scrutiny, whereas, even though P-KIBS may not yield themselves to easy scrutiny, they are unlikely to be continuously 'consumed' by people without relevant expertise. Conversely, I assumed that tensions involved in and affecting the organising of service delivery of C-KIBS and P-KIBS, were likely to be less severe than those in the provision of T-KIBS. My decision

was also pragmatically motivated. I was confident I would have been able to secure access to the UK-based European office of a global provider of IT services through a personal connection. Despite multiple assurances and a tentative agreement with regard to the level of access I would have been granted, this ultimately proved not to be the case. Without any explanation, I was informed in August 2016 that it was no longer possible for me to conduct my study.

I began searching for a replacement organisation in September 2016. As a result of my teaching obligations during term time I restricted my search to T-KIBS firms within a few hours' commute from my institution. Recognising that KIBS firms are generally relatively small (Freel, 2006: 336), I did not expect to find many organisations comparable in terms of size to the one that had revoked access locally. The search conducted through LinkedIn confirmed this, with 57 suitable organisations of mostly small size identified. I received no replies from the majority of these organisations despite sending multiple emails and LinkedIn messages to their key personnel. A handful provided me with the contact details of a senior manager or a director who were equally unresponsive. Overall, my experience with these organisations serves as a further testament to the difficulty of securing access to consultancy firms (see Gill, 2015: 311).

The breakthrough moment came when I first contacted MonTech, the case study organisation, on 14th November 2016. I had a short, informal, over-the-phone conversation with Jack, the Customer Services Manager, who provided me with an overview of the organisation and its activities. I contacted him again via email on 5th December 2016 to arrange an interview with him for 14th December 2016. Our meeting which consisted of an interview followed by a more detailed explanation of the research concluded with a permission to interview other members of the organisation.

3.5.2 Types of data collected

As aforementioned, all variations of case study research involve collecting in-depth data from multiple sources, including but not limited to interviews, documents and observations (see 3.3.2). My decision with regard to the types of data to be collected relied on a pragmatic logic whereby I considered the main interests of the three literary domains that provided the theoretical framing for the current study (i.e. KCT, CoP and LoP) and its specific aims (see 1.3). As aforementioned, it would have been desirable for me to collect extensive observational material. Unfortunately, this became problematic following the withdrawal of the organisation, which first agreed to host my research (see

3.3.3.1). Issues associated with the collection of observational data were exacerbated by the restrictions imposed by MonTech. Ultimately, it was possible for me to carry out limited observations of how MonTech’s members used and interacted with various software at work (see 3.5.3). However, I had to gain insight into some relatively important aspects of the organising of service delivery at MonTech and the practices comprising it via other means. Interviews (see 3.5.4), which effectively became the primary source of data in the study, allowed me to explore the subjective experiences (Stake, 1995: 64) of MonTech’s members and helped me unveil the logic behind practical activity (Nicolini, 2009b: 196-197; Sandberg & Tsoukas, 2011: 351) at the organisation. As such, they proved instrumental in developing an understanding of the social dimension of service delivery at MonTech. To further my understanding of its material aspects, I collected documentary data, including forms, manuals, reports, software printouts and any other relevant textual artefacts (see 3.5.5). Finally, I produced detailed research notes recording each of my visits to their office (see 3.5.6). Table 3.5 provides a detailed summary of all data collected.

Table 3.5 Summary of the empirical material collected throughout the research.

Data collection timeline	
<ul style="list-style-type: none"> • November 2016 – unrecorded, over-the-phone conversation with the Customer Services Manager; • December 2016 to May 2017 – formal, on-site data collection; • June 2017 – July 2017 – request for additional documents. 	
Data source	Data collected
Interviews	<ul style="list-style-type: none"> • 1 unrecorded, informal, unstructured 20-minute telephone conversation with the Customer Services Manager; • 5 initial semi-structured interviews lasting between 60 and 90 minutes; • 5 follow-up semi-structured interviews lasting between 20 and 40 minutes.
Documents	<ul style="list-style-type: none"> • Corporate information from company website; • Screenshots/printouts from the Project Management Software; • Screenshots/printouts from the Helpdesk Software; • Requirements Specification Template; • Excerpts from internal quality manuals posted on the organisations Intranet; • Product Order Form; • Product Release Approval Forms; • Sales Proposal Document Template; • Service Level Support Agreement; • 2 e-mails with additional explanations provided by respondents.
Non-participant observations	<ul style="list-style-type: none"> • 16 hours of purposeful and incidental observations made at the participating organisation.
Research notes	<ul style="list-style-type: none"> • 35 pages of notes based on observations and reflections made during visits to the participating organisation.

I collected most of the data between the December 2016 and May 2017. However, I had my first informal, unrecorded, telephone conversation with the Customer Services Manager in mid-November 2016. Typically of abductive research, data were becoming relevant to my explanation during my engagement with the empirical material (see Brinkmann, 2014: 724), leading me to request some additional documents in June 2017.

3.5.3 Non-participant observation

Through observations of situations, events, problems and efforts taken to address them interpretive case study researchers can develop more detailed, nuanced and complex understandings of the organisations they are investigating (Stake, 1995: 60-63). Regardless of their scale and whether they are made purposefully or incidentally, observations at the very least enable situating what has been learned about a case in its physical context, including office layout and working conditions (Yin, 2009: 109-110). Based on descriptions in Stake (1995: 44, 66) and Flyvbjerg (2006: 237-238), interpretive case study researchers conduct observations from a non-participant and non-interventionist standpoint, which indicates that in contrast to ethnographic studies an emic-etic (i.e. from within-from outside) split is typically maintained. This corresponds with the ‘observer-as-participant’ role described by Angrosino and Mays de Pérez (2000: 673), whereby the researcher regards herself or himself to be a part of the investigated setting, but only interacts with it in casual and non-directive manner.

Although interpretive case studies are always interested in the subjectivity of people inhabiting the case, they uncover it in subtly different ways depending on which research tradition influenced their design (see Gerring, 2004: 345; Stake, 1995: xi; 2008: 139-140). As aforementioned (see 3.3.3.1), in case of practice-based research, they are regarded to be the only appropriate means of studying the situatedness of practices (Yanow, 2006: 1746; also Feldman & Orlikowski, 2011: 1249). This is the case because participation in practice and its articulation are neither the same, nor entail the same point of view. In fact, practitioners are more likely to struggle with articulating the underlying logic of their practices than observers who enjoy the benefit of an outsider perspective (Nicolini, 2012: 63). Consequently, observations provide researchers with ‘a key to reality that indirect observation (via other people’s accounts) cannot give’ (Czarniawska, 2004: 787). Therefore, even though I was not conducting an ethnographic study, being able to collect observational data was highly describable.

Unfortunately, my opportunities to conduct observations at MonTech were severely restricted. The level of access I initially negotiated with the Customer Services Manager was limited to ‘a couple more visits for a couple of hours’ for the purpose of interviewing respondents. Therefore, the timing of my observations was dependent on interviewee availability and the scheduling of interviews which was handled by the Customer Services Manager on all but one occasion (see 3.5.3.1). This had twofold implications. Firstly, I was unable to visit the organisation at all between late February 2017 and mid-March 2017 as it was a particularly busy time for MonTech. Secondly, I was unable to observe any of the internal meetings mentioned by the respondents. Although witnessing them would have enabled me to gain valuable insights into what seemed to be important activities comprising service delivery, as well as helped me contextualise my respondents’ experiences, I was reluctant to pursue access to them throughout my time at MonTech. Firstly, I felt I was already ‘stretching’ my access since most of the initial interviews exceeded the estimated length of one hour. Secondly, since the Customer Services Manager viewed his organisation’s participation in the study as ‘helping’ my research (see 3.4.1), I considered myself to be at a significant power disadvantage to him (see Bell & Bryman, 2007: 68) which put me in no position to push for what would amount to a major renegotiation of our initial access agreement. Given what I had to endure before securing access to MonTech (see 3.5.1), I was reluctant to risk jeopardising it. Regardless, I was ultimately able to carry out some much-needed observations.

The majority of my observations were conducted incidentally while I waited for my respondents to arrive at their interviews or waited for my commute back. In fact, combined with the scheduling of two interviews at different times of the day on several occasions, my commute played an important facilitative role in allowing me to observe members of MonTech at work. The fact that it was relatively infrequent meant I would often arrive well in advance of my scheduled interview and leave long after they have concluded, allowing me to spend up to approximately an hour more on site each visit. I would spend my time during each of the visits either inside the main office area or in one of meeting rooms adjacent to it. Since the small meeting room in which I carried out most of the interviews overlooked the main open office area, I was able to continue familiarising myself with MonTech’s working rhythm even when I was conducting interviews. In fact, some of the interviewees referred to what was happening outside as they were discussing their experiences. Among others, they referred to how being in close physical proximity with their colleagues, which was supported by the layout of the main

office area, allowed communicating with ease not only within the three areas of service delivery (i.e. Development, Support and the Helpdesk), but also across them. Furthermore, familiarising myself with the layout and condition of the entire office, in particular the two meeting rooms proved invaluable in contextualising the meetings I was unable to observe. The main benefit of these observations was that they enabled me to appreciate how members of the three areas of service delivery interacted with one another from a CoP perspective (see 4.5.2). However, as far as understanding the actions comprising their practices was concerned, their utility was rather limited since most of the work of Development and Support took place in a digital environment comprised of advanced software development, testing and release tools, which were difficult to grasp given my inadequate technical knowledge. In effect, I was able to observe how members of MonTech interacted with material artefacts, but the work done in the digital environment largely eluded me (see Yanow, 2006: 1748).

The limited deliberate observations I was able to conduct were a result of the interview design I had adopted (see 3.5.4.2). Specifically, I incorporated an element of deliberate observation into their design by being prepared to ask my respondents to demonstrate the software they used at work during or after the interview, if possible. Interestingly, I only had to ask for this once. On all other occasions, the respondents themselves offered me to have a look at what they were working on in course of the interview, after it concluded or at another time, thus creating opportunities for highly important albeit limited deliberate observations. I believe this was a consequence of asking my respondents to describe their work as vividly as possible, which often resulted in them struggling to explain what they were doing, thus validating the argument that the pre-reflexive, taken-for-granted logic of practice is difficult to articulate (Nicolini, 2012: 63; also Tsoukas, 1996: 16-17; 2009: 942-943; Yanow & Tsoukas, 2009: 1349-1350). These observations allowed me to glimpse into the work done in the digital environment at MonTech I was unable to capture via the incidental observations described in the preceding paragraph. Although it would have been advantageous to request demonstrations of all applications used, this was not possible due to aforementioned access restrictions. Consequently, my observations were limited to components of the digital environment significant to the organisation as a whole – the Intranet, the Service Management Software (SMS) and the Development Backlog Management Tool (DBMT). Unfortunately, neither the notes taken (see 3.5.6) nor the screenshots and printouts (see 3.5.5) I had collected preserved all of the details of my observations. In particular, they failed to fully capture the

interconnectedness of the various areas of the SMS and the DBMT. However, as both were sourced from third-party providers who hosted user tutorial videos online, I was able to preserve my understanding of how each of these packages functioned as a whole.

Before concluding the discussion of the observational material I had collected, I must point to two of its limitations, which relate to how such data are ordinarily used in practice-based research. Firstly, in order to adequately represent practice in a text, it is necessary for researchers to actually engage in its constituent activities (Bechky, 2006: 1758-1759, 1761). This was not possible for me due to the access restrictions I had to face. As with other interpretive case study researchers (see Flyvbjerg, 2006: 237-238; Stake, 1995: 44, 66), I remained an ‘observer-as-participant’. I was part of the setting I was investigating, but only interacted with it in a casual and non-directive manner (Angrosino & Mays de Pérez, 2000: 673). Secondly and relatedly, as insightful as my observations were to understanding service delivery at MonTech and its organising, and given the effort I had invested into devising an interview process which would allow me to overcome at least some of their limitations (see 2.5.3.2), my account of the constituent practices of service delivery is somewhat impoverished. Nevertheless, I must reiterate that the objective of the current study was not to describe the practices of service delivery at MonTech, but to reinvigorating dialogue between possession- and practice-based theorising of organisational knowledge through its diffractive analysis (see 1.4). I believe that despite its limitations, the empirical material I had collected still enabled me to do it.

3.5.4 Interviews

Qualitative interviews are the most common form of data collected in qualitative research overall (Englander, 2012: 13; King, 2004a: 11; King & Horrocks, 2010: 1, 6; St. Pierre & Jackson, 2014: 715). They are used to elicit examples and rich descriptions of people’s subjective experiences and understandings (Brinkmann, 2013: 22; Charmaz, 2006: 25-27, 29; King & Horrocks, 2010: 2-3; Rubin & Rubin, 2005: 3), thus providing researchers with means to go beyond the surface level of phenomena by gaining insights into the micro- and macro-worlds of people’s work lives (Cunliffe, 2008: 127; 2011: 659; Kvale, 1983: 173, 194; Kvale & Brinkmann, 2009: 1, 24, 29, 171; Rubin & Rubin 2005: 14).

In interpretive case study research, they serve two important purposes. Firstly, they enable obtaining knowledge of happenings that could not be directly observed by the researcher. Secondly, they are the primary means of capturing the multiple realities, subjective experiences and personal understandings inhabiting the case (Stake, 1995: 44, 64-67). In

practice-based research specifically, interviews help unveil the underlying logic of practice (Nicolini, 2009b: 204-205; Sandberg & Tsoukas, 2011: 351), including standards of good and morally appropriate performance, accountability conventions and the main practical concerns, which manifest in everyday activity (Nicolini, 2009b: 204-205). In light of these arguments and the restrictions that prevented me from conducting extensive observations (see 3.5.3), qualitative interviews became the most important source of data in my research.

Having recognised the importance of interviews to my study, it is necessary to discuss their purported limitations. Firstly, statements made in course of an interview are not situated in their natural context (Eisenhardt & Graebner, 2007: 28; Charmaz, 2006: 35; Watson, 2011: 211). Thus, respondents are reflecting on their experiences retrospectively rather than in real time (Charmaz, 2006: 529), which may pose problems for some research. For practice-based studies, these pertain to the fact that participation in practice and its articulation are neither the same, nor entail the same point of view (Nicolini, 2009b: 202-203; 2012: 63; also Tsoukas, 1996: 16-17; 2009: 942-943; Yanow & Tsoukas, 2009: 1349-1350). While this makes it impossible for interviews to tap into the situatedness of organisational knowledge from a practice standpoint (Bechky, 2003: 1758-1759, 1761), it facilitates reflection (Stablein, 2002: 9), which enables them to make the contribution described in the preceding paragraph. Secondly, the level of rapport between the interviewer and interviewee in interview-based studies is lower than in ethnographic research (Watson, 2011: 212). The resulting impression management on part of the latter (Eisenhardt & Graebner, 2007: 28) may prevent them from disclosing the more contested aspects of their work (Nicolini, 2009b: 205). In the current study, this was largely mitigated against by the phenomenological-contextualist interview design (see 3.5.4.2) which encouraged respondents to illustrate issues relevant to them through the use of rich descriptions (see Thompson et al., 1989: 138-139), thus discouraging simplistic rationalisations (see van Manen, 2007: 20; Rubin & Rubin, 2005: 10, 37, 75, 129-134).

3.5.4.1 Participant selection

With the exception of studies employing phenomenology as a strategy (see 3.3.1.2), qualitative research typically brings together multiple, refracted accounts of a phenomenon to allow researchers to explore its alternative explanations (Denzin & Lincoln, 2005: 6). Thus, in most research utilising interview data, participants are selected purposefully with the aim of achieving diversity of experience of the investigated

phenomenon (King, 2004a: 16-17; King & Horrocks, 2010: 29). In interpretive case study research this enables attainment a thorough understanding of the case (Stake, 1995: 56).

When I began collecting data in the current study, the organisation comprised 1 person operating the Helpdesk, 5 Developers and 4 Support staff, including the Customer Services Manager. Another IT developer and a dedicated salesperson joined the organisation mid-way through data collection. These two individuals were deemed ineligible to participate in interviews since they had very limited experience of service delivery at MonTech (see Rubin & Rubin, 2005: 66). Furthermore, one of the Support staff was unavailable for a face-to-face interview because he was based in Thailand. This limited the pool of potential interviewees to 9 people out of which 5 were recruited – 2 from Development, 2 from Support and 1 from the Helpdesk. Their recruitment was intended to ensure diversity of experience of KIBS delivery in MonTech was achieved. Jack, the Customer Services Manager, who was the first person I interviewed, assisted me with the selection of the other respondents and the scheduling of their interviews. Although involvement of a gatekeeper in participant selection creates the risk of respondents with a particular set of views being recruited (King & Horrocks, 2010: 31-32), this is unlikely to have happened due to MonTech's small size. In fact, Jack's participation was advantageous to the study because he could identify people who had different experiences even if they were part of the same area of activity (i.e. Development, Support and the Helpdesk). For example, client concerns featured extensively in the Development Manager's account of software development, but were almost entirely absent in the Junior Java Developer's description due to him not interacting directly with customers.

Given MonTech's small size and the fact all of its members actively participated in service delivery, I disregarded the advice to interview managers first to get an overview of the organisation and its members (King & Horrocks, 2010: 34; Rubin & Rubin, 2005: 65). Thus, respondents were not interviewed in any pre-determined order, but as they became available. However, I completed all initial interviews before follow-up interviews commenced. This ensured that all non-human artefacts involved in KIBS provision at MonTech were identified in advance of the follow ups, which among others included questions about the relevance of artefacts particular respondents did not mention in their initial interviews (see 3.5.4.3).

With regard to whether sufficient interview material was collected, it must be remembered that quality of insights in qualitative research depends on the craftsmanship and depth of the analysis and not the number of participants (Brinkmann, 2013: 90; Englander, 2012: 20-21, 23; Rubin & Rubin, 2005: 68). The general trend in interview-only studies is to recruit between 5 and 25 respondents (Kvale & Brinkmann, 2009: 113) or collect no more than 20 hours of interview data, assuming verbatim (i.e. word-for-word) transcription is used (King & Horrocks, 2010: 143). However, what amounts to a sufficient number of respondents is justifiable in the context of a study's aims and its underlying philosophy. For example, in research employing phenomenology as a strategy, the number can be as low as 1 and as high as 30, albeit usually is towards the lower end of the spectrum (Englander, 2012: 21; Gill, 2015: 311; Sanders, 1982: 356). Arguably, recruitment of 5 respondents in the current research was sufficient considering MonTech's small size and the fact that the aims of my study were theoretically rather than empirically motivated (see 1.3). Undeniably, collection of further interview material over a longer period of time was desirable. Possibly, it would have allowed me to gain a better understanding of practices involved in service delivery at MonTech, which I was unable to observe (see 3.5.3). However, I must stress that the Customer Services Manager initially stated he was willing to 'sponsor' one interview per area of service delivery (i.e. Development, Support and Helpdesk) in addition to his own interview. Permission to interview another IT developer already extended beyond our original agreement. Finally, it must be considered that the study also involved collection of other forms of data (see 3.5.3, 3.5.5 and 3.5.6) and utilised a non-reductionist analytical method (see 3.6.1), which drastically extended the time required to complete the analysis compared to what would have been required if the same volume of data was coded.

3.5.4.2 Interview design

Although there are multiple approaches to qualitative interviewing (see Table 3.6), several characteristics are common to all of them. Generally, interviews bring together conversational partners unacquainted with each other, with the interviewer asking non-leading questions to introduce at least the main topics, close off others and encourage interviewees to elaborate and reflect on particular issues (Brinkmann, 2013: 18-19; Charmaz, 2006: 26; King & Horrocks, 2010: 2, 17; Kvale, 1983: 190; Kvale & Brinkmann, 2009: 3, 33-34, 172, 192-193; Rubin & Rubin, 2005: 13-15, 33, 112, 157). This dynamic coupled with the methodical consciousness on part of the interviewer, which is driven by the desire to produce knowledge, sets even the most open in-depth

interviews apart from ordinary conversations (Brinkmann, 2013: 21; Kvale, 1983: 179). Furthermore, regardless of the approach employed, each interview is likely to be somewhat unique and unpredictable (Rubin & Rubin, 2005: 12) given that each respondent is likely to have his or her own story to tell which may require a slightly different interview approach (Stake, 1995: 65).

Despite the above commonalities, it is possible to distinguish between alternative approaches to qualitative interviewing on the basis of their underlying metatheoretical assumptions, as well as their implications for the interviewer-interviewee relationship and interview design (see Brinkmann, 2013: 18-21; King, 2004a: 11-13; Kvale & Brinkmann, 2009: 147-160; Rubin & Rubin, 2005: 9-11). As a result of the importance of interviews to the current study (see 3.5.2 and 3.5.4) and the scarcity of methodological advice on conducting interpretive case study research, including the use interviews as part of it (see 3.1), I conducted a comprehensive review of publications on qualitative interviewing. The review resulted in the identification of three ‘ideal’ type approaches to interviewing (see Table 3.6). I adopted the phenomenological-contextualist approach because it was philosophically congruent with this research (see 3.2) and because it was devised specifically to elicit subjects’ experiences of their everyday world (see Jackson & Mazzei, 2013: 263; King, 2004a: 11; King & Horrocks, 2010: 13; Kvale, 1983: 173-176, 180; Kvale & Brinkman, 2009: 14, 24, 30; 124; Silverman, 2000: 823), which this research required.

The interview guide (see Appendix C) was designed in accordance with the principle that the more open the interview the more the respondent can shape its course in a manner consistent with their experience, thus enabling the researcher to better understand their lifeworld (see Kvale, 1983: 173; Thompson et al., 1989: 138; 1990: 347). Typically, this is manifested through the limited use of *a priori* defined questions, but more extensive probing of respondents’ answers (Sanders, 1982: 357). Studies employing a phenomenology strategy may use as few as one (Thompson et al., 1989: 138) or two (Creswell, 2007: 61) such questions. Even if more questions are prepared, they are unlikely to be asked (Conklin, 2007: 277). In comparison, in research based on a phenomenological tradition (i.e. concerned with lived experience), such as the current study, more pre-defined questions or themes may be used (King, 2004a: 11; Kvale, 1983: 174, 176; Kvale & Brinkmann, 2009: 24-30, 124). However, they must be sufficiently broad to enable respondents to describe and reflect on specific situations rather than provide abstract opinions (Kvale, 1983: 176; Kvale & Brinkmann, 2009: 30). This

requires the researcher to bracket her or his presuppositions about the investigated phenomenon by setting them aside or at least accounting for their influence on the interview (King, 2004a: 13; Kvale & Brinkmann, 2009: 30-31).

In the absence of academic consensus with regard to when and how to bracket, the approach eventually adopted must be justified in the context of the individual researcher and the particular study (Tufford & Newman, 2010: 85-87, 93). Since abductive reasoning entails a dynamic, breakdown-driven interplay between theory and practice (see 3.2.3.2), bracketing was restricted to collection of interview data and initial analysis (see 3.6.2.2). With regard to the former, its aim was to enable the interviewees' accounts to challenge the understanding of knowledge in the three domains my involvement brought into the research (Englander, 2012: 19). Therefore, I phrased the interview questions openly enough to enable participants to speak in their own terms (Thompson et al., 1989: 347). With regard to analysing the organising of service delivery at MonTech using the two practice-based (i.e. CoP and LoP) lenses, open phrasing was conducive to elucidating local practical concerns (see Nicolini, 2000a: 1403-1404; 2009b: 196-198, 202).

The study's aim to engage in dialogue between possession- (i.e. KCT) and practice-based (i.e. CoP and LoP) theorising of organisational knowledge on the basis of an analysis of KIBS service delivery at large rather than within individual projects influenced my choice of three overarching themes for the interview guide (see Appendix C). Recognising the difficulty in preparing follow-up questions to broad opening questions (see Rubin & Rubin, 2005: 135, 138, 152), I prepared some speculative probes, but refrained from using them in the actual interviews to avoid controlling their course (see Conklin, 2007: 277; Rubin & Rubin, 2005: 147-151). Instead, in a typical phenomenological (Kvale, 1983: 181; Sanders, 1982: 357) and practice research (Nicolini, 2009b: 200) manner, I sought clarifications from my respondents by asking them for more nuanced descriptions (Kvale, 1983: 181; Sanders, 1982: 357). As a matter of fact, the main utility of these follow up questions was that they served as an insurance policy in case the research was reviewed by more positivistically-minded academics as part of my institution's progression procedure. The interview guide I actually used comprised only the three broad thematic sections originally devised – 'the self and KIBS projects', 'experiences of involvement in KIBS provision' and 'experiences of interacting with artefacts in KIBS provision'. Respondents were first asked to describe themselves and talk me through a typical or

Table 3.6 Overview of qualitative interviewing approaches.

	Socio-constructionist interviewing	Phenomenological-contextualist interviewing⁵	Realist interviewing
Key ontological and epistemological assumptions	Interview data created in and relevant only in the narrow context of the interview due to the assumption that language actively construes the external social world and people's mental states.	Interviews generate partial, negotiated knowledge of a world outside the interview situation that is the outcome of respondent's understandings, researcher's interpretations, meaning systems that inform their perspectives and judgments exercised by the researcher on the basis of their affiliation with a particular scientific community.	Interviews uncover coherent, unequivocal, rationalistic, already existing knowledge pertaining to an external reality.
Interviewer-interviewee relationship	Interviewer and interviewee as subjects actively constructing the interview context and resulting knowledge.	Interviewer and interviewee as mutually-influencing subjects involved in an intersubjective endeavour. However, the researcher actively shifts to a subject-phenomenon relation reflecting that her or his main concern is the phenomenon and not the respondent.	Interviewer as subject and interviewee as the object of her or his investigation.
Design principles	Loosely structured, flexible, emphasising the constructive use of language and its discursive functions. Respondents are presented with a wide variety of contexts in which they can demonstrate their range of discursive practices.	Loosely structured and flexible in order to elicit clarification of respondents' experiences of their everyday world and meanings from their own perspective. Flexibility helps the interviewer deal with the complexity of respondents account. The researcher is actively attempting to avoid imposing his perspective on the interviewee through bracketing.	Highly structured and rigorously applied interview guide drawing extensively on extant theory. Possible use of predetermined response categories that leave no room for interviewer improvisation. This is intended to enable comparisons to be drawn between interviews and other sources of data (i.e. data triangulation). Data may even be used for quasi-hypothesis testing purposes.
Philosophical assumptions consistent with	Intersubjectivist problematic	Subjectivist problematic	Moderate objectivist problematic

Notes: Table represents 'ideal' types with dotted borders indicating that some research may utilise more ambiguous interviewing techniques. Typology based on King (2004) supplemented by Brinkmann (2013), Englander (2012), Fontana and Frey (2000), Jackson and Mazzei (2013), King and Horrocks (2010), Kvale (1983), Kvale and Brinkmann (2009), Rubin and Rubin (2005), Silverman (2000) and Thompson et al. (1989).

⁵ The term 'phenomenological-contextualist' is intended to reflect that the same approach to interviewing is referred to as 'phenomenological' in King (2004) and 'contextualist' in King and Horrocks (2010).

memorable project at their organisation from their perspective. While the purpose of the former was mostly to become acquainted with each respondent, it also had some analytical significance in light of the relationship between knowledge, identity and practice (see 2.4.2). Specifically, it provided me with a glimpse into how they understood their contribution to MonTech's KIBS provisioning activities. As for the latter, it ensured I could position each of the occurrences described by the particular interviewee in the overall context of their involvement in service delivery. Furthermore, as neither of these issues were emotionally charged, they were also useful in helping respondents get acquainted with the interview situation (see King, 2004a: 17; King & Horocks, 2010: 55-56; Rubin & Rubin, 2005: 115-122). Incidentally, discussing these introductory themes provided insights beyond my expectations by revealing substantial disparities between how my research participants experienced KIBS provision at their organisation. For example, the Junior IT Developer I interviewed did not experience his work life in terms of client projects at all since not only did he not interact directly with customers at all, but also had only limited exposure to the client-facing parts of the organisation (i.e. Support and the Helpdesk). While the other respondents were able to talk me through a project and position it within the context of the organisation's overall activities, their descriptions were vastly different reflecting the variety of contributions they made. Overall, the first theme of the interview paved the way for a detailed and reflective account of each respondent's experience of service delivery (i.e. the second theme). This discussion revealed the most substantive differences in people's experiences and understandings of themselves, other actors and the KIBS context in general, thus pointing to tensions that characterised service delivery and influenced its organising. In case of all respondents, it also touched upon the final theme of the interview – experiences of interacting with artefacts in KIBS provision. However, since the second theme emphasised respondents' own practices, the artefacts mentioned were typically the ones they interacted with the most extensively. In comparison, asking them specifically about artefact-related experiences typically resulted in descriptions of artefacts that were not instrumental to their own work, but had some impact on them. The data collected on this theme proved exceptionally useful in revealing how the distinct practices of the organisation's three areas (i.e. Development, Support and Helpdesk) were weaved together among others through artefacts.

Even though I did not believe asking respondents about what were essentially mundane experiences of the normality of their work lives had the potential to be emotionally

challenging, as a matter of good practice I asked each one of them if they had anything to add or any questions about the research at the end of the interview (see King, 2004a: 18; King & Horrocks, 2010: 56). Considering that the phenomenological-contextualist interview design was intended to enable them to shape the course of our conversation by invoking experiences they themselves considered relevant (Kvale, 1983: 173; Thompson et al., 1989: 138; 1990: 347), it was no surprise to me that none of the respondents had anything to add and that the only question they had was if I found their narratives useful. Anticipating that the open-endedness of the initial interviews would demand further clarifications to be sought (see Rubin & Rubin, 2005: 31), I asked each participant about the possibility of further contact before leaving the interview. All of them agreed.

Guides for follow-up interviews were prepared on a per-respondent basis after I transcribed all of the initial interviews, at which point I was familiar with the key issues raised by the interviewees (see Braun & Clarke, 2006: 87-88), including having a rough idea of how KIBS were provided at the organisation. There were essentially, two sections to every follow-up interview guide. The first comprised issues mentioned by the particular interviewee that I felt required elaboration because they were not explored in sufficient depth during the initial interview. I raised these either by asking the particular respondent to tell me more about a specific issue, possibly quoting what they said before. The second comprised of key issues and artefacts identified by other respondents that were absent from that particular interviewee's narrative. In order to uphold the primacy of the respondent's own lifeworld (see King, 2004a: 11, 13; Kvale, 1983: 173-176, 180; Kvale & Brinkman, 2009: 14, 24, 30-31, 124; Silverman, 2000: 823; Thompson et al., 1989: 347), I asked them if they had experienced a particular issue or interacted with a particular artefact. If their answer was negative, I did not probe further.

3.5.4.3 Conduct of the interviews

As aforementioned, my access to MonTech was initially limited to 'a couple more visits for a couple of hours' in addition to my initial interview with the Customer Services Manager who was involved in scheduling all but one interview (see 3.5.4.1). This prevented me from holding preliminary meetings with my research participants to establish rapport with them ahead of the interviews (Englander, 2012: 27). Thus, the only way in which I was able to gain their trust and make them feel more comfortable was by providing them with the Participant Information Sheet and the Consent Form in advance of our meetings (see 3.4.2), relying on the word of mouth of the employees I had already

interviewed and assuring them that there were no right or wrong answers at the interview itself (Rubin & Rubin, 2005: 111). With the exception of the Customer Services Manager himself and the Junior IT Developer, the other interviewees seemed much more relaxed, possibly even enthusiastic, considering that they arrived with printed and signed Consent Forms even though I promised to provide them with copies at the interview. One of them even mentioned jokingly that he was told what was about to happen to him.

With the advantage of hindsight, I believe the main reason why my interview with the Customer Services Manager felt different was that while I was interviewing him, he was assessing whether I could potentially harm the organisation. This became clear when he referred to the NDA I had signed (see 3.4.1) immediately after I asked for permission to take a picture of graph he drew. A possible second reason was that I had mistakenly disregarded the potential negative impact of dressing formally for research interviews (King & Horrocks, 2010: 49), having assumed such attire was appropriate for an interview with a manager of an organisation providing services to the banking sector (see 4.2.1). Learning from this experience, I attended all subsequent interviews in more casual, semi-formal attire. As for the interview with the Junior Java Developer, I believe the reason why he appeared nervous during our first meeting was that he had only been at the organisation for seven months at the time of the interview. Additionally, the fact that he only graduated from my institution nine months before our meeting, might have made the interview seem like a re-enactment of a student-teacher dynamic, which would explain his cautious attitude and initial attempts to elicit confirmatory responses from me.

With regard to the interview venue, in accordance with my agreement with the Customer Services Manager, all interviews were conducted at the organisation's office. The first three interviews took place in a small meeting room adjacent to the main open office area and the remaining five in a large meeting room next to it (see 4.2.3). The change of venue was a necessary consequence of the small meeting room being converted into an office for the newly appointed salesperson. While neither of these venues offered the same level of privacy as a location outside the company's office (see King & Horrocks, 2010: 43-44), this is unlikely to have impacted my respondents' answers given that the interviews did not raise sensitive or potentially harmful issues. As for the scheduling of the interviews, I avoided having back-to-back interviews because the open design I had adopted proved to be quite straining, which led to concerns over my ability to maintain a high level of attentiveness over a prolonged period of time (see King & Horrocks, 2010: 52-55). Nevertheless, due to respondent availability, I had to arrange more than one

interview for the same day on two occasions. However, in both instances I ensured I had a substantial break between them to rest. As aforementioned, this provided me with an opportunity to conduct observations (see 3.5.3).

3.5.4.4 Transcription

Typically of research examining participants subjective experiences (King & Horrocks, 2010: 143), all interviews were transcribed verbatim (i.e. word-for-word). However, since neither discourse nor narrative analysis was used, pauses and hesitations were recorded only with minimal precision (i.e. without their length specified) (see King & Horrocks, 2010: 143; Kvale & Brinkmann, 2009: 181-182; Rubin & Rubin, 2005: 204). Since detailed notes prepared during and revised after each of the interviews (see 3.5.6) already compensated for the loss of both aural and non-aural cues during the conversion of oral narrative into a written one (King & Horrocks, 2010: 146-147; Kvale & Brinkmann, 2009: 178, 192; Rubin & Rubin, 2005: 204), it was not necessary to incorporate them into the transcripts. Transcribing all of the interviews myself enabled me to identify key issues in the empirical material early on (Braun & Clarke, 2006: 87-88), which aided me in the preparation of follow-up interview guides.

As aforementioned, I provided my respondents with copies of their transcripts on ethical grounds (see 3.4.2). Recognising that consulting their content with the interviewees was also a means of ensuring their accuracy (Rubin & Rubin, 2005: 71) and getting early clarification of their responses (Bryman & Bell, 2011: 142), I emailed the transcripts as soon as possible. The feedback I received on them, which was provided either in the response email itself or through the inclusion of commentary within the returned transcript, further aided me in the preparation of the follow-up interview guides (see 3.5.3.2). In addition to providing feedback, all respondents edited their transcripts to some extent. In case of four them, this entailed correcting mistakes in the transcription, including incorrectly spelled software and hardware names, as well as filling in missing words, which I highlighted as unintelligible in the recording. One respondent made further changes to improve the style of their language, with the most radical revision entailing the removal of a repeated opening sequence of words in a sentence. While this resulted in their transcript no longer being entirely linguistically accurate (see King & Horrocks, 2010: 148), the changes they made were too minor to alter the content of the transcript in a meaningful way since the constructive use of language in human interaction was not analysed as part of the study. Interestingly, dissatisfaction with the peculiarities

of one's language was also expressed by another respondent during their follow up interview even though they refrained from making similar changes to their transcript. Regardless, the manner in which these two interviewees reacted confirms the potentially stigmatising effects of verbatim transcription (Kvale & Brinkmann, 2009: 186-187).

3.5.5 Documents

Interpretive case study research has traditionally downplayed the role of documentary evidence. The view that examination of documents (e.g. correspondence, internal reports, minutes of meeting, etc.) provides researchers with records of activities they cannot observe themselves (Stake, 1995: 68) demonstrates an exclusive concern with the representational quality of documents. However, both textual and non-textual artefacts are essential components of many social interactions (Hodder, 2000: 706). They are imbued with meaning of their authors, intended recipients and others who interact with them in course of their work (Charmaz, 2006: 37; Hodder, 2000: 704, 706, 708-709). More importantly, as a result of their meaningfulness to social interactions and practices, documents are highly unlikely to provide reliable representational data. They may be created and edited by their authors for specific audiences and particular purposes (Yin, 2009: 103, 105-106) that are often different than research (Atkinson & Coffey, 1997: 47 in Silverman, 2000: 826; Charmaz, 2006: 35-38). Moreover, the descriptions they provide might suffer from deliberate omissions (Charmaz, 2006: 37). Neither of these considerations are present in Stake's (1995) study of Harper School.

What is even more striking than Stake's (1995) uncritical attitude is that his approach is incongruent with interpretive case study's aim to explore subjective meanings and experiences and relate them to the broader context of the case (Stake, 1995: 1, 8-9, 12, 43, 50, 134; 2008: 128, 135-136; Thomas, 2010: 580). With the exploration of participants' subjectivity being a core objective, it seems inappropriate to focus exclusively on the representational aspect of documentary data. On the contrary, if anything it is the meaningfulness of documents to those inhabiting the case that should be emphasised. In order to unravel their meaning, it is necessary to understand the practices in which they feature, their practical significance and their relevance to the people engaging with them (Hodder, 2000: 711). In fact, researchers must move beyond a simple conceptualisation of documents as texts towards a more nuanced understanding of them as artefacts that must be situated in the context of their creation and use before being subjected to interpretive procedures. In light of the non-participant involvement of

interpretive case study researchers (see 3.5.3), it is critical to consult people who engage with documents either as authors or users (see Charmaz, 2006: 39-40; Hodder, 2000: 705). In fact, it may not even be possible to identify all documents relevant to the case without their input.

The approach to collection of documentary data employed in the current study drew on the above critique. All of the documents (see 3.5.2) were collected because they featured in respondents' experiential accounts of their involvement in service delivery or were explicitly mentioned as relevant to their practices when the respondents discussed their experiences of engaging with artefacts in course of KIBS provision (see 3.5.3.2). Thus, most of them were acquired after their relevance had already been discussed either by requesting copies at the interview or later on by email. However, concerned about her ability to express herself coherently, the Helpdesk Manager brought hard copies of documents relevant to her work to both of her interviews as visual aids. She also supplied some other documents she thought could have been useful to the study. As a result of her initiative, some documents did not have to be requested directly from respondents who mentioned them in their interviews.

As aforementioned, in order to preserve the anonymity of the organisation and comply with the terms of the NDA I signed, all corporate identifiers had to be removed from the collected empirical material (see 3.4.1). In case of documentary data, this involved the removal of all company names, logos and product names. I removed these identifiers myself from all but one document - the Requirements Specification Document template, which was supplied to me in an already sanitised format by the Customer Services Manager. To preserve the original layout of each document, in-text identifiers were substituted with generic terms (e.g. 'Software A', 'System A', 'Company', etc.) while graphical identifiers were digitally blackened-out.

3.5.6 Research notes

In case study research notes provide a log of the researcher's immediate observations, impressions and reflections relating to the case itself and the research process as a whole (Eisenhardt, 1989: 538-539; Stake, 1995: 55). They are particularly valuable to interpretive case study researchers who regard their own experience of working on a case as a valuable source of knowledge (Flyvbjerg, 2006: 236, 240; Stake, 2008: 134-135). Although a number of discretionary note-taking strategies have been proposed, including a tentative task matrix and a record of time spent on particular tasks (see Stake, 1995: 55),

in recognition of interviews being the primary source of data in the current study, the approach employed drew extensively on recommendations made for interview-based studies (e.g. King, 2004a; King & Horrocks, 2010; Kvale & Brinkmann, 2009; Rubin & Rubin, 2005).

Note-taking in interview-based studies is intended to preserve non-verbal features on of interview interactions, including reactions and various contextual aspects that are not captured by the audio-recording (Fontana & Frey, 2000: 661; King & Horrocks, 2010: 47-48, 146-147; Rubin & Rubin, 2005: 111, 204). Retention of this detail in the current study was desirable for two reasons. Firstly, it facilitated consideration of the implications of my active participation in the research as a reflexive interpreter (see 3.2.3.3). In particular, it enabled accounting for my influence within the intersubjective interviewing endeavour and the impact it might have had on my respondents (see 3.5.4.2), for example:

He was a recent graduate of my institution. At the beginning of the interview he appeared very cautious. [...] After describing himself he asked me if his answer was what I wanted to hear. It felt as if he was re-enacting a teacher-student relationship.

Secondly, retention of non-aural cues was necessitated by the phenomenological-contextualist approach to interviewing employed in the current study, which requires registration and interpretation of not only what is said but also how it is said (Kvale, 1983: 175), including the body language of the respondent (Tufford & Newman, 2010: 90). In the current study, notes describing the manner in which respondents spoke about particular issues indicated the emotional impact they had on them, including their attitude to other participants in service delivery, which was not accurately represented in the transcripts, for example

Speaking about having early discussions about client requirements, he appeared annoyed by the fact that sometimes clients did not really know what they wanted or did not know how feasible it was at a technical level (i.e. development level).

In addition to notes pertaining to interviews, I maintained a record of incidental and deliberate observations (see 3.5.3) I made while on site. The former included a drawing

of the office layout, descriptions of the fixtures and furnishings of the main open office area and the two meeting rooms, as well as summaries of any observations that informed my understanding of working life at MonTech. The latter included summaries of respondents' demonstrations of the software they used at work, including its layout and functionality.

Following the advice of Rubin and Rubin (2005: 203), all notes were typed up as soon as possible to ensure that no significant details were omitted.

3.6 Data analysis

3.6.1 Choice of analytical method

Interpretive analysis of qualitative data often starts at the time of its collection; at the moment of first impression (Kvale & Brinkmann, 2009: 190, 195-196, 300; Stake, 1995: 71, 78), with formal analysis being its continuation (Kvale & Brinkmann, 2009: 193, 195-196). Although meaning-oriented, coding-based analyses are frequently employed in interpretive case study research (Stake, 1995: 74-79), I decided against utilising them in the current study (see 3.6.1.1) on grounds of their contested congruity with the interpretive epistemology of the research, inadequate support for abductive reasoning and concerns over the impact reducing all non-textual data (e.g. software layouts and function accessibility, document layouts) to text would have on their ability to inform my understanding of the material aspects of service delivery. Consequently, I adopted the approach that emerged from the critique of coding – diffractive analysis (see 3.6.1.2).

3.6.1.1 Rejection of coding-based approaches

The publication of the 'Qualitative Data Analysis After Coding' (2014) special issue of *Qualitative Inquiry* serves as an exemplar of the growing scepticism towards the philosophical congruity of meaning-oriented, coding-based analyses, such as thematic analysis (e.g. Braun & Clarke, 2006; King & Horrocks, 2010; Ryan & Bernard, 2000; Rubin & Rubin, 2005) and template analysis (Brooks & King, 2012; King, 2004b, 268-269; King & Horrocks, 2010), with interpretive epistemology, despite leading publications on both techniques claiming neither is associated with a particular set of metatheoretical assumptions (Braun & Clarke, 2006: 78, 81, 94, 97; Brooks & King, 2012: 3, 7, 9; King, 2004b: 256-257, 268-269; King & Horrocks, 2010: 166). Coding in the

context of this critique, does not pertain to the process of poring over the data, annotating it, scribbling over it and drawing connections (St. Pierre & Jackson, 2014: 715), but the practice of reducing data to themes and writing transparent narratives on their basis (Jackson & Mazzei, 2013: 261; Lenz Taguchi, 2014: 269; Mazzei, 2014: 743; St. Pierre & Jackson, 2014: 716).

In order to understand the critique of coding, it is worthwhile to distinguish between acknowledging that data is always already impregnated by theory (Alvesson, 2011: 1658), which interpretive scholars invariably do (see 3.2.2), and analysing it in a manner which reflects this. Subjecting empirical material to a mechanistic, quasi-statistical process of breaking it down into rationally organised structures is only partially consistent with the assumption that language is always contaminated by meaning on part of both the researchers and their subjects. This is a consequence of a paradox whereby the meaningfulness of narratives from the research participants' standpoint remains privileged. In effect, they continue to be treated as if they were brute, representational, truthful, transparent and free from contamination by theoretical interpretation until they are analysed (Jackson & Mazzei, 2012: 16, 31; 2013: 261-262, 269; Lenz Taguchi, 2014: 269; Mazzei, 2014: 743; St. Pierre & Jackson, 2014: 715-716). Arguably, this is necessary to legitimate the practice of jeopardising the integrity of human experience through its compartmentalisation for analysis (Alvesson & Sköldbberg, 2009: 66). Relatedly, it also creates a situation whereby experiences of researchers and their respondents within the research situation are subjected to different rules. Coding upholds a distinction between the empirical and the theoretical, as well as maintains the primacy of the former, which manifests in the practice of coding the empirics, possibly with the help of theory, rather than coding the empirics and the theory (St. Pierre & Jackson, 2014: 716). This contradicts the interpretive assertion of researcher positionality within the study (Brinkmann, 2014: 720; St. Pierre & Jackson, 2014: 716). The result of this discriminatory treatment is the reduction of the complexities of social life and research into a transparent, coherent, structured and unambiguous narrative (Hook, 2015: 984; Jackson & Mazzei, 2012: vii-ix, 7; 2013: 261-262; Lenz Taguchi, 2014: 270; Mazzei, 2014: 742-473) that is ordinarily sought in positivist scholarship (St. Pierre & Jackson, 2014: 715).

The emphasis on levelling the playing field between the empirical and the theoretical in the preceding paragraph is indicative of post-coding analyses' close association with abductive reasoning (see Brinkmann, 2014: 722). Naturally, my commitment to

abduction (see 3.3.2) renders such analyses, including diffractive analysis (see 3.6.1.2), suitable for the current study. However, it also invites consideration of the extent to which abduction is facilitated in coding-based analyses as a further justification of my rejection of such approaches. Although thematic analysis permits development of concepts to describe issues that are not unequivocally expressed in the data (Rubin & Rubin, 2005: 56-57; Braun & Clarke, 2006: 84-85) through reference to extant theory and the researcher's experience with the subject matter (Ryan & Bernard, 2000: 780), this can only be done early on (i.e. deductively) or in the final stages of the analysis (i.e. inductively) (Braun & Clarke, 2006: 86). In comparison, template analysis appears more conducive to abductive reasoning at first instance. It permits the development of an initial coding template comprising *a priori* themes, which may draw on existing literature. The template is then revised in accordance with the needs of the empirical material, with codes being added, deleted or revised (Brooks & King, 2012: 3-4; King, 2004b: 256, 259, 261-263; King & Horrocks, 2010: 168). To appreciate the extent to which this amounts to abduction, we must consider what codes are and what is the extent of their contribution to the interpretation of the phenomenon under investigation. Codes, regardless if they are derived from extant theory or emerge from the engagement with the empirical material, are no more than labels attached to segments of text (King, 2004a: 256-257) and the template is effectively a hierarchically organised list of codes (Brooks & King, 2012: 1,4; King, 2004b: 258). *A priori* themes only 'relate to important theoretical concepts or perspectives that have informed the design and aims of the study' (*ibid.*: 3). They do not perform an explanatory function. King (2004b: 266) is very clear in this regard when he states that '[t]he template and the coding derived from it are only means to the end of interpreting the texts'. This task ultimately falls on the researcher. The issue is not that template analysis is not abductive. If we recognise that data is inevitably impregnated by theory (Alvesson, 2011: 1658), it has to be. The problem is that the explanatory influence of theory is underrepresented while the organisation of data into transparent structures is glorified.

3.6.1.2 *Diffractive analysis*

Diffractive analysis entails asking analytical questions based on selected theoretical concepts of the data and developing alternative explanations by providing answers to them (Davies, 2014: 740; Kvale & Brinkmann, 2009: 236-237; Jackson & Mazzei, 2012: 13; 2013: 264; Mazzei, 2014: 744). It assumes that data are not static, complete and representational but are undergoing a continuous process of becoming as they are

attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273). Thus, the aim of asking theory-imbued questions is not to force data into theory in a deductive manner (see Langley, 1999: 698-699, 707) but to produce diffractions – understandings that push research, theory and data beyond their limits and open them up beyond their ordinary, easy sense while preventing the analysis from straying away from either (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271-272; also Kvale & Brinkmann, 2009: 238-239; Langley, 1999: 699, 706).

The knowledge and meaning that emerges from diffractions is never exhaustive but only irruptive in the sense that it is transformed through subsequent readings of the data with additional theoretical lenses rather than confined to a fixed, organised system (Jackson & Mazzei, 2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269; see also Davies, 2014: 734-735, 740; Lenz Taguchi, 2014: 274-275; Mazzei, 2014: 742-744). Therefore, consistently with abductive reasoning (see 3.2.3.2) and, more generally, interpretive epistemology (see 3.2.2), it never achieves the status of a ‘true’ interpretation (Jackson & Mazzei, 2012: 91; Lenz Taguchi, 2012: 274). Relatedly, diffractive analysis is also aligned with interpretive epistemology with regard to researcher positionality. It assumes that researcher involvement in scientific inquiry inevitably influences any interpretive effort (Davies, 2014: 735; Hook, 2015: 994) as a result of theory being instrumental to all thinking (Jackson & Mazzei, 2013: 269), including ‘habitual thoughts-as-usual’ (Davies, 2014: 740).

3.6.2 Analytical process of diffractive analysis

3.6.2.1 Incorporation of non-interview data

Based on my review of extant publications utilising or explaining diffractive analysis (e.g. Davies, 2014; Jackson & Mazzei, 2012, 2013; Lenz Taguchi, 2012; Mazzei, 2014), the approach has thus far only been used with interview data. Nevertheless, considering that thinking with theory is not oriented towards the processing of data, which is the case in coding (see 3.6.1.1), but its questioning in search of insights, there are no contraindications that the same attitude cannot be adopted with other forms of empirical material. In fact, it ought to be permitted since ‘there is no recipe for this kind of analysis [...] because one has to first read and study theory carefully and then put it to work in a particular project’ (St. Pierre & Jackson, 2014: 717; also Kvale & Brinkmann, 2009: 236-238).

In recognition of interviews being the primary source of insights in the current study (see 3.5.2), the approach I adopted to incorporating documentary and observatory material involved ‘bringing them in’ as the relevant activities and artefacts were invoked by the respondents’ narratives. This was particularly important to understanding their role in service delivery from each theoretical perspective (i.e. KCT, CoP and LoP).

3.6.2.2 Bracketed reading of the data

Following the recommendation of Kvale and Brinkmann (2009: 238-239) I carried out a bracketed reading of the data prior to asking specific theoretical questions of it. In recognition of the philosophical considerations underpinning this research (see 3.2), which are reflected in the underlying assumptions of diffractive analysis (see 3.6.1.2), the manner in which I bracketed my analysis was consistent with the modern use of this methodological device.

The use of bracketing during data analysis is intended to safeguard against the analysis straying away from ‘the level of lived experience’ (Thompson et al., 1989: 140) by ensuring that experiences are understood in terms of the lifeworld in which they emerge rather than through preordained secondary conceptual categories (Thompson et al., 1990: 347; Tufford & Newman, 2010: 91). It involves temporary suspension of the researcher’s biases, preconceptions and assumptions about the phenomenon under investigation in order to mitigate their effects, facilitate reflection and enable the data to transcend the inquirer’s pre-existing understandings (Englander, 2012: 19; Tufford & Newman, 2010: 80-81, 85, 87). Traditionally, this was done in order to attain a transcendental attitude. However, growing scepticism with regard to whether this was actually achievable resulted in the redefinition of its purpose, which is now regarded to be the reflexive withholding of one’s natural attitude (see Creswell, 2007: 62; Conklin, 2007: 283-284; Holt & Sandberg, 2011: 219-220; Kvale, 1983: 184-185; Thompson et al., 1989: 140; Tufford & Newman, 2010: 82-83).

Drawing on the preceding discussion of diffractive analysis (see 3.6.1.2), I consider the natural attitude of a ‘thinking theorist’ to be that of a user who mobilises particular theoretical constructs to ask questions of the data to reveal different dimensions of a phenomenon. Conversely, I interpreted the idea that the empirical material should speak for itself in its bracketed reading (Thompson et al., 1989: 140) as allowing it, rather than theory, to direct my attention. This enabled me to identify key issues relevant to how service delivery was experienced in the data pertaining to each respondent (i.e. interview

transcripts, documents they referred to and my notes). Preparing a Word document which reorganised the empirical material around the following topics proved particularly useful in providing a written account of MonTech and its service delivery process (see 4.2-4.4):

- Personal and organisational impact of changes in MonTech's ownership;
- Understanding of oneself and one's work;
- Weighing of technological challenges and the commercial potential of a project;
- Liaising with IT-illiterate business users;
- Liaising with client's IT staff;
- Liaising with distributors;
- Implications of how the client works;
- Implications of functioning in multiple organisational contexts;
- Committing to paper;
- Understanding of methodology at Development;
- Understanding of methodology at Support;
- Understanding of methodology at the Helpdesk; and
- Quality manuals.

Not all of these topics were equally relevant to all respondents. For example, neither changes in MonTech's ownership nor the issue of weighing of technological challenges and commercial potential of a project featured in Fred's account of his experience of working on service delivery. He had only joined the organisation after the acquisition and, as a Junior Java Developer, was not involved in deciding whether to take a project on or not. Liaising with client representatives and distributors were also absent from his retelling of his experiences since he did not interact with them directly. Furthermore, even if the same issues were mentioned by multiple respondents, they were experienced differently. For example, because of his early involvement in each project and visits to each customer site at least twice a year, Jack, the Customer Services Manager, interacted more frequently than the other respondents with business users of MonTech's software, making the distinction between client staff that were IT literate and those who were not exceptionally relevant to his experience.

While I believe I have been successful in letting the data speak for itself (Thompson et al., 1989: 140), my bracketed reading was by no means entirely free of theory. Rather it reflected the notions that theory is instrumental to all thinking (Jackson & Mazzei, 2013: 269) and that researcher positionality inevitably influences any interpretive effort (Davies,

2014: 735; Hook, 2015: 994). While I did not utilise any particular concepts from the KCT, CoP and LoP literatures, I believe that I had mobilised basic concepts of collaboration, conflict, sociality, materiality, relationality, identity and power that directed my attention to these specific issues (see Davies, 2014: 740). In fact, these basic concepts are likely to have directed my attention to the three theoretical perspectives (i.e. KCT, CoP and LoP) in the first place. The fact that these concepts both influenced my choice of theoretical lenses and guided my bracketed interpretation of the empirical material would explain why I often returned to the documents produced on its basis to ensure my theoretical interpretations were free from omissions and misinterpretations.

3.6.2.3 Theoretical readings of the data

Analytical approaches involving theoretical readings of data have been described as non-systematic (Davies, 2014: 734; Jackson & Mazzei, 2013: 269-270; Kvale & Brinkmann, 2009: 236). Arguably, this is a misconception attributable to the association of systematism with mechanistic, rigid processes in conventional qualitative data analysis that can be replicated across research projects and data sets on the basis of the assumption that methodology, theory and empirics are distinct from one another. In diffractive analysis, the empirical material being plugged in, the researcher self and practices of qualitative research mobilised are all simultaneously provoked and destabilised (see Jackson & Mazzei, 2012: 1-2, 4-6, 10-12, 34-35; 88-89, 137; 2013: 262-263; Lenz Taguchi, 2014: 265, 271-272, 274, 277). This prevents it from being reduced to universal a sequence of steps. Although not systematic in the conventional sense, the analytical process is neither spontaneous nor occurs by chance (see Jackson & Mazzei, 2012: 5-14, 2013: 264-267).

A theoretical reading is a deliberate act of attending to the data under the influence of a particular concept (Jackson & Mazzei, 2012: 20) to raise analytical questions (Jackson & Mazzei, 2013: 264) and generate new concepts from the contradictions afforded by the plugging in of data and theory into one another without excessively drawing on what is already known either to the researcher or the researched (Jackson & Mazzei, 2012: 10, 12; 2013: 266-267; also Davies, 2014: 735, 740; Mazzei, 2014: 742, 744). Conversely, the systematicity, as well as transparency of diffractive analysis comes from reflecting on what analytical questions are made possible by a specific theoretical concept (Jackson & Mazzei, 2012: 5).

The diffractive analysis I carried out emulated the approach adopted in past publications (e.g. Davies, 2014; Jackson & Mazzei, 2012; 2013; Mazzei, 2014). However, there were some notable differences attributable to the fact that I was not plugging in individual constructs as much as theoretical perspectives comprising multiple concepts. For example, my discussion of the CoP perspective in the literature review (see 2.4.2, 2.5.1.2, 2.5.2.2 and 2.5.2.3) covered legitimate peripheral participation, communities of practice, boundaries, boundary objects and a performative conceptualisation of power. I was concerned that using the more refined concepts from the very beginning would have resulted in the empirical material being slotted into pre-existing categories instead of opening it up. For this reason, I devised the first set of questions based on the core concepts associated with each theoretical perspective. With regard to the LoP perspective, I followed Nicolini's (2009a: 1392; 2012: 213, 219) advice that in attempting to represent and understand practice, we should first 'zoom in' on its local accomplishment before 'zooming out' to appreciate it as a translocal phenomenon. Correspondingly, instead of devising the first question based on the concept of a 'landscape of practices', I drew on the more locally-oriented notion of 'residual agential humanism' (see 3.4.3.3). In case of all three theories (i.e. KCT, CoP and LoP), the initial questions I devised proved insufficient as far as developing a relatively comprehensive understanding of the organising of service delivery at MonTech from the particular perspective was concerned. However, the inadequacies that were revealed in course of their engagement with the empirical material pointed towards more refined concepts, which had explanatory potential. Thus, I developed new questions based on them and, with their help, reinterpreted service delivery at MonTech in subsequent readings, thus iteratively adding further layers to my understanding from each perspective. In case of all three theories (i.e. KCT, CoP, LoP), I found myself having to go beyond what the extant literature had to offer by expanding on the concepts I had plugged in or developing new ones. A summary of the stages in which this process unfolded in case of each perspective can be found in Table 3.7.

Table 3.7 Summary of diffractive analysis of service delivery at MonTech (part 1)

	Primary concepts invoked in the initial readings of the empirical material	Secondary concepts invoked in the subsequent readings of the empirical material on the basis of the limitations of interpretations based on the primary concepts	Further conceptual development necessary to overcome the outstanding limitations of each theoretical interpretation of the empirical material
KCT	<p>Tacit-explicit continuum The concept enabled perceiving the process of service delivery as a sequence of articulations. These articulations were important not only to the design of the service solution, but also coordination of activity across client projects. However, the concept was inadequate for explaining difficulties in defining the software in advance and issues stemming from differences in meaning among participants.</p>	<p>Embeddedness of knowledge in material artefacts The concept enabled appreciating that development of the software was not a simple process of combining explicit knowledge. However, this alone was not enough to explain the difficulties associated with defining the service solution in advance.</p>	<p>Practicality of personal knowledge Recognition of the practicality of personal knowledge revealed that the outstanding difficulties associated with defining the solution were derived from the fact that it was a tool to be used in practice rather than a machine intended to mimic human behaviour.</p> <p>Recognition of the practicality of personal knowledge enabled explaining the reason why dialogue in service delivery was not oriented towards the generation of consensus among participants. It also explained why even readily available explicit knowledge was not communicated with ease.</p>
		<p>Collective knowledge The concept pointed towards the complementarity of knowledge among participants in service delivery. However, it could not explain why shared understandings did not emerge, preventing effective communication. This limitation invited closer scrutiny of how dialogue was used in service delivery.</p>	
CoP	<p>Community of practice The concept enabled recognising the various CoPs involved in service delivery. However, it was inadequate for exploring the relations between them this revealed.</p>	<p>Syntactic, semantic and pragmatic boundaries The concept allowed explaining the interactions between the CoPs involved in service delivery through a consideration of how their practices were 'threatening' each other.</p>	<p>Establishment of connections between the secondary concepts In order to explain the organising of service delivery at MonTech it was necessary to establish connections between the secondary concepts. This enabled explaining how the Development team at MonTech was able to remain in control of a project despite rarely engaging with the client themselves. Boundary objects which simultaneously facilitated the flow of knowledge across practice boundaries and reified Development practice were recognised as central to this process. Consideration was also given to how the same boundary object was used to generate power effects over time.</p>
		<p>Boundary objects The concept enabled appreciating how knowledge flew across pragmatic boundaries with the help of the documents involved in service delivery at the software itself.</p>	
		<p>Reification The concept revealed how practices involved in service delivery were differentially reified within documents which were exchanged between the parties involved.</p>	
		<p>Performative conceptualisation of power The concept revealed how the primacy of Development practice was established and maintained within MonTech and in client projects. Relatedly, it enabled appreciating how boundary objects were utilised for this purpose.</p>	

Table 3.7 Summary of diffractive analysis of service delivery at MonTech (part 2)

	Primary concepts invoked in the initial readings of the empirical material	Secondary concepts invoked in the subsequent readings of the empirical material on the basis of the limitations of interpretations based on the primary concepts	Further conceptual development necessary to overcome the outstanding limitations of each theoretical interpretation of the empirical material
LoP	<p>Residual agential humanism The concept enabled understanding the contribution to service delivery made by human actors and material artefacts. However, it was inadequate for exploring either the unique contribution made by the software and the manner in which the parties involved in service delivery acted, as well as the implications this had for its organising.</p>	<p>Epistemic object The concept enabled appreciating how the software gradually revealed itself throughout the service delivery process. However, further explanation was needed with regard to how this impacted the organising of service delivery.</p>	<p>Epistemic object Rather than stimulating collaboration, as is the case in the extant literature, the software, as an epistemic object, affected the manner in which MonTech acted towards their clients to prevent individual projects from having adverse effects on the organisation at large.</p>
		<p>Practical intelligibility The concept was inadequate for explaining the behaviours and actions of members of MonTech and their clients. However, it provided the basis for the development of the concept of positionality.</p>	<p>Positionality The concept of positionality was developed to explain how the differential incorporation of the arrangement of the landscape of practices comprising service delivery affected the behaviours of members of MonTech and their clients.</p>
		<p>Landscape of practices The concept enabled charting the connections between practices involved in service delivery. However, on its own it was insufficient in explaining the behaviours of members of MonTech and their clients.</p>	

4 Case description and interpretation

4.1 Introduction

In this chapter, I provide the answer to the first research question, namely:

- (1) *How is service delivery at MonTech organised from:*
 - (a) *a KCT perspective*
 - (b) *a CoP perspective; and*
 - (c) *a LoP perspective?*

The manner in which I do this is based on the approach used in other research utilising diffractive analysis (see Davies, 2014; Jackson & Mazzei, 2012; Mazzei, 2014). Thus, after briefly introducing MonTech (see 4.2), I provide an overview of their service delivery process (see 4.3) and, subsequently, provide additional detail on project requirement gathering and responding to client-raised issues (see 4.4). I deliberately focus on these two aspects of service delivery because they serve as the most effective means of exploring its organising using the KCT, CoP and LoP perspectives. Across these descriptions, I avoid invoking any theoretical concepts. This is intended to improve the transparency of my analysis by showing how the same narrative developed on the basis of the collected empirical material alone is transformed through its subsequent interpretations with different theoretical lenses (Jackson & Mazzei, 2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269; also Davies, 2014: 734-735, 740; Lenz Taguchi, 2014: 274-275; Mazzei, 2014: 742-744) (see 4.5). Incidentally, this approach allows me to avoid unnecessary repetition by enabling me to refer back to relevant issues instead of having to reintroduce them in each theoretical reading.

The referral back process is facilitated by the use of numbered quotations from interviews with MonTech's members working across the three areas of service delivery – Development (i.e. Will and Fred), Support (i.e. Jack and Francis) and the Helpdesk (i.e. Molly). I have opted for the use of such quotes because pages or sections in the primarily descriptive sections of this chapter (see 4.2.-4.4) do not serve as appropriate reference points. This is a consequence of the irruptive and transformational nature of diffractive analysis (Jackson & Mazzei, 2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269; see also Davies, 2014: 734-735, 740; Lenz Taguchi, 2014: 274-275; Mazzei, 2014: 742-

744). Specifically, depending on the theory (i.e. KCT, CoP and LoP) I ‘plug’ into the empirical material, different issues are brought to light and the empirical material comes to matter in a new way. Each time, connections within it are redrawn rather than replicate those unveiled in course of a bracketed reading and the other theoretical interpretations. Arguably, if this was not the case, my diffractive analysis would fail to avoid reductionist temptations (see Hook, 2015: 984; Jackson & Mazzei, 2012: vii-ix, 7; 2013: 261-262; Lenz Taguchi, 2014: 270; Mazzei, 2014: 742-473). In effect, each theoretical reading of service delivery at MonTech (see 4.5) draw differently on the empirical material which is scattered across multiple sections and pages in the descriptive account (see 4.2-4.4). Furthermore, it is not always the entire page or section that is relevant, rather it is a particular utterance and its surrounding description and discussion. As a result, the use of numbered quotations enables referring back to the descriptive account of service delivery at MonTech with greater accuracy, thus enhancing the transparency of my analysis.

There are three reasons why transparency is desirable. Firstly, reflecting on which quotations, with their accompanying descriptions, feature in each theoretical reading, serves as an effective means of answering the third research question in Chapter 5:

- (3) *How do the theoretical foundations of each perspective affect what is revealed and concealed in its associated theoretical reading?*

Secondly, because the methodology of diffractive analysis does not proceed sense-making but experientially emerges as part of it in real time (Brinkmann, 2014: 722; Davies, 2014: 735; St. Pierre & Jackson, 2014: 716), the summary of my analytical process, which I provided in the preceding chapter (see 3.6.2), is rather limited since it is merely a retrospective account. Arguably, by going back to the utterances I refer to throughout the three theoretical interpretations, it is possible for my readers to better appreciate how my understanding of service delivery at MonTech and its organising emerged over time. Thirdly and finally, doing this also puts them in a better position to draw their own naturalistic generalisations (see 3.3.2.1).

4.2 Description of MonTech

4.2.1 Background and service offering

MonTech provide niche monitoring software solutions for customers in multiple sectors. The company's first software package was intended for the financial industry, which still accounts for the largest portion of its clients, some of whom have used MonTech's software for over two decades. In addition to their core business built around three software packages, MonTech have occasionally developed bespoke applications and even engaged in projects with a much stronger hardware design component. Will, the Development Manager, attributes this diversity to the organisation's 'culture of taking any problem and just having a go at it'.

MonTech underwent two changes in ownership since it was established in 1989, with the second acquisition in autumn 2015 having major implications for the functioning of the organisation. MonTech became solely responsible for developing and supporting their software, while new sales were to be generated from the new owner's own salesforce selling it to their existing customers. This vision did not materialise. MonTech still did not have any of their owner's clients on their books by December 2017. Nevertheless, the organisation did not suffer from a lack of new projects due to infrastructure upgrades at existing customers' sites, requests for improvements and new features, as well as customers migrating to new versions of the software. By March 2017, when data collection concluded, MonTech still did not serve any of its owner's clients. In light of this, it was decided that the company should once again become responsible for generating its own sales and a dedicated sales person was hired.

With regard to the organisation's service offering, MonTech's software connects to the client's own infrastructure to collect, process and analyse data in real-time and generate textual and visual representations intended to aid organisations in addressing their day-to-day problems. It is also capable of monitoring infrastructure performance to ensure MonTech's applications do not have adverse effects on the systems they 'live on'. Although their first software package was designed for a variety of fault-tolerant computer systems, they have since diversified and now carry three lines of applications capable of collecting, analysing and visualising data from different types of computer systems. Their functional similarity reflects that KIBS providers tend to specialise in

particular types of solutions (Miles, 2012: 21). As Will explains, the software offered are not out-of-the-box solutions but part of a consultative service.

Will 1: Our software is [...] like a Lego set of parts that we can put together. So, that means it's very flexible but there's also quite a lot of work to tailor it to particular customer's requirements. [...] It's not a washing machine you're buying it's more a consultative service [...] it's not a product

His description corresponds with the portrayal of similar organisations in the literature as providers of customised solutions (e.g. Bettencourt et al., 2002: 100-101; Miozzo & Grimshaw, 2011: 919; Scarso & Bolisani, 2012: 16; Tether & Hipp, 2002: 165, 169-170; Tether, Hipp & Miles, 2001: 1129-1131). However, it must be emphasised that because MonTech's software packages must be integrated with clients' existing IT infrastructures, they are not only customisable with regard to how the client intends to use them, but also in terms of the IT system on which they 'live', which may even have implications for how the service is delivered (see 4.3.2).

Will 2: It's not just like a single piece of software on one machine somewhere. It could potentially be, you know, hundreds across a whole network. It's quite a process.

Service delivery at MonTech involves three areas of activity – Development, Support and the Helpdesk. As aforementioned (see 3.5.4.1), the number of Development staff fluctuated between five and six during data collection, while the number of Support and Helpdesk staff remained constant at four and one, respectively. Following the advice of King and Horrocks (2010: 139), due to extensive reliance of the forthcoming discussion on quotations from participants working in each area, their 'pen portraits' are provided in Appendix D.

4.2.3 Office and atmosphere

MonTech's new role as a development and support centre prompted it to move from a sprawling commercial hub of one North West England's major cities to a 'smaller but still nice office' on its outskirts. They are one of the tenants occupying a brown, eight-storey office building that, similar to MonTech's software, has been designed with functionality rather than aesthetics in mind. Access to the building is rather open. The ground floor reception never required me to disclose which tenant I was visiting. Overall,

MonTech's new office shares very little with the state-of-the-art, secure sites that typically house its clients. It is a typical example of office space catering to smaller businesses.

MonTech's office occupies approximately half of one of the building's floors. The front door leads straight into an open office area that makes up the majority of their rented space and is the centre of activity (see Figure 4.1.). A section of it nearest to the door, which is furnished with a sofa, serves as a waiting area for visitors. The rest of the room consists of computers neatly arranged in rows that can also be accessed remotely from anywhere in the office. At the time of my first visit, some cardboard boxes were still scattered in this room – evidence of how recent MonTech's move was. This work space is shared by all members of the organisation. A small meeting room is separated from it in part by a glass wall. Before being converted into an office for the newly appointed sales person in April 2017, it was used for internal meetings. At the time it was furnished with a whiteboard, a flipchart, a flat screen mounted on the wall that was used as a computer monitor and a round table with a telephone and computer peripherals. The appointment of the new sales person resulted in a desk being added. The larger meeting room next door is similarly furnished, but has a much larger oval table surrounded by chairs and whiteboards stretching across almost the entirety of the interior wall. A projector placed on the table allows for displaying content on a portable display standing in front of the wall shared with what used to be the small meeting room.

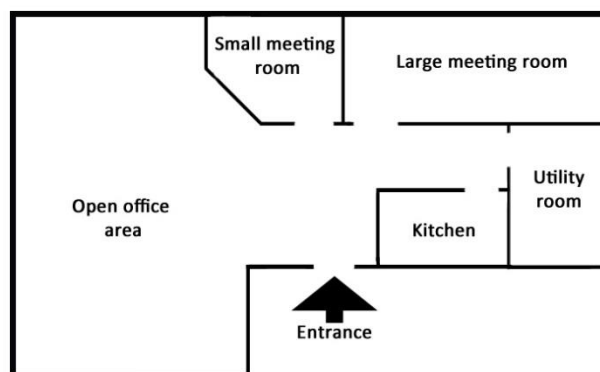


Figure 4.1. Layout of MonTech's office (not to scale)

The arrangement of desks in the open office area merits further consideration. Molly is sitting nearest to the window on the outer wall, which stretches across the open office area and the two meeting rooms. She faces members of the Support team who are sitting

directly in front of her. The fact they face each other is significant since Molly's job of allocating and monitoring client calls to the Support team, sometimes requires her to speak with them directly to bring urgent matters to their attention (see 4.3.4.3). The Development team are sitting at a distance of approximately two-and-a-half meters from the Support team, with their backs turned away from them and Molly at the Helpdesk. While this is possible because the open office area is relatively large for an organisation of MonTech's size, it is also evocative of the fact that, with the exception of Will in his capacity as Development Manager, Development are the furthest removed from the customer in terms of the frequency of their interactions (see 4.5.2).

Regarding the atmosphere at MonTech's office, throughout most of the day people work largely independently on their tasks at their computers. Work-related conversations tend to be confined to the particular service delivery area (i.e. Development, Support and the Helpdesk), they may involve showing, asking for a second opinion and getting feedback from colleagues. Based on my respondents' descriptions, conversations are more vibrant during Scrum and Sprint planning meetings (see 4.3.4.1 and 4.3.4.2), which I was unable to observe. They take place every morning and every three weeks, respectively. The silence at MonTech's office is also defined by the organisation not being 'buried' with phone calls from customers. I have not heard a single phone ring during any of my visits. Thus, silence serves as an indicator that MonTech's software is working as intended on client sites. The extent to which the office usually empties during lunchtime further conveys MonTech's confidence that a major disruptive client incident is unlikely to happen.

4.3 Overview of service delivery

4.3.1 Service delivery process

In extant KIBS literature, the service delivery process for all types of KIBS has been presented as a form of linear progression between identifiable stages (Scaro & Bolisani, 2012: 22-24; also Gadrey & Gallouj, 1998: 3-4; Lehrer et al., 2012: 502-505; Miozzo & Grimshaw, 2011: 928-929). Although MonTech's service provision process generally follows a similar timeline, to present it as linear would grossly oversimplify how a project can unfold over time (see Figure 4.2).

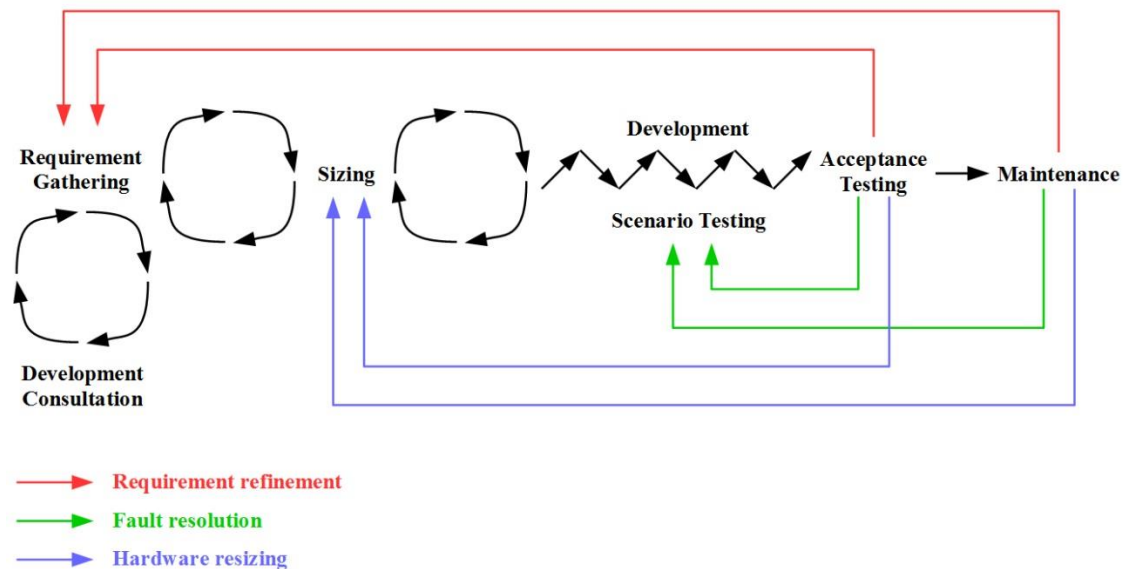


Figure 4.2 MonTech's service delivery process.

4.3.1.1 Requirement Gathering, Development Consultation and Sizing

At MonTech, service delivery begins with learning about the customer's day-to-day problems that require addressing. Any technical challenges they pose as far as deploying the software on the client system must also be identified. The more novel and complex the project from a development perspective, the more interactions are likely to be required before project requirements are agreed and a finalised Requirements Specification Document (RSD) is signed off by both parties. The Development team may even 'mock something up' for the customer based on a sample of their data to have a look at. In comparison, in projects not requiring any development effort, Development staff, with the exception of Will (see 4.3.4.1), are unlikely to be involved at all.

Once the technical challenges of a project are understood, it must be 'sized' to determine the hardware requirements necessary for the software to run and perform its functions according to the client's requirements. This is important not only for the production environment on which the software will ultimately 'live', but also testing rigs at MonTech and at the client organisation. If the client does not have access to the necessary equipment and cannot afford to purchase or lease it, project requirements may have to be reviewed before the project moves into Development.

4.3.1.2 Development and Scenario Testing

In the past, under Development Methodology A (DMA), software development at MonTech involved scheduling an entire project in advance by preparing a complete list of tasks with their estimated completion times. The large scale of each task meant that it could take weeks for them to be reviewed which created the risk of development effort being wasted. Moreover, since it was not possible to predict how much time and effort the Development team would have to commit to supporting existing customers, projects sometimes went beyond their schedule. These disadvantages prompted MonTech to change to Development Methodology B (DMB) approximately five years ago. At the time, all members of MonTech attended training in DMB even though it is not used at all at the Helpdesk and only one of its elements (i.e. Scrumming) has been implemented at Support (see 4.3.4.2). Since its adoption, DMB has become synonymous with MonTech’s software development philosophy to the extent that some members of Development threatened to leave if the new owners compelled them to work in another way.

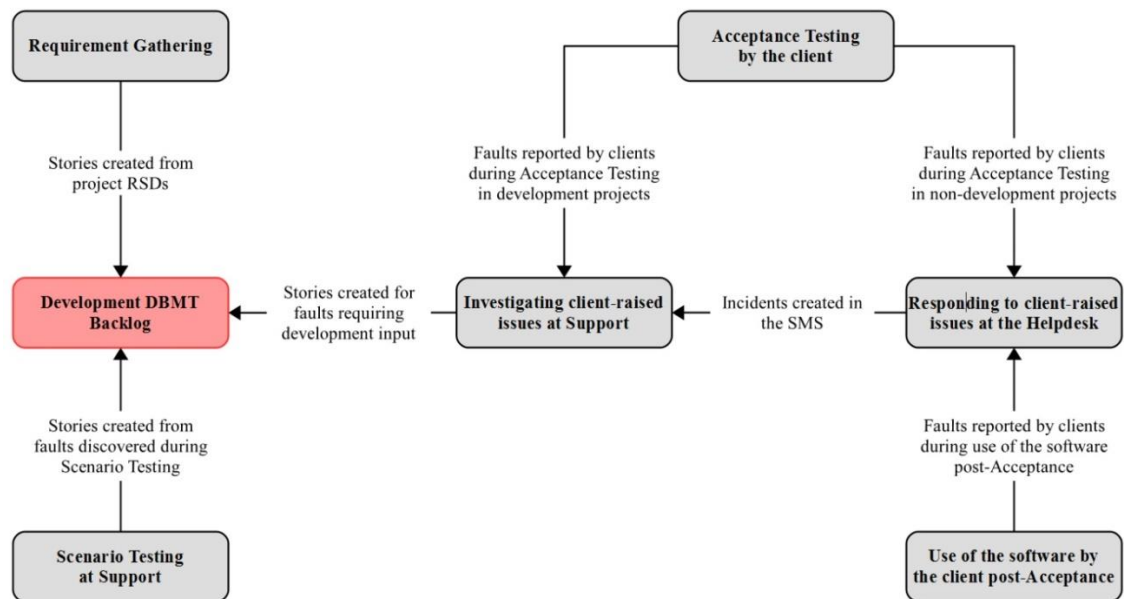


Figure 4.3 Origin of Stories in the Development DBMT Backlog.

In contrast to DMA, DMB entails breaking down a project into smaller self-contained components known as Stories, which comprise multiple Tasks, and putting them on the Backlog in the Development Backlog Management Tool (DBMT) used by the Development team. The DBMT Backlog is not project-specific but contains all of the

outstanding Tasks pending completion for all clients, including developing new features and addressing client-raised issues requiring the Development team's input (see Figure 4.3). For a Story to be worked on it must be taken off the DBMT Backlog and included in a three-week development exercise known as a Sprint. This is done collectively by Development in Sprint Planning meetings (see 4.3.4.1). It is possible that in the course of working on a Story new technical issues will be identified, requiring a Story to be amended or an entirely new one to be created and added to the DBMT Backlog for consideration in future Sprints. While the initial set of Stories is normally written by Will, the mandate to amend them or add new Stories on the basis of existing ones is experience-based.

Will 3: *[W]e will probably generate additional Stories as we understand the technicalities of it more [...] The initial set of Stories will probably get written by me and then in subsequent Sprints then the whole team will probably write Stories as a result of their experiences working towards the solution.*

This experience does not pertain simply to having done the work required to progress a given Story. Rather, it stems from the familiarity with the software gained in course of working on it, which is derived from MonTech's 'full-stack' approach to development whereby individual members of Development come to appreciate the connections between the various areas of the software the Story they are working on relates to.

Will 4: *[W]hen a Story is assigned to somebody it might have [changes in multiple areas of the software] and one person will [...] take a vertical slice through the software and make all those changes. It means you don't have to be waiting on anybody else [...] it also means if you've got some problems you're much more likely to understand why your GUI isn't working because of some strange data pattern that you see because you're the one who put it in the database in the first place so you've got a really strong understanding of the problem from one end of the stack to the other.*

On completion of a Story, which can take from several days to a week, the particular software component is 'potentially releasable'. This means that as far as a project as a

whole is concerned, Development and in-house testing occur concurrently. In fact, as developers work towards completing a Story, they conduct two automated Development Tests. A Unit Test is first performed to ascertain that the particular function added or changed works correctly. It is followed by an Integration Test whereby the Continuous Integration Tool (CIT) builds all components of the software and runs test scripts written by developers against it. When testing completes, the CIT provides the Development team with a list of all tests, indicating which ones have succeeded and which have failed. The advantage of these tests is that they enable faults within the code to be quickly identified and rectified with human involvement being limited to writing the tests, reviewing the results and rewriting the code where necessary. However, the automated tests conducted by Development cannot mimic the full extent of users' interactions with the software. Because of this, further tests, known as Scenario Tests, are subsequently conducted by Support based on test scenarios devised by them in collaboration with Development based on the relevant RSD. They entail using the software 'as a customer would use it', which includes installing it on a test rig, feeding it data in real time and checking if it functions as expected. Any issues encountered are fed back to Development via email or in person to confirm whether the source of the problem lies in the software's configuration or its code. In case of the latter, the Support staff conducting the test will add a Story describing the failure to the Development team's DBMT Backlog.

4.3.1.3 Acceptance Testing

Even if the software passes Scenario Testing, it is not guaranteed that it will run without any problems on the customer site. Live customer data may be more robust than its sample or imitation fed during Scenario Testing. Local IT environment settings that could not be fully accounted for and replicated at MonTech (see 4.3.2.1) may also negatively affect the software. Despite considerable efforts put into understanding the technicalities involved in a project, a shroud of mystery hangs over the software and the hardware environment at the customer site.

Will 5: *We're constantly running the software as if it's running in an environment that mimics the customer, but you can never duplicate things identically. You might have some data pattern that causes you a problem. A magic character suddenly turns up in a field on site and then that might cause you a problem.*

Jack 1: *[W]hen [...] you put your software down it might be the first that you've ever truly seen the thing that you're gonna monitor. [W]hen you shift it to another site there can be any amount of local environment settings that could affect it in a way that we would never see here.*

This shroud of mystery is the reason why MonTech insist their clients conduct Acceptance Tests on their sites before deploying the software on production systems. Acceptance Tests are essentially the next step in ascertaining whether the software works. They are also the first opportunity to validate whether the hardware requirements have been 'sized' correctly. Their results are fed back to Support who must devise and conduct a new Scenario Test based on the reported fault. As with Scenario Tests carried out on new features, the purpose is to determine whether the fault stems from bad configuration or faulty code. I must also highlight that the Acceptance Test constitutes the first opportunity for anyone at the client organisation, typically the client's technical staff, to use the software. Because of this, its results can sometimes lead to project requirements being refined or, in rare situations, drastically altered.

4.3.1.4 Maintenance

Once the solution has been accepted and deployed on a production system, it enters into Maintenance. As with Acceptance Testing, it is still possible for the software to malfunction or for the hardware dedicated to it to prove inadequate. This is due to the fact that even though the customer's own testing environments are more likely to replicate their production systems, they are also not identical. Finally, given that in most cases the ultimate users of MonTech's software are not involved in Acceptance Testing, its deployment on the production system may result in requests for existing features to be altered or new ones to be added.

4.3.2 Client site specificity

4.3.2.1 Replicating client IT infrastructure

The need to adapt the software to the particular customer's infrastructure and the data it is processing combined with tailoring its analytical functions to meet client expectations, results in virtually no two clients having the same version of the software. As Will explains, from a Development perspective, this means that the software is to some extent made a new for every client.

Will 6: *[T]he problem we've got of it being so diverse between one customer and the next it's not the same recipe every time for installation and configuration. It's a new recipe usually and a distinct one for each customer.*

This is also the reason why it is imperative for MonTech to set up and maintain a replica of the client's IT infrastructure to be able to reliably carry out Scenario Tests of new features and reported faults (see 4.3.1.3-4.3.1.4). Devising the test rigs is the responsibility of Support, albeit they might consult Development or even the client when they do this. As Francis's remarks demonstrate, devising a test environment involves exercising judgment.

Francis 1: *[W]e tend to try and simplify whatever the customer is using as much as humanly possible because you can't recreate the whole thing. So, you kinda have to think what are the essential [hardware] components [...] [S]ometimes you'll talk on what you're planning on doing with the developers [...] [Y]ou might go to a customer and say 'This is what we're thinking of doing. Do you think that's a suitable kind of emulation of what you're running'.*

4.3.2.2 Software branching

Francis's description of the problems that may be encountered in course of installing the software on a replica of the client's systems as part of Scenario Testing (see 4.3.1.2), illustrates the extent to which MonTech's software must be tailored to each customer.

Francis 2: *The first test is always the installation [...] Well, you'd be surprised how often that doesn't quite work. [...] [T]here are some parts that need to be installed that are specific to that customer. [...] [Y]ou don't want to see another client's files knocking around in a folder somewhere.*

Conversely, MonTech's ability to conduct tests reliably, address any faults and introduce enhancements rests not only on emulating the client's infrastructure, but also ensuring they are running the exact same version of the software as the one installed on the customer site.

Will 7: *You want to be absolutely certain that you have a version of the software that matches what the customer has. If there's any sort of mismatch [...] you might be down a rabbit hole saying 'I really can't understand why this is happening at the customer site' because if you look on your own copy of the software it doesn't actually match what the customer experiences.*

This is achieved through software branching, which entails separating the development of the particular version of the software released to the customer from the 'main branch' in the Version Control System (VCS). This allows Development to 'pull' code specific to a customer when they are working on the software that was or will be released to them. Fixes to a customer branch of the software are likely to be added to the main branch, but the reverse is never the case. Once again, this is the result of the uniqueness of how MonTech's software works on each site.

Fred 1: *[W]e don't know exactly how the customer uses the software and it [...] could be a bit of a disaster and I think there would be more testing involved for them if we gave them the latest version of the software with all the stuff we've added since we sold it to them.*

A further reason why MonTech do not add features to customer-specific versions of the software, unless they are requested, is their clients' conservative attitudes towards risk whereby all changes to the software raise concerns over the stability of existing IT systems.

Francis 3: *[T]he tighter the controls someone has on their network, the more difficult change can be. But generally, they have very tight controls. Once something is in and working, it's more stable which is the whole idea of those additional controls*

4.3.2.3 Security

MonTech's clients' concerns over security and control, as well as their risk aversion are attributable to the critical role their IT infrastructures play in the running of their organisations and, in case of many of MonTech's customers, the private and confidential

data they process. The implications of these concerns are not limited to software development, but affect the service delivery process at large.

Francis 4: *[S]ome places are very secure and you really have to work in a very different way for those really secure places compared to the more care-free places.*

At the most secure sites, even if MonTech can view the client's infrastructure at least during a planned maintenance window, they may find themselves relying on the client's technical staff (see 4.3.2.5) to address any challenges their infrastructure presents for the functioning of MonTech's solutions.

Jack 2: *[We're involved in the client's IT infrastructure] to the point that we understand how it works, but we can't do anything about it. We have to understand the problem and maybe contribute to finding a solution, but it's up to the client to provide the expertise. There's no way we would be allowed to log on to a customer network and start tracing our messages.*

Overall, security concerns are a double-edged sword. On the one hand, secure sites are more likely to have a dedicated team responsible for conducting Acceptance Tests before the software is deployed on a production system and subsequently monitoring its performance. As aforementioned, this is desirable from MonTech's perspective because of the limitations inherent in internal testing at the organisation (see 4.3.1.2). On the other hand, in addition to restricting MonTech's access to the client's infrastructure, security issues may impact the choice of medium used to release the software, as well as any subsequent fixes and enhancements. More generally, they affect the extent to which MonTech can participate in installing and maintaining the software. The higher the level of security, the less likely MonTech are to do it directly. They may have no choice but to guide the client's technical staff through the activities associated with either task. As Francis explains, this significantly complicates the service delivery process.

Francis 5: *It's a bit of an art form really to try and diagnose problems when no one will tell you what's gone wrong. [Y]ou can say 'Look in that log...' and they might give you a hint of what message appears but they won't send you the full message*

4.3.3 Implications of changes in ownership

4.3.3.1 Activity prioritisation

As aforementioned, even though under new ownership MonTech are no longer responsible for generating their own sales (see 4.2), they are still developing enhancements for existing customers. Nevertheless, because of their new role as a development and support centre activities are now prioritised differently.

Jack 3: *[Developing new software] takes away people from support and maintenance and the new owner is adamant that we need to do everything we can to protect the year-on-year support and maintenance revenue that we gain. [...] We have to make sure that we do not overburden the Development team that way.*

Reflective of Jack's remarks, MonTech now engage in smaller development projects that can be completed within three months rather than six months or even a year without the involvement of the entire Development team. Nonetheless, because such smaller projects still require liaising with customers, Support staff took on additional duties following the most recent acquisition, which were previously the responsibility of 'Support/Consultants'.

Will 8: *[I]n times gone by we would have people who were, sort of; 'Support/Consultant' role. So they would be dealing with first line support [...] but also they might do installations or talking to new customers about what we can do for them. [...] Those roles have sort of moved around and are a little bit grey at the minute*

4.3.3.2 Quality assurance

Prior to the acquisition, MonTech were debating whether or not to extend their ISO9000 accreditation due to concerns over the reaccreditation process becoming increasingly strenuous and expensive for a company of their size. It was ultimately the new owners who decided against it. On the balance it was a welcome change because it enabled more flexible application of quality assurance procedures stored in the Quality Manual (QM),

which prescribes the steps required for the completion of various tasks involved in service delivery and is accessible to all of MonTech members via the organisation's Intranet.

Francis 6: *While it could be a hindrance at sometimes we saw the benefit of following a known process and approval process. [...] But in practice it meant you have to try and write things in a specific way that wasn't specific to the software you were using. [...] It could be a bit cumbersome let's say. Now, [...] [it] is much more flexible and still follows a good process. [...] There's perhaps a more organic approach to that these days.*

Will 9: *We've, in the main, internalised that list of what's required, [...] but in the early stages it was quite useful to agree those terms of reference [...] We're probably a little bit loose with that. If we were being a little bit more to the letter of the law strict, for every Story we should look at each of the points on the list and tick them off. We don't do that and that's not really caused us any problems*

The QM is not the only quality assurance measure at the organisation. When MonTech were accredited they also introduced a Document Management System (DMS) to track and control documents. Although in the past the DMS was used for all documentation, with MonTech no longer being accredited its use has been limited to workflow-related documents such as client meeting minutes, sales quotations, design documents, RSDs and Product Release Approval (PRA) forms. Other information including advice how to conduct specific tasks, insights from on-site client visits and lessons learned while working on client projects, are now shared via Google Docs, which Will describes as a 'backdoor' to the DMS. The change has been well received across MonTech because the poor user interface of the DMS made it 'not very popular'.

4.3.4 Participation

Extant KIBS literature portrays service delivery as a form of value co-creation between the KIBS providing company and its corporate customer (e.g. Betterncourt et al., 2002; den Hertog, 2000; Lehrer et al. 2012), with some authors further acknowledging, although without any deliberation, diversity of participation as far as each one of them is concerned

(e.g. Miles, 2012: 20-21; Miozzo & Grimshaw, 2005: 1429-1431; Scarso & Bolisani, 2012: 22-24). However, as far as projects MonTech are involved in are concerned, participation is not necessarily limited to the members of the two organisations bound by the service contract.

4.3.4.1 Development

As the Development Manager, Will is the first member of the Development team to be involved in a project since he is involved in assessing it at a technical level before it is taken on. In case of projects involving development effort, he is the most likely person to write the first set of Stories based on the signed off RSD (see 4.3.1.2). As aforementioned, Stories must be included in a Sprint before individual developers pick them up, write code and conduct automated tests of the software before passing finished builds for Scenario Testing to Support. Development's involvement in subsequent stages of a project (i.e. Acceptance Testing and Maintenance) depends on whether any faults with the software that require their input are identified by the client and referred to Development by Support (see 4.3.1). Unless the issue reported is classified as critical and requiring immediate attention (see Appendix E), the Support person investigating the issue will add a Story explaining it to the Development DBMT Backlog.

Sprint planning meetings are held every three weeks. The Development team reviews their performance in the current Sprint based on the tracking data provided by the DBMT (see Appendix F). The data informs the Development team about the progress they have made by stating the number of Stories and Tasks which have been completed. In effect, the DBMT points their direction towards Stories that became problematic as they were worked on and allows for their easy identification within the Sprint by highlighting them in a different colour. Completed, in-progress and deferred (i.e. no longer to be completed within the current Sprint) Tasks within a Story are identifiable in the same way. Overall, the DBMT does much of the work of directing the team's attention to problematic Tasks, which merit discussion, before they decide which Stories to include in the next Sprint. Stories are added to Sprints on the basis of their priority and difficulty.

Will 10: *[I]t's probably a combination of what's coming up in terms of release to customers. At the moment we've got some releases coming up [...] so the focus of the Sprints in the beginning part of the year has been Stories that contribute towards that release.*

Fred 2: *[T]he last two Sprints the focus was on one aspect of the software that hadn't been updated in a while, but some customers were due to get an upgrade and they used these features so there was a big push to do as many as possible.*

As a consequence of this approach, Stories, which are not deemed urgent may not be attended to for a considerable time since they have been added, in which case it may be necessary to reinvestigate whether customer requirements have not changed. In principle, all Development staff have an equal say on the difficulty of a particular Story, whether it ought to be included in the current Sprint and who should work on it. However, Will, in his capacity as the Development Manager, may dictate that the Sprint should focus on a specific client project or area of the software. He also has the deciding vote on close decisions with regard to which Stories to include in a Sprint.

In addition to Sprint planning meetings, the Development team meets every day in the morning for a 5-15 minute meeting known as a Scrum to summarise and justify the work they had done the previous day, obtain advice on any issues encountered, learn if someone is working on a related part of the software and get a general idea of how the team is doing overall. Even though Jack contributes to the efforts of the Development team only occasionally, he regards this to be one of the main advantages of DMB over DMA as it ensures the work done is reviewed more regularly, which allows for greater flexibility.

Jack 4: *[E]ach morning you have to stand up and say what you're doing [...] but somebody can say to you 'That's not what you should be doing. You should've done this'. That check and balance is every single day, you know. So the review ethos is definitely stronger. [...] You can change tasks more easily, you can adjust your priorities more easily.*

4.3.4.2 Support

As the Customer Services Manager, Jack is the first person to be involved in a project not only from Support, but from MonTech in general. In gathering client requirements, he may consult other members of the Support team and, in case of projects requiring development input, Will. Once project requirements are sufficiently understood, Francis, acting in his capacity as the IT Manager, is likely to become involved to size the hardware and set up test environments at MonTech. Other members of Support are unlikely to

become involved before Scenario Testing. The extent to which Support supervise Acceptance Tests depends on how much development effort has gone into the software. As Francis's remarks indicate, the newer the code, the more likely it is to fail. Thus, being more closely involved in its Acceptance Testing puts MonTech in a better position to understand any problems that may arise.

Francis 7: If somebody was using a code base which was proven elsewhere [...] that would probably go through Molly [as if the project was already in the Maintenance period]. If there was lots of customisation or development changes, perhaps me or Jack would be more involved in that at that stage [...] [Y]ou don't necessarily want them to come back and say 'Here's the results of our testing. These twenty failures, fix those'. You kind of wanted to come back to us with each one [...] We learn more from it being part of the discussion of whether something's a test failure or not.

When the project moves into Maintenance, Support are responsible for addressing any client-raised issues forwarded by the Helpdesk. Overall, Support liaise with clients the most extensively from the entire organisation even though the majority of their communications with MonTech's customers are 'fronted' by the Helpdesk, which monitors the Support email (see 4.3.4.3).

As Jack's remark illustrates, the work of Support is much more unpredictable than that of Development. Consequently, it does not lend itself to planning, which is why Support only implemented Scrum meetings in their work despite receiving training in DMB alongside Development. It also demonstrates that Support's main priority is investigating and addressing client-raised issues forwarded to them by the Helpdesk via the SMS (see 4.3.4.3). As aforementioned, although Support can resolve configuration issues and software issues for which fixes have already been developed on their own, unknown problems with the software may require input from Development (see 4.3.1.3-4.3.1.4).

Jack 5: One email or one phone call can change your working week. [...] [A]t the moment we have two or three calls open and our priorities with them shift all the time [...] but what we do is the Customer Support function meets every day at ten for a Scrum [...] to make sure that the priorities for the day are

correct. We don't have Sprint planning. We don't have a three-week cycle. We have a day-to-day cycle

4.3.4.3 Helpdesk

Molly regards herself to be involved in client projects throughout their entire duration because she is responsible for building up 'a full case history' – a record of all correspondence and communications with each client, licenses that had been issued, release history and shipping records. This is stored in the SMS – the software that is also used for logging all client calls regardless of the project stage at which they are raised, recording enhancement requests made after the software has been accepted, creating alerts reminding that specific customers are pending a maintenance agreement renewal and monitoring progress on new release shipments. As Molly explains, having all information on each client in a single location is the reason why MonTech insist that all customers contact them via the Support email address.

Molly 1: *If it's not come through Support and it is on somebody's machine [...] then we haven't got the full picture in one place. If that person leaves or falls ill, it is very difficult for somebody else to actually understand what has been happening. Whereas if it's through Customer Support, it's all logged. Everybody has access and it can be a smooth handover.*

After the software has gone through Scenario Testing and is deemed ready for release, Molly's level of involvement in a project increases as it is her responsibility to prepare customer licenses and ship the software for Acceptance Testing. Unless a project involves major changes to the software, in which case Support may liaise directly with the client, as the software undergoes Acceptance Testing at the client organisation, Molly starts answering customer-raised calls, raising Incidents for them in the SMS and assigning them to whoever she believes is the relevant Support staff. Even when extensive development effort is required, she begins raising and allocating Incidents for a project after it enters into Maintenance. The difference between responding to customer issues during the two periods is that the latter is covered by the Service Licence Agreement (SLA). As Molly's remarks demonstrate, this is when client calls become 'actual issues', which must be addressed within the timeframe stipulated by the SLA.

Molly 2: *[I]f it's an actual issue, that's when the Helpdesk would be looking at the calls and checking the response times. [...] Because I don't know these answers, I just have to put in the detail on the call. I don't know how long it's going take to fix, whether it needs a fix. So when I am reviewing the calls, if I think that 'Oh, this hasn't had an answer yet' I'll go around knocking on their doors saying 'What's happening with this?' I review the calls daily.*

As the preceding quotation indicates, Molly does not only log calls, but actively monitors them to ensure they are resolved within the timeframe stipulated by the SLA. This reflects that even though the SMS links the work of the Helpdesk and Support, it falls primarily under Molly's domain. The fact that Support notify Molly of any client communications or changes they make to an Incident in the SMS out of concern that she must always be kept up-to-date in order to build up client and project histories, as well as monitor response times is a further manifestation of this.

4.3.4.4 Client's business staff

The decision to engage with MonTech is generally motivated by the business staff of the client facing a problem or recognising a business need that must be addressed. As Jack explains, the fact they are often not IT literature, is a major cause of the uncertainty surrounding software development.

Jack 6: *It's very unusual to find a business user who earns his living in a non-IT world who has a clear idea of what they would be looking at. They have a clear idea of the problem that they'd need to solve but they can't visualise the tool that would do it.*

When the client's business staff participate in early meetings, they articulate the problems they face and the impact they have on their business, but their lack of IT expertise prevents them from participating in technical discussions. Thus, despite having a stake in the project, they tend to withdraw from it after the initial discussions and, instead, rely on the client's technical staff to represent their interests. They may reengage with the project just as it is about to be signed off, especially if some training in the software is required.

However, they never retake responsibility for monitoring it from their more technically-inclined colleagues.

Jack 7: *They're interested in the success or failure, but they'll never go to a meeting about it. [...] [T]hey might put their head above the parapet a couple of times, but they're not gonna track it that close. [...] They've given that responsibility to somebody else, they don't understand it anyway, they're probably not interested in it to be honest.*

Even though it may seem that the client's business staff cannot contribute much to the development of a solution, their complete withdrawal from it can be damaging since the expectations they have towards the software may be different from those of their technical colleagues. Will's recollection of one such instance, demonstrates the potentially negative effects on software development this may have.

Will 11: *They wanted to be able to navigate from the initial alert down into the detail very quickly and that wasn't something that came up as much in the initial technical discussions. It was all about how we would obtain the data and what sort of rules we'd put in there. It didn't really get uncovered until later on when there was user involvement*

4.3.4.5 Client's technical staff

Will refers to them as the 'technical, managerial layer who's going to own' MonTech's solutions, which they recommended to and procured on behalf of the client's business staff. They are involved in the project throughout its lifetime and are the people who Jack, as the Customer Services Manager, meets at least bi-annually in person on the customer site. Their participation is critical in devising a software solution for the client because they understand the IT aspect of the client's business processes.

Jack 8: *[Business users] got people working with them, who've got probably a business background but a much stronger sense of the IT aspect of it and they act as a buffer between the two. [...] [Y]ou're hoping between the three of you – the end user, you who does not have a great deal of knowledge of the bank and somebody who has a foot in both camps [...] you can*

come up with something that's appropriate. [...] It's more difficult when you've got two ends of the spectrum and nothing in the middle, definitely.

Although their expertise is invaluable, it does not guarantee that the project will proceed smoothly on its own. As Jack's remark illustrates, the extent of their commitment to the project may have major implications for how work proceeds at MonTech.

Jack 9: *The worst case scenario for us is that we have to spread three months' work over twelve months because that's the speed at which the customer works. [...] [People will] get drawn off what they're doing back into something which really ought to have been finished [...] [S]omebody in my position almost finds himself being the project manager for the client because nobody is running that at that end. Other times [...] they make you run hard.*

Once the software is released to the client, the client's technical staff are responsible for performing Acceptance Tests and feeding their results back to MonTech (see 4.3.1.3). As the remarks made by Jack and Francis indicate, their commitment to this task affects how likely problems with the software are to be discovered before it is deployed on a production system, at which point MonTech will have to address them more urgently and in accordance with the SLA (see 4.3.4.3 and 4.4.2).

Francis 8: *We would always [...] push that the Acceptance Testing is done entirely by the customer and preferably without them knowing our testing process. [...] [I]t's more robust like that because they will think of tests we haven't. They will think of edge cases, [...] [T]he people who use the software have seen other things, trip up over these unusual cases and will try and trip our software [...] They're the things that [...] cause serious headaches and you want to find those at the Acceptance stage.*

Jack 10: *[T]hey'll start testing it and the quality of that depends on the organisation involved and how committed they are. At one of our [...] clients, I think they expect us to do most of the testing [...] but you go to one of our other clients and they've got a room full of people who want to break it.*

Finally, unless the service is provided via a distributor (see 4.3.4.6), once the project enters into Maintenance, the client's technical staff are the people who raise issues and make upgrade requests.

4.3.4.6 Distributors

In order to serve clients which MonTech cannot cover themselves because of geographical, time zone and language barriers, the organisation sometimes delivers its services via distributors. While participation of some of them is limited to getting their customers in touch with MonTech, others have maintenance and support contracts with them. In the latter case, MonTech may not deal directly with members of the organisation using their software. Instead, they receive reports of faults and upgrade requests from a distributor. The overall attitude towards them is best reflected in Francis's remark that 'whether they are profitable or productive ultimately, the jury's still out on that one'. More specifically, most of them are regarded as not adding much expertise to a project, particularly in its early stages, and prioritising their own commercial interests after the software has been delivered to the client.

Will 12: *Not only is it that there's an extra communication barrier, it's also a cost thing because the distributor takes a cut of the sale and they're not necessarily adding a huge amount of extra... expertise or... there can a situation where they're just asking a question, passing it on [...] [T]hey're playing mailman.*

Jack 11: *There comes a time when you need the distributor to challenge the customer on your behalf [...] but actually their affiliation is with the customer because of an ongoing commercial relationship. That's the most challenging thing – that they 'go native' as we call it.*

4.3.4.7 *Third-party infrastructure providers*

Some of MonTech's clients do not own their IT infrastructure, but lease it from third-party providers or directly from hardware manufacturers. In these circumstances, MonTech find themselves 'operating in two corporate networks' and possibly even become entangled in a politically charged relationship between their customer and the infrastructure provider. Because both of these issues have the potential to negatively affect service delivery, it may be necessary to find a way around them. However, As Francis's and Will's retellings of two projects demonstrate, this can also pose problems.

Francis 9: So [the client] owned two data centres but the network between the two was run by somebody else so they just had a fight around whose responsibility it was to find and fix the problem and we were not involved for about eighteen months [...] [S]ometimes we will try and engineer a solution that might not require the third party as much as possible

Will 13: [W]here there is a lot of politics about who owns the network [...] we have to adapt our software to cope with that [...] This caused quite a lot of technical difficulty because the network was not quite entirely sane as a result of the politics of the thing.

4.4 Requirement gathering and responding to client-raised issues

4.4.1 Requirement Gathering

As aforementioned, the purpose of requirement gathering is two-fold (see 4.3.1). Firstly, MonTech are seeking to understand the customer's day-to-day business problems and needs, which the client's business staff are more than competent in explaining. Secondly, they are attempting to determine the technical challenges involved in solving them, which is something the client's technical staff can contribute towards. The latter entails assessing whether MonTech's software already has the necessary functionality or whether development effort will be required, calculating data processing and retention rates for

hardware sizing purposes, as well as determining the means for MonTech's software to access data stored in the client's infrastructure. Reflective of the necessity of customising the solution to the customer's existing IT systems (see 4.2 and 4.3.2.1), this is done early on since some of the problems it may involve lie outside of MonTech's control.

Jack 12: *It's not something that you try to leave to the day when you arrive with the software. [...] [Y]ou get the view that they'll buy the software, you have to start talking to them about the challenges of putting it in. [...] [W]e have a number of issues relating to people's networks. You know, you could argue it has nothing to do with your software because it all works here but it actually does. That's a problem you have to part own and help solve.*

Although Jack is ordinarily the first person to engage with the client and effectively oversees the entire Requirement Gathering process, he typically brings in other people who can have a more high-level technical discussion about the project. If development effort may be required, Will is consulted to contribute a technical assessment. It may take multiple interactions over a period of several months before MonTech have a sufficiently clear understanding of the functional and technical aspects of a project to decide whether or not to take it on. If they do, Francis becomes involved to help determine the hardware components required to run the software and calculate the requisite storage and processing capacities. Unless the client can provide the necessary hardware, MonTech may advise them to abandon some of the features they had originally requested to scale down the project. As Will's and Jack's remarks indicate, clarifying the functional, technical and hardware aspects of a project is not easy. It is a precarious, iterative process which may be thwarted by misconceptions and lack of involvement on part of the client. Regardless, MonTech must persevere in it in order to protect themselves from the potentially negative consequences of venturing into the unknown.

Will 14: *There needs to be an interactive period where we get an initial set of requirements, we drill down to the details of that so we understand what we need to provide [...] [Y]ou can get a false impression that the client has a very clear idea about what they want [...] but as the project progresses you find out that, actually, those initial clear ideas weren't that well-*

formed [...] [G]etting that initial understanding of your requirements is a very important phase. Bizarrely, we find some customers don't want to put much effort into that. They just want a thing. [...] Quite often we end up taking the hit on that because [...] you're eating into your profits on the project because you're doing more work and using more resources to deliver that thing than you originally anticipated.

Jack 13: *We've backed away from things where the... the number of unknowns has stacked up and made us think that's a bit of a black hole from a development perspective*

Throughout the Requirement Gathering period, MonTech may liaise with the client via multiple means, including meetings in person, video-conference calls, shared desktops, email exchanges and documents, including numerous iterations of an RSD. Because of geographical distance it may be difficult to meet with some clients face-to-face, particularly in later stages of a project when only its very fine details are being fleshed out. However, being able to hold such a meeting on at least one occasion and subsequently using instantaneous means of communication whenever possible may help better understand the wider context not expressed in the RSD which affects the solution being provided or the project as a whole.

Jack 14: *[I]t concentrates the mind of both sets of parties. [...] Somewhere down the line the project's gonna get a lot harder and that's easy to deal with if you've met the person involved then you can make an assessment about how far to... to press on or to back pedal a bit when you get your thoughts together. You're looking to build up a relationship with the person involved.*

Francis 10: *[A] phone call helps and a face-to-face meeting helps a lot [...] Some people can sound tough but you know it's part of what's required in their role [...] [T]hey're just trying to fight a better price or trying to fight to get more for his money or whatever that would be. A face-to-face is always the easiest way to try and work that out. [...] [W]hat constitutes a good solution, if you like, which is not necessarily the*

perfect technical solution but has lots of compromises built in

Regarding RSDs, ‘final’ RSDs contain the agreed and signed-off project requirements. They provide the basis on which payment terms are negotiated between MonTech and their clients. They are created from a template which provides a basic structure. The front page of every RSD contains details about the authorship of the document, when it was created and a version number indicating whether it contains original or revised requirements. This is followed by a list of contents. The main document begins with an overall introduction about the project and includes a ‘Revision Log’. The remainder consists of highly-technical information that depending on the project may provide details of the client’s IT infrastructure on which the software is intended to run, explanations of requirements in detailed technical terms, descriptions of the performance of specific processes, less technical descriptions of graphic and textual output to be generated as a result of these processes, and explanations of the requested user features. Screenshots of the software may be included to better visualise the software output. The document may also identify areas where further consultation with the client is required. Because this content is highly customer-specific, each RSD is unique.

Although the RSD is subsequently used to write the first set of Stories in order for the project to be added to MonTech’s development cycle (see 4.3.1 and 4.3.4.1), it has broader significance to the project. Specifically, it guarantees that service delivery will be judged on the basis of what MonTech committed to provide at the time the RSD was signed off by both parties. Conversely, on the one hand, it safeguards MonTech against the client attempting to alter project requirements without their consent. On the other, it ensures that any unanticipated work requested by the customer is billable. As Jack, Francis and Will indicate, the protective qualities of a signed off RSD relate back to the uncertainties inherent in software development rather than being directed at shielding MonTech from dishonest clients.

Jack 15: *I think it is essential before you even start you get the requirements specification. You have to commit to paper what they’re gonna get. [...] It offers protection for both parties really so that the customer can turn around and say ‘So we actually did ask for it to be done that way’, but it’s more often than not to protect ourselves because the*

customer very rarely fully thinks through the thing that they want. [...] [Project specifications] are allowed to change [...] [Y]our document has always got grey areas. [...] You just need to write it down really and then... there can be no argument.

Francis 11: *There's always some question you might have missed during the requirements gathering that needs to be ironed out. You don't want to do that just by a phone call. You need to do that in writing to make sure that the requirements document gets updated properly and it's all fed back*

Will 15: *It's interesting how when somebody's actually sat in front of a piece of software and they start playing with it then they go 'Actually, what I meant was bla, bla, bla' rather than the sort of nebulous idea they had at the beginning. [...] If we don't think that it's covered by the existing requirements then [...] depending on what are the contract arrangements, we might say it's a new development so it's gonna cost whatever.*

4.4.2 Responding to client-raised issues during Acceptance Testing and Maintenance

The aforementioned SLA (see 4.3.4.3) is the main document governing provision of support services once the software has been accepted by the client and installed on a production system, albeit it also structures interactions between the two organisations during Acceptance Testing even though it is not binding at the time. Although the extent of coverage (e.g. inclusion of out of business hours support) is tailored to each particular client, the SLA's core contents are standardised. They pertain to the Support email managed by the Helpdesk being the default point of contact for raising issues with the software, provide a fault severity classification and response time framework (see Appendix E) and outline obligations of both parties with regard to maintenance. As with RSDs, the SLA must be signed off by every customer. However, as can be inferred from Jack's comments, the SLA does not mitigate against uncertainty, as much as protects MonTech's control over the service delivery process when uncertainty strikes (i.e. software breaks down).

Jack 16: *For us, it's important that it's not just signed but it's agreed. We won't let it be imposed. We're quite happy to a critical call or major call, but we don't want people telling us that something that they think is critical when it isn't.*

As aforementioned, from MonTech's perspective having the Support email as the default point of contact with customers, or distributors acting on their behalf, is beneficial because it helps maintain a full picture of each client's dealings with MonTech, which facilitates monitoring work progression both within and across projects (see 4.3.4.3). Additionally, with regard to responding to client-raised issues, adhering to the instruction to report any faults via the Support email guarantees that they will be attended to. Furthermore, their subsequent recording by Molly as an Incident in the SMS ensures that everyone working on a call as it is being forwarded from the Helpdesk to Support and, possibly, to Development is equally informed as to what had already been done on it. This highlights that even though it is the Development who can be credited with the authorship of the software, developing it and continuously supporting it is collective endeavour involving all three areas of service delivery. Correspondingly, as Molly's remark demonstrates, everyone at MonTech works to ensure that clients follow the agreed process of reporting faults.

Molly 3: *[T]he Support mailbox is the only area that is being monitored at all times. If they go directly to Francis or Jack [...] [i]f they are out of the office for three days that may not get answered for three days [...] [S]ometimes they will try to miss Support [email] out and go straight to a developer and sometimes the developer will respond to say 'Can you please make sure all queries come through Support'*

Recollecting that she cannot remember receiving any major calls during her time at MonTech, Molly speculates that if the software was not as stable as it is and did not undergo rigorous testing before being deployed, it might have been more likely for their clients to attempt to bypass the Support mailbox and phone in to seek immediate resolution, in contradiction to the SLA. This highlights that the status of the Support email as the established means of communication is not derived from the SLA alone, but also rests on the effort that goes into ensuring the functionality of MonTech's software before it is deployed on a production environment.

As previously indicated, although in most cases the people who contact MonTech are the client's technical staff (see 4.3.2.5), it may also be the distributor (see 4.3.4.6). Unless MonTech are allowed to liaise directly with the customer and simply keep the distributor 'up to date with what's being said', their involvement introduces an additional communication layer that may become a source of problems. Acting in their own interest, which is aligned with that of the client, distributors may be reluctant to forward MonTech's requests for detailed information, thus negatively affecting their ability to resolve issues with the software. Irrespective of whether a fault is reported by the client's own staff or by a distributor, it is possible for MonTech's assessment of the problem, including whether it is a software fault to begin with, its severity and means of resolving it, to be challenged.

Jack 17: *You're banking on the distributor representing or at least informing you of at least what's going on at the customer site accurately and that's not always the case. It can get very political*

Francis 12: *[T]hey can be more on the customer side than on our side which means you sometimes end up with two people fighting what you're trying to say instead of us two fighting the customer. [...] [Y]ou would hope that the reseller would be on our side, but invariably... but more often than not they tend to be on the customer [side]*

Even though the fault reporting process is described across MonTech as 'free-form', the person raising an issue with the software, regardless of whether they work for the client or the distributor, is required by the SLA to specify which version of the software is affected, indicate how severe do they think the issue is and describe what is happening. As Francis's remark indicates, the client's technical staff, who alongside their business-minded colleagues often struggle to define the software when its development is first commissioned (see 4.4.1), become increasingly adept at reporting faults as the software continues to be used at their organisation. Thus, Molly or members of the Support team to whom she assigns Incidents in the SMS rarely need to reach out to the client to obtain missing information.

Francis 13: *[W]e're quite lucky in the sense that a lot of our users have been using our software for a long time. [...] So we tend to get quite informed requests from them in the first place. [...] [I]f they're new; [customers] will get in touch and you really don't know if [...] they'd done something wrong that's not really a fault or if it's a user error, if you like; or if it's a software error.*

Molly raises Incidents in the SMS as soon as a client or a distributor reports an issue with the software. A closer investigation of the manner in which she performs this task reveals that the SMS plays an active role in Molly's work at the Helpdesk, which is not reducible to that of an information repository. She does not enjoy complete freedom with regard to how she creates an Incident. The SMS provides her with a template she must follow, which comprises of dropdown boxes, text boxes and tabs, which ensure that Molly does not forget to include any potentially important detail. It also provides her with easy access to all information pertaining to the specific customer (e.g. the total number of Incidents raised and whether they have been resolved, past correspondence, maintenance coverage, contractual details, distributor details and shipment records). In doing this it helps her determine the subsequent course of action – whether to inform the client they are no longer entitled to free software support, which member of Support to assign the Incident to and whether to inform the Support team at large that multiple issues have been reported by the same client, as well as whether multiple clients had been experiencing similar problems in their versions of the particular software package. Finally, the SMS aids Molly in responding to the person who reported the fault. The email message is automatically generated and includes an SMS reference number, which allows both MonTech and the respondent to easily identify and track the particular fault. However, Molly may edit its contents before it is sent in order to, for example, request further detail. The fact that she is the least technically-adept member of the organisation manifests in her explanation of how she approaches this task.

Molly 4: *I would usually know from the customer that is a Software C call, mainly because I can relate the customer to the products they are using. [...] I do have a checklist of what to ask or sometimes if I think it is relevant. I just send the full checklist that is related to Software B or Software A. If they can't answer it all or it's just not related they just won't answer the*

question, but at least the guys have something to work with when they have time to look at the issue. [...] Because at one time what would have been happening, the Helpdesk would forward the call and they would be saying to us 'Can you ask this, this and this'. [...] We now try and ask for that information upfront.

Once the Incident has been raised, the SMS automatically emails the relevant member of Support that an Incident has been assigned to them and provides him with a link to the Incident in the SMS. The assignee receives similar automatic notifications each time the Incident is updated. Additionally, Molly emails him a copy of the original customer email and informs Jack that a customer call had come in.

In course of investigating the fault and attempting to recreate it using the client's version of the software (see 4.3.3.2) on a testing system replicating their IT infrastructure (see 4.3.3.1), the relevant Support staff may seek assurances from Development that the coding of the software rather than its configuration are at fault. They may also request further information from the client or the distributor acting on their behalf. Ordinarily, in accordance with the SLA, Support communicates with the client via email, which is 'fronted' by the Helpdesk (see 4.3.4.2). However, as Francis and Molly explain, email may not be the ideal medium when dealing with more complex problems or ones requiring immediate resolution.

Francis 14: *If you really haven't got a clue where to start then email is not the best. [...] [B]ut if you can get on the phone with them [...] the initial discussion is much more interactive and you really get down to the two or three things it might be [...] [S]ometimes the contact we've got on the other side doesn't have that information either [...] [T]hey might have to go off to another team to find this question out and another question might need another team.*

Molly 5: *If it's on a production environment that's impacting their business [...] we would probably get on a phone call at that stage and try and get as much information over the phone so we can start trying to solve that problem and understand the situation [...] If it's critical or major it will have immediate*

impact and the developers will have to stop what they're doing to look at the issue.

It is possible that the Support staff tending to the Incident disagrees with the severity category that had been assigned to it by the customer. This may happen because MonTech's clients tend not to rely on the classification in the SLA. Overall, they frequently classify problems with the software as more severe than the contractual definition stipulates. In these circumstances, substantial effort may be required from the Support staff to convince the client the issue is not as severe as they believe.

Francis 15: *They tend to do it not based on what's in the contract. They will do it based on how they see it, which is not always how we see it. [...] [W]e will assign the priority based on the contract definitions. [...] If it's on a test system then it can't be classed as high priority from our point.*

Molly 6: *Sometimes we get into e-mail wars [...] We need to speak to the client just to understand what they're thinking the issue is and we can understand what they know. [...] You know, some of the e-mails are so long and can be misinterpreted*

Although the SLA effectively allows MonTech to enforce their classification, this is rarely done. Rather, the Support person explains the reasoning behind assigning a different priority to the issue to the customer and enquires about the rationale behind their own assessment. As Francis's explanation indicates, the SLA is not invoked without restraint. Rather it serves as means of ensuring MonTech retains the upper-hand in deciding on a plan and a timeframe for resolving an issue, whilst attempting to accommodate their clients.

Francis 16: *Some customers [...] got downtime planned, access to the data centre booked [...] staff that are coming in on the weekends to facilitate the change. [...] There's a whole range of things that are all waiting to happen [...] So although [...] we're not treating it with highest priority, obviously there's much more of a deadline on that*

Unless the problem reported is a configuration issue or a known coding fault for which a fix already exists, the Support person acting on it adds a Story to the DBMT Backlog to

have the issue investigated by Development. The Story includes the SMS reference number to facilitate tracking it across the three areas of service delivery. As Francis's remarks indicate, considerable investigative effort requiring substantial understanding of the software must be undertaken by members of Support to write a Story, which is informative to the Development team.

Francis 17: I don't make changes in the VCS, but I do get stuff out. [...]. I might get the code out, search for the error message that the user's seen [...] I can say it looks like it's a problem in this specific dll even so that I can raise a Story that... I can sound like I know what I'm talking about whenever I raise an issue

Regardless, Will ordinarily inspects Stories added by Support as they appear on the DBMT Backlog and seeks further clarifications to ensure that 'by the time it's something that's gonna get actioned we've got a full picture of what the problem is'. As aforementioned, for a client-raised issue to be acted on, it must first be included in a Sprint, which may happen immediately in the unlikely case of a critical or major call.

4.5 Diffractions

4.5.1 KCT-based interpretation

4.5.1.1 Solving problems without experiencing them

Regardless of whether interaction with the client is oriented towards developing an understanding of their day-to-day business problems, which is the case in Requirement Gathering, or an issue with the software that occurred in course of its use, which is the case when MonTech respond to a client Incident, what is required is an articulation of the experience of these problems beyond their original experiential context so that they can be addressed by MonTech's Development and Support staff (see Molly 1 and Francis 13). In case of Requirement Gathering, sharing of explicit knowledge of the project requirements via the RSD enables Francis to 'size' the required infrastructure (see 4.3.1.1). Furthermore, it enables Will to break down the project into individual Stories that eventually will be shared with the entire Development team via the DBMT and worked on by its individual members in course of Sprints. It is also used by Support, in

collaboration with Development, to devise a Scenario Test for the software (see 4.3.1.2) and eventually is invoked in determining whether MonTech have delivered what was requested (see 4.4.1). As for responding to client-raised issues, Molly's requests for further information, as well as creation of an Incident in the SMS and allocation of an Incident to a member of the Support team will be made on the basis of the explicit description of the problem the client's staff have experienced and shared with her via email. The assignee will then act on the SMS call, which potentially will be fed into MonTech's development cycle in a new textual form (see 4.3.4.3 and 4.4.2). Overall, this highlights that every activity MonTech undertake as part of working on a client project can be 'traced' back to an issue that had been experienced at the customer organisation.

As aforementioned, articulation of one's knowledge amounts to movement along the tacit-explicit continuum from the former towards the latter (Nonaka, 1991: 98; 1994: 16, 19, 25; Nonaka & von Krogh, 2009: 637, 640-641). In addition to facilitating all of the activities described in the immediately preceding paragraph, such movement enables knowledge about individual client projects to be stored digitally (see Nonaka, 1991: 98; Nonaka & Toyama, 2003: 5) and, more importantly, processed (see Nonaka, 1994: 19; Nonaka & Konno, 1998: 47) by the DBMT and the SMS, thus contributing to the coordination of activities across projects at MonTech. Specifically, having all Stories on the DBMT Backlog allows the Development team to review their Sprint performance and make informed decision with regard to which Stories should be included in the future Sprints (see 4.3.1.2 and 4.3.4.1). Likewise, logging Incidents in the SMS allows it to track responses, generate alerts and produce reports. These functions are instrumental to Molly's ongoing efforts to ensure client Incidents are responded to within stipulated timeframes (see Molly 2). As Molly explains, Jack also relies on them to ascertain whether there have been any abnormalities in the work of the Support team in a given month (see Molly 7).

Molly 7: *We do a monthly report on SMS of all the calls. SMS will put them into categories such as product, customer, enhancement, sales etc. They would be reviewed [by Jack] to see if there is anything that is popping up, you know; more than it should.*

What the discussion up to this point does not pay much attention to is the multiple interpretations and further articulations by different people involved in service delivery,

which are required before the software addressing a particular problem experienced at the client organisation is deployed on their production system. Fred's commentary on a Story he is working on hints at the nature of the problems this presents (see Fred 3).

Fred 3: *I'm not sure what actually went into the initial Helpdesk message, [...] by the time it reached me, it still wasn't really technical [...] but it kind of pointed to the area of the software where the error might be lying in. [...] [W]hen they arrive to me I don't tend to have much of an idea of the impact it had on the customer.*

In order to unravel them further, it is useful to start with a discussion of the software being developed itself. Regardless of the type of problem (i.e. business problem or software fault) that provides momentum for software development, the knowledge rooted in its experience is not embedded in the software being provided. As with the infamous bread-making machine (see Gourlay, 2006; Ribeiro & Collins, 2007; also Cook & Brown, 1999: 395; Giroux & Taylor, 2002: 502), developing MonTech's software is a creative endeavour that, on the one hand, requires generation of new knowledge (see Will 1 and Will 6) and, on the other, relies on MonTech's members drawing on various sources of existing knowledge, which could be described as tacit or explicit to a varying extent. For example, 'sizing' the hardware needed to run MonTech's software requires knowledge which is in some regards explicit (e.g. the relevant mathematical formulae, the RSD on the basis of which the 'sizing' is done) and in others tacit (e.g. knowing how to use the formulae) (see 4.3.3.1).

What distinguishes MonTech's software from the bread-maker is its ultimate purpose. The bread-making machine was designed to mimic human performances without incorporating human skills (Ribeiro & Collins, 2007: 1430), effectively making the master baker redundant. Even though MonTech's software similarly removes the need for people to put together a report manually through the substitution of polymorphic tasks with mimeomorphic ones (see Gourlay, 2006; Ribeiro & Collins, 2007), it does not automate diagnosing and resolving a problem on its basis. It is a tool used by humans (see Jack 6 and Jack 18) rather than a machine capable of completing a task in their stead (see Will 1). Although it conveys largely the same insights as the man-made reports it replaces, it does this in a different format – charts, diagrams and statistics accessible via the software interface. The implications of this are two-fold. Firstly, its introduction as a tool

at the disposal of the client's staff alters the manner in which they diagnose and resolve problems. Secondly, whether or not the software 'works' can only be ascertained after it had been used in practice (see Will 11). The latter point is reflected in the perceived importance of Scenario Tests and MonTech's insistence on rigorous Acceptance Tests being carried out by the client prior to the software's deployment on a production system (see Will 5, Jack 1, Francis 2 and Francis 8). It also manifests in the importance attached to ensuring that investigations of software faults are carried out using the client's version of the software on a corresponding test system (see Will 7).

Jack 18: *[I]n days of old... for [one of our clients] to put together some report and start investigating what the issue would have been would have taken three to four hours. Whereas actually they were able to turn monitoring screens on and just go to one particular one and [identify the problem].*

The disjuncture between practices before and after the introduction of MonTech's software indicated above is also one of the reasons why it is difficult for MonTech to determine in advance what the client expects from the solution, as well as the development input required to deliver it. When MonTech are first brought on board, the problem definition articulated by the client's business staff constitutes explicit knowledge that has been abstracted from their current practical context (see Jack 6 and Will 11). On its basis, MonTech are only able to make speculative decisions with regard to what further information to request in order to assess the amount of development effort required and what software design choices to make (see Francis 11, Jack 17 and Francis 18). Use of mock-ups in Requirement Gathering does not necessarily resolve this issue since their utility still depends on the client employees' ability to imagine a future practical context (i.e. following the introduction of the software) (see Jack 19). Correspondingly, the longer the software has been used at the client organisation, the more informed and detailed requests and problem statements become (see Will 15 and Francis 13).

Francis 18: *[A]t the beginning the customers have never seen the product so they don't know [...] which reports would come from summary, which would come from individual data. So we have to discuss their requirements from that point of view. [What data and how long you keep it] can significantly affect how big the server would be. [...] [Y]ou would want to be*

checking in on that along the way to make sure it was not ramping at a much faster trajectory than you thought. You don't want to run out of space after ten days.

Jack 19: *[T]he best way of showing them what they're buying is to show them something that approximates to what they would have [...] and hope they can make the connection with what it is that they would buy and the visual thing is very powerful. If you start drawing a diagram of the architecture of the product or just putting it down as raw bullets, you know; it's not as compelling an argument [...] And in fact it won't be the very thing they'll get.*

Regardless of whether the client can visualise the future solution or already has experience using the software, it is not necessarily the case that its employees will provide MonTech with the knowledge they need to develop new or support existing software. Members of Development and Support alike acknowledge that the development of MonTech software ultimately rests on the knowledge communicated by members of the client organisation (see Fred 3, Will 16 and Jack 20). Thus, knowledge conveyed by the client's employees can be regarded as complementary (see Hecker, 2012: 342) with the bodies of knowledge relevant to software development on the basis that it affects the meaning and actions of those associated with them.

Will 16: *There's this term in the industry 'dog fooding'. So when you develop a product you also use the product yourself so you also have that customer experience, as well as the developer experience. That's very difficult for us [...] [I]t's always going to be through the medium of what the client gives us. [...] [W]e're sort of peering through a keyhole of what they do.*

Jack 20: *[A]ctually you don't understand their problem because you don't have the day-to-day involvement with the application and their processes so you're using your experience and your intuition to try and create something that would be of help to them but they need to meet you coming the other way.*

However, whether complementary knowledge is communicated and utilised successfully rests on whether the people conveying it are mindfully attentive to those who rely on them (see Spender, 1996a: 69-70, 74; Weick & Roberts, 1993: 360-368, 373-374) and whether they share understanding with them (see Hecker, 2012: 342) with regard to how their knowledge domains are interrelated. Within MonTech this can be observed in Jack's efforts to include people with particular interests in the project during Requirement Gathering (see 4.4.1). It also transpires in the manner in which information on faults with the software is collected within MonTech (see Molly 4 and Francis 17). However, such mutual awareness and understanding do not necessarily define the relation between MonTech and the customer organisation (see Will 14).

The explicit knowledge articulated through the client's employees' explanations of their business problems or fault reports often communicates what is relevant to them specifically (*cf.* Dyck, Starke, Mischke & Mauws, 2005: 389; also Nonaka & von Krogh, 2009: 641) without conveying the practice-based meaning that informs their judgment (see Gourlay, 2006: 1422; Nonaka & von Krogh, 2009: 642; Spender, 1996a: 68, 71; 2003: 273-274; also Tsoukas, 1996: 17)⁶. When this knowledge is made meaningful anew by its recipients at MonTech in the context of their own practical circumstances (see Hargadon & Fanelli, 2002: 295; Ribeiro & Collins, 2007: 1430; Spender, 1996a: 64-65; also Nonaka, 1991: 103; Nonaka & von Krogh, 2009: 642-643) it may prove to be problematic for their purposes, thus prompting requests for further information. Regardless of whether they are made by Will when he is making a technical assessment of an early version of an RSD (see 4.3.1.1 and 4.4.1), Molly as she is responding to an initial fault report email (see 4.3.4.3 and 4.4.2), a member of Support as he is tending to an Incident assigned to him (see 4.4.2) or someone at Development when he is working on a Story (see Will 3), they are not motivated by concerns about the original tacit premises of the explicit knowledge being forwarded to them (see Massey & Montoya-Weiss, 2006: 102; also Swan et al., 1999: 270) but their perception of it as inadequate in the context of their own practices (see Will 3, Francis 1 and Will 14). This problem extends to knowledge that is readily available in an explicit form and could be forwarded to MonTech by the client's technical staff with limited effort, including descriptions of

⁶ Relatedly, this reasoning can be extended to explain the perceived advantages of full-stack development (see Will 4). The tacit aspects of the action of writing software code, including why it was written in the particular way, are not represented by the explicit knowledge embedded in the code. Consequently, a single member of the Development team is better equipped to ensure that all aspects of the software are coded complementarily and, if necessary, correct the code even though every Developer knows how to code.

clients' existing IT infrastructures (see Francis 1 and Jack 12), software logs (see Francis 5) and screenshots (see Molly 4). Because the client's employees are not aware of its relevance to software design, it is often communicated only after MonTech had requested it. Relatedly, this also explains why MonTech consider it advantageous to have, at the very least, monitoring-level access to the client's IT systems and prefer to resolve client issues via remote access rather than having to rely on what is being communicated by the client (see Will 5, Jack 2, Will 8, Francis 5 and Jack 12).

4.5.1.2 Incommensurability and disjointedness of meaning

In the final paragraph of the immediately preceding section, I alluded to the issue of differences in meaning focusing on the how they affected communications between members of the client organisation and MonTech. However, the problem of divergence of meaning is much more prevalent as it is rooted not in attitudes towards specific activities but general understandings of what the solution is and how it ought to be provided. Will's commentary that the planned and rigid DMA, which MonTech abandoned in favour of the more flexible and incremental DMB (see 4.3.1.2), was more consistent with customers' understanding of service delivery, as well as recognition of a need to 'glue' two radically different approaches together (see Will 17), are evocative of the gravity of consequences this has for service delivery. What complicates the matter further is that divergence of meaning is not limited to members of the two organisations bound by the service contract, but also transpires through the actions of other parties that may be involved in service delivery.

Will 17: [Customers] tend to want, you know, an upfront price, an upfront timescale so you have to sort of glue those two very different approaches together. [DMA] would match what the customer expectation was.

As aforementioned, considerations of conflict, as well as power, in KCT literature are significantly underdeveloped (see 2.5.3.1). Instead, it is idealistically assumed that dialogue enables collaborators to eventually arrive at a tentative agreement as to what knowledge is relevant to the fulfilment of the goal at hand and how it ought to be pursued (Kodama, 2005: 904-905; 2007: 117, 127, 129; Nonaka & Toyama, 2003: 7). This provides the basis for heedful coordination of their respective activities (see Hecker, 2012: 434; Spender, 1996a: 69-70, 74; Weick & Roberts, 1993: 360-368, 373-374). As indicated in the preceding section, although there is evidence of such coordination within

MonTech, it is rarely the case as far as their interactions with clients are concerned. In fact, the greater the number of parties involved in a project, the more diverse and misaligned the meanings attached to software and its delivery process become. The software may simultaneously be regarded as a consultative service (see Will 1), a machine-like product which can be developed with little consumer participation (see Jack 7, Jack 9, Jack 10 and Will 14), a responsibility requiring commitment (see Jack 7, Jack 9 and Francis 10), an issue requiring immediate attention (see Francis 15), an opportunity for easy profit (see Will 12 and Jack 11), an inconvenience (see Francis 9 and Will 13) and a potential security threat (see Francis 4). As Will's commentary indicates, when divergence of meanings attributed to the software translates into dramatic differences in levels of commitment between MonTech and the client, the service delivery process becomes a source of frustration for both parties (see Will 18).

Will 18: *[W]e were trying to say 'Well, no, we can't quote on a description that's only a paragraph long'. [...] [T]he client eventually said after a couple of backwards and forwards 'We don't want to be asked any more questions. We just want the price'. Umm... at that point we said 'We just can't quote on this because we don't know whether it's something we can do easily or it might be very difficult and we could get burned really on the cost'.*

Such situations are dealt with through dialogue. However, a synthesis of contradictory understandings is not pursued (see Nonaka, 1994: 25; Nonaka & Toyama, 2003: 5; Nonaka et al., 2000: 15). In fact, dialogue is limited to MonTech's interactions with their customers and, in case of some projects, distributors (see Jack 11, Jack 17 and Francis 12). Third-party infrastructure providers are deliberately excluded even if this may pose technical challenges for software design (see Francis 9 and Will 13). Speculatively, it is unlikely that they would willingly participate in any discussions initiated by MonTech in the first place given that they do not have a stake in the project (see Nonaka, 1994: 21). Finally, even in case of dialogue with customers and distributors, perspectives align only temporarily. As members of Support point out, it is not uncommon for disagreements with clients and distributors to reoccur as a project progresses (see Jack 14, Jack 17 and Francis 16).

Arguably, the pursuit of a synthetic understanding, which bridges the differences between MonTech, their customers and, possibly, distributors acting on their behalf is a futile endeavour. Ultimately, the software has to be coded in a programming language of the Development's choice. Correspondingly, the only way to deliver the service is to do it in accordance with the Development's conception of service delivery. In light of this, it is not surprising that MonTech had walked away from projects where the client was reluctant to either provide them with the information they requested (see Jack 13) or commit to the necessary extent (see Will 18).

The above argument highlights a profound incommensurability, which allows appreciating the ends towards which MonTech engage in such limited dialogue. Rather than to facilitate synthesis of contradictions, they use dialogue to inflect (see Giroux & Taylor, 2002: 498) a technical definition of a project. This culminates in the signing off of the RSD, any amendments to it and the SLA, all of which are intended to offer MonTech protection from the client attempting to impose their view of the solution and its delivery process (see Jack 15, Francis 11, Will 15 and Jack 16). However, the protection these documents afford is only partial because their provisions are too vague for them to be used to coordinate action in lieu of shared understanding (see Hecker, 2012: 435; also Tsoukas & Vladimirou, 2001: 979). Even though they detail what the solution is intended to be and outline potential issues that might occur with it (see 4.4), they contain only ambiguous, if any at all, provisions as to how either ought to be worked on. Consequently, they are always susceptible to reinterpretation by the client (see Jack 15, Francis 11, Will 15 and Francis 16). These limitations make it necessary for MonTech to anticipate future conflicts and prepare for compromises that will have to be struck to resolve them by developing an awareness of the political context in which the solution is embedded at the client organisation (see Jack 14 and Francis 10). Overall, this highlights the tentative and fragile nature of the inflected technical consensus on which service delivery depends from MonTech's standpoint. It also indicates that participants continue to act first and foremost in the interest of their own knowledge and the justification on which it is based (see Essers & Schreinemakers, 1997: 29-30; Giroux & Taylor, 2002: 502; also Fong, 2003: 484; Dougherty, 1992: 191, 196).

A further meaning-related issue affecting service delivery pertains to the disjointedness of meanings across projects whereby the solutions being provided are meaningful to MonTech's customers from the perspective of their individual projects, but their meaningfulness to MonTech reflects that they are developing and maintaining software

for multiple clients. In other words, for MonTech, meaning transcends formal boundaries (see Kodama, 2005: 896; 2007: 116-117; Nonaka & Toyama, 2003: 7-8), which in case of service delivery at MonTech are demarcated by contractual relationships. Pursuit of clarity (see Will 14 and Jack 13) and protection (see Jack 15, Francis 11 and Jack 16) in both Requirement Gathering and responding to issues raised by clients during Maintenance is motivated by concerns over a particular project taking people away from working for other clients (see Jack 3, Fred 2, Molly 2 and Jack 9)⁷. This is particularly undesirable considering that the client-site specificity of each solution provides only limited opportunity for work done on one project to benefit another, with fixes to the general coding of the software being the only exception (see Fred 1). Nonetheless, it is something MonTech have to deal with on a regular basis (see Fred 4). What complicates MonTech's situation further is that their customers do not perceive themselves as having a stake in the work done for other clients. Consequently, they act exclusively in their own interest which manifests in them classifying issues they raise as higher priority than MonTech (see Francis 16). The reason why MonTech respond to such attempts by enforcing fault classification according to the SLA is to ensure work on other projects is only disrupted when absolutely necessary – when a major or critical issue with the software is reported (see Molly 5). However, this can only be done to the extent that keeps each individual customer satisfied with the service they receive (see Will 14).

Fred 4: *If a customer issue comes up that immediately takes priority and somebody gets working on that. [...] I think since I've been working here, even within a single Sprint, there hasn't been a time where we haven't added something or changed something.*

4.5.1.3 Organising of service delivery from a KCT perspective

The KCT-based interpretation of service delivery at MonTech explains its organising by focusing on issues pertaining to communication and meaning. Interestingly, it radically departs from what would be an expected interpretation from this perspective. The idealistic vision of collaborative effort guided by consensus-generating adherence to the same fundamental values and goals (see Kodama, 2005: 904-905; 2007: 127, 129; Nonaka & Toyama, 2005: 422) has given way to a much less idyllic image in which

⁷ Speculatively, concerns over possible negative effects of committing to a particular project at the expense of others may also explain the poor commitment on part of distributors (see 4.3.4.6. and 4.4.2.) and third-party infrastructure providers (see 4.3.4.7.).

uncertainty, need for protection stemming from it and irreconcilable differences explain why service delivery at MonTech proceeds in the particular way described throughout this chapter.

While communication is crucial to service delivery at MonTech whereby articulation of client problems, which amounts to movement towards a more explicit form of knowledge (Nonaka, 1991: 98; 1994: 16, 19, 25; Nonaka & von Krogh, 2009: 637, 640-641), enables MonTech to both work on a given project and coordinate activity across projects, it is also problematic. Firstly, when a software is first commissioned, MonTech are effectively working on something that does not exist yet. Consequently, any articulations of knowledge about it are at best speculative, as are the software design decisions made on their basis. Secondly and relatedly, even when the software already exists and MonTech are working to improve it, they depend on articulations of problems which occurred in different experiential contexts than their own. As such, the knowledge being conveyed is based on different tacit premises (see Gourlay, 2006: 1422; Nonaka & von Krogh, 2009: 642; Spender, 1996a: 68, 71; 2003: 273-274), which may prevent it from being immediately useful to MonTech. Thirdly, the preceding two issues are exacerbated by a lack of mindful attentiveness (see Spender, 1996a: 69-70, 74; Weick & Roberts, 1993: 360-368, 373-374) and shared understanding (see Hecker, 2012: 342) between MonTech and members of the client organisation. Fourthly and finally, MonTech must cope with profound and only temporarily reconcilable differences in meaning. Taken together, these issues are the source of uncertainty, which affects the organising of service delivery at MonTech in its entirety and transpires through the adopted approaches to software testing, preference for higher levels of access to customer IT systems, pursuit of ever-elusive clarity with regard to what work needs to be done, attitudes towards dialogue and the manner in which disagreements with customers play out.

4.5.2 CoP-based interpretation

4.5.2.1 Preliminary considerations

Before proceeding with my CoP interpretation of service delivery at MonTech and its organising, I must address a preliminary issue which arises from my commitment to the practice-centred rather than community-centred iteration of CoP theory (see 2.4.2.3). As aforementioned, one of the major differences between the two variants pertains to what constitutes a CoP, with the latter adopting a broader definition (see Hydle et al., 2014: 617-618; Wenger & Snyder, 2000: 139-142; Wesley & Buysse, 2001: 115-118), which

enables the identification of project teams as CoPs or, more specifically, multi-professional CoPs (see Kislov et al., 2011: 4-6; Kislov et al., 2012: 9; Levina & Vaas, 2005: 337-339, 342, 350, Wenger, 2000: 234-238). The emergence of such CoPs is associated with the development of a 'new joint field' (Kislov, 2014: 310; Levina & Vaast, 2005: 337), 'a shared domain of knowledge and practice' (Kislov et al., 2012: 9), development of collaborative identities associated with the multi-professional CoP (Kislov, 2014: 310; Kislov et al., 2011: 7) and changes in the manner participants in the multi-professional CoP engaged in their local practices (Levina & Vaast, 2005: 350). Given the project-based nature of software development at MonTech, it is worthwhile to reflect on whether any groupings involved in its projects could potentially be recognised as multi-professional CoPs.

As aforementioned, participants in MonTech's projects invariably include members of its three service areas (i.e. Development, Support and the Helpdesk), the client's business staff and the client's technical staff. In some cases, distributors and, to a much lesser extent, third-party infrastructure providers are also involved (see 4.3.4). In all instances, the majority of ongoing interactions occurs between members of MonTech and the client's technical staff. The fact that with the exception of two on-site visits a year (see 4.3.4.5), the majority of them occur via email and, to a much lesser extent, by phone or video conferencing does not necessarily preclude the development of a potential multi-professional CoP (Amin & Roberts, 2008: 363-367). In fact, as the software is maintained over time, MonTech and their clients' technical staff eventually develop relatively stable practices which facilitate the flow of knowledge between them (see Oborn & Dawson, 2010: 848-856; Brown & Duguid, 2001: 209) (see Francis 13 and Molly 8). While this can be interpreted as evidence of the emergence of a new joint field (see Kislov, 2014: 310; Levina & Vaast, 2005: 337), as well as a common practice and a shared domain of knowledge (see Kislov et al., 2012: 9), the situation is not as straightforward. MonTech's local practices do not change in response to joint work (see Levina & Vaast, 2005: 350). Rather, as the forthcoming analysis will show, MonTech's actions are motivated by self-preservation of their local practices and are oriented towards maintaining their primacy over the practices of their clients. Arguably, this also prevents the emergence of collaborative identities among members of MonTech and the client's technical staff (see Kislov, 2014: 310; Kislov et al., 2011: 7), which is evident in the recurring disagreements which arise between them with regard to classification of faults and actions to be taken to resolve them (see Jack, 16, Molly 3, Francis 15). In light of this, despite the presence

of some features associated with multi-professional CoPs, it seems inappropriate to regard MonTech's client projects as such.

Molly 8: *[Our long standing customers] know that we know them, as much as they know us [...] [O]nce they're used to doing things a certain way, it's hard for them to change their ways as well.*

On its face, it may appear more likely that the three areas of service delivery (i.e. Development, Support and the Helpdesk) at MonTech constitute a multi-professional CoP. Among others, the work of the Helpdesk is connected with that of Support through the Incidents Molly allocates via the SMS (see 4.3.4.3 and 4.4.2). In turn, the activities of Support are linked with those of Development via Stories the former adds to the DBMT Backlog (see 4.3.1.2, 4.3.4.1-4.3.4.3). While these connections are ongoingly enacted, the definition of a joint field is too ambiguous to provide an unequivocal answer (see Kislov, 2014: 310; Levina & Vaast, 2005: 337) as to whether they constitute evidence of a multi-professional CoP. It is equally impossible to declare that members of the three areas of service delivery (i.e. Development, Support and the Helpdesk) share a domain of knowledge and practice (Kislov et al., 2012: 9), or that they have developed collaborative identities on their basis (Kislov, 2014: 310; Kislov et al., 2011: 7). On the contrary, if the more refined definition of ordinary CoPs (see Wenger, 1998: 72-85; 2000: 229) is applied to them, it becomes apparent that much more sets the three areas of service delivery apart than brings them together. Specifically, with the exception of Development and Support working together to devise Scenario Test plans, work generally flows between the three areas of service delivery in a sequential fashion involving minimal interaction (see 4.3.1, 4.3.4.1-4.3.4.3 and 4.4). The spatial arrangement of MonTech's office and the pattern of everyday conversations within it (see 4.2.3) reflect the extent to which the work of each service delivery area is rather distinct. Development and Support discuss and coordinate work in their respective areas independently, as well as utilise different software tools for these purposes (see 4.3.4.1-4.3.4.2). It is also possible to identify artefacts which are unique to a particular service delivery area, such as the CIT, which used mainly by Development, or the testing rigs used by Support to conduct Scenario Tests (see 4.3.1.2). While some artefacts are shared between Development, Support and the Helpdesk, their local use differs. This manifested clearly when Molly was away from the office on holiday. The task of raising Incidents in the SMS was taken over by the Support team. Despite using the SMS in their daily work, they were uncertain whether they were raising

Incidents correctly. Therefore, they maintained a blog containing a more detailed account of all client interactions for Molly to review on her return.

In light of the preceding discussion, claiming that members of the three areas of service delivery (i.e. Development, Support and the Helpdesk) at MonTech constitute a multi-professional CoP would obscure potentially important differences and relations of mutual action intelligibility, mutual accountability and power between them (Gherardi, 2006: 135, 148, 150, 154, 156; Gherardi & Nicolini, 2002b: 428-429, 431, 433). In fact, power is a key consideration in the forthcoming analysis of service delivery and its organising at MonTech. It is not possible to understand how it is enacted in interactions between MonTech and their clients without first considering how it is performed between Development, Support and the Helpdesk.

In light of the argument contained in this section, I recognise Development, which most notably includes Will and Fred, and Support, which among others includes Jack and Francis, as two distinct CoPs within MonTech (for full membership, see Appendix D) for the purposes of the forthcoming analysis. Although a similar community does not exist at the Helpdesk since Molly is now the sole person working in this area of service delivery, it would be inappropriate to subsume her within either of the two communities. As aforementioned, even though the Helpdesk and Support share a common artefact (i.e. the SMS) which connects their work, their ultimate contribution to service delivery is radically different. Francis alludes to this when he describes Molly as the sole person responsible with overlooking client interests (see Francis 19). Likewise, Molly portrays herself as distinct from Development and Support when she openly admits her poor technical competence, as well as lack of familiarity with their work (see Molly 4 and Molly 9). This indicates that her work at the Helpdesk forms the basis for the construction of a unique identity that sets her apart from her colleagues at Development and Support. Therefore, in the forthcoming analysis, I treat Development, Support and the Helpdesk as having distinct practices even though CoPs exist only around the former two.

Francis 19: [T]wo people might be talking to the customer on two different issues, but Molly as the central point will say 'You know that that's happening there?' [...] Molly is the coordinator of all of that.

Molly 9: *Just because I take the call doesn't mean I know how to fix the problem, but I do know who would be able to fix or solve the problem. It doesn't cause me any concerns that I don't understand the IT business. [...] I am trained to take the call, listen, be polite and get as much information as possible.*

With regard to members of MonTech's client organisations involved in service delivery, while I have not collected sufficient empirical material to make a definite determination, Jack's distinction between the two types of client staff and description of the relations between them (see Jack 6 and Jack 8), as well as differences in their participation in service delivery (see 4.3.4.4-4.3.4.5), suggest it is appropriate to treat them as distinct CoPs for the purpose of the forthcoming analysis. Likewise, based on the limited empirical material available, it seems safe to assume that the practices of distributors (see 4.3.4.6) and third-party infrastructure providers (see 4.3.4.7) are at the very least equally distinct.

4.5.2.2 Dominance of Development through power performances

As aforementioned, the gravity of tensions in work involving multiple CoPs is not reducible to differences in language (i.e. syntactic boundaries) and meaning (i.e. semantic boundaries) (Carlile, 2002; 444; 2004: 557-563). Reflective of this and in order to avoid unnecessary overlaps with my KCT interpretation of the case (see 4.5.1), my CoP-based analysis highlights key issues in service delivery at MonTech, both during Requirement Gathering and when clients report issues with the software during Acceptance Testing and Maintenance, which pertain to how practitioner knowledge, identity and the practice in which they are invested are all 'at stake' at pragmatic boundaries (Carlillie, 2002: 446; 2004: 559-560, 563). As the following discussion will illustrate, the particular practice which is being protected from such threats throughout the service delivery process is the one associated with the Development team, as the architects of the solution being provided. Consistently with the performative conceptualisation of power (see Contu, 2014: 289-290; Fox, 2000: 858; Mørk et al., 2010: 577, 587-589), this protection takes on the form of an ongoing (re)constitution of the primacy of Development practice over those of other parties involved in service delivery.

Understanding how Development's interests and practice are being protected even though they only occasionally interact with clients, requires consideration of the performative basis of their power within MonTech. Historically, the importance of Development was

emphasised when DMB was first introduced. As aforementioned, all members of MonTech attended training in DMB (see 4.3.1.2) even though it was not relevant to the work of Support and the Helpdesk (see Jack 5). However, there was no expectation for Development to gain a similar understanding of the work done at Support or the Helpdesk. More recently, Development's power in relation to the other areas was reproduced amid MonTech's acquisition by their current owners. The new owners reaffirmed the Development's position as they redefined MonTech's role at which point it became important not to overburden the Development team (see Jack 3). Their relational power was further reaffirmed, if not bolstered, by some members of the Development team threatening to leave (see 4.3.1.2) in order to maintain their CoP and practice (see Mørk et al., 2010: 576). In comparison, the taking on of additional responsibilities by Support (see Will 8), was both a reflection and perpetuation of its relatively less empowering position within the organisation.

Although Development's importance within MonTech has a historical basis, its primacy over Support, as well as the Helpdesk, is only possible because it is actively reconstructed in course of regular project work. Among others, this occurs when Will is brought in to make a technical assessment of a project. In deciding whether or not to take on a project, the privileged position of the Development's perspective he contributes is reconstituted (see Will 14 and Jack 13). Its primacy is also re-established each time a member of Support attempts to write a Story for the DBMT Backlog which is understandable to the Development team (see Francis 17) and when its actionability is subsequently reviewed by Will (see 4.4.2). In doing this Support do not elevate the status of their knowledge (see Giroux & Taylor, 2002: 503-504; Star & Griesemer, 1989: 388-391; also Tsoukas, 2002: 425) but re-establish the dominance of Development. In a similar manner, Molly reaffirms the superior position of the Support over the Helpdesk by ensuring that the information contained in the SMS Incident she raises is what they need to conduct investigations of client-reported faults (see Molly 4). In doing this, she also indirectly reconstructs the power of the Development team. After all, Support seek information that would enable them to determine whether or not the Development team should be involved (see Francis 14 and Molly 6). Because these interactions occur within projects, they do not only reconstitute the Development's power within MonTech, but also project it on to the relationship with each client. Interestingly, the interests of Development, who themselves only occasionally liaise with customers, are actively safeguarded by the Helpdesk and Support. This reflects that the performance of practice generates power

effects within and across CoPs (Mørk et al., 2010: 587). Thus, in preserving their own ways of working in their interactions with the client's technical staff, Support and the Helpdesk also reconstitute the primacy of Development practice as if they were their proxies.

With regard to how the primacy of Development is established and maintained within projects in relation to participants from outside MonTech, it is necessary to draw a distinction between how it is first constructed during Requirement Gathering and how it is reconstructed throughout Development and when clients report issues with the software during Acceptance Testing and Maintenance. Before the client's business staff commission the project, the interaction between them and Support revolves around a relatively vague definition of the solution, which emphasises its functional aspects (see Francis 18) and may be accompanied by a prototype that the client can relate to (see Jack 19). Because of their ambiguity both of them can be appropriated within either practice without accounting for the other enabling them to serve as a common reference point (see Giroux & Taylor, 2002: 510; Nicolini et al. 2012: 617; Star, 2010: 604-605, 308; Star & Griesemer, 1989: 393, 408; Wenger, 1998: 105-107, 247) without putting the Development's or the client's business staff's knowledge and practice at stake (i.e. neither considers their understanding of the project to be challenged by the other). Withdrawal of the latter (see Jack 7) after they commission the project acts to the advantage of the Development team. Through Will's direct involvement and Support staff acting as their proxies, the project is defined in increasingly technical terms (see Jack 12) reflective of the Development practice. This is possible because although the practice of the client's technical staff, with whom MonTech liaise at this stage, is distinct from Development (see Jack 8), both emphasise the technological and potentially problematic aspects of the solution (see Will 11), instead of viewing it as a simple to deliver product that should operate without fail (see Will 14 and Will 18). Because their knowledge and the problems associated with it, which pertain to the smooth running of the software, are sufficiently similar across their respective practices (Carlile, 2002: 445), MonTech can push for a technical definition without it being perceived as threatening by the client's technical staff. Even though the latter may still bring non-technical concerns to the project (see Francis 10), they are less likely to refuse responding to detailed technical questions (see Will 18). If the project involves distributors, their participation at this stage is not posing substantial danger to Development and their practice. Although them 'playing mailman' may cause delays (see Will 12), it does not threaten Development's pursuit of a technical

understanding of the problem, nor does it impact the work they are doing for other clients since the project has not entered the development cycle. Summarising, MonTech's ability to protect themselves, and more specifically, Development and their practice from the project being radically redefined post-delivery (see Jack 15 and Will 15) is not derived as much from the contents of the signed-off RSD, but the power inherent in interactions between Development, Support and the Helpdesk and the client's employees which result in its creation – appeasing the business users, their withdrawal and taking advantage of the opportunity this creates to inflect (see Giroux & Taylor, 2002: 498) a technical understanding of the project⁸. As I will demonstrate in the next section (see 4.5.2.2), this does not imply that the RSD is without relevance since it can be used in the reconstruction (see Bechky, 2003b: 725, 746) of the primacy of Development practice if it comes under threat during Acceptance Testing and Maintenance.

It must be remembered that power relations and boundaries between CoPs never stabilise, but undergo continuous reproduction (Contu, 2014: 293; Mørk et al., 2010: 58). Service delivery at MonTech is no exception (see Jack 14). Although time delays are not a major issue during Requirement Gathering, this changes when Stories from the project start flowing into the DBMT Backlog. Development practice, which entails planning and prioritising work across multiple projects (see 4.3.1.2 and 4.3.4.1), is under potential threat from delays and additional work to be done on a specific project (see Jack 9). Decisions to rely as little as possible on third-party infrastructure providers (see Francis 9 and Will 13) and insisting on rigorous Acceptance Tests being performed (see Francis 8) are both pre-emptive measures taken in defence of Development and their practice over time. In comparison, when clients start reporting issues with the software, the privileged position of the Development practice is actively reconstructed as Support resist attempts by the client's technical staff, who may be supported by a distributor (see Jack 11, Jack 17 and Francis 12), to impose their view of the software and its development trajectory (see Jack 17, Francis 15 and Molly 6), restate the importance of the solution's technological basis (see Molly 4) and confront them over attempts to bypass the procedures for reporting faults prescribed by the SLA (see Molly 3). If these efforts failed, the Development's primacy would be undermined, boundaries between the practices

⁸ To avoid any confusion, I must explain that appeasement is not synonymous with displacement since its aim is not alliance-building across communities of practice (see Giroux & Taylor, 2002: 503-504; Star & Griesemer, 1989: 388-391) but protection of a particular practice by deliberately not revealing how it contradicts others. Because it entails not engaging with pragmatic differences at all, it can be regarded as the most radical means of ensuring that tensions between collaborators are not exacerbated (see Carlile, 2002: 444).

participating in service delivery would be destabilised and ways of working would possibly change to MonTech's and, particularly, the Development team's disadvantage (see Mørk et al., 2010: 58; Mørk et al., 2012: 264, 267-268; also Mørk et al., 2008: 20).

Although as the proceeding discussion indicates the practices that enable and structure project work are constituted and reconstituted in a manner that fundamentally serves the Development, I must emphasise that this does not imply that other parties, specifically the customer's staff, are deprived of all influence. Among others, throughout development and after the solution has been delivered, the client's technical staff continuously exercise control over access to their network (see Francis 3, Francis 4, Jack 2, Will 8 and Francis 5). What I am arguing is that the MonTech's actions create and maintain a power dynamic that produces discretion over aspects that are relevant to the practice of the Development team.

4.5.2.3 Constructing boundary objects in and for power performances

In the preceding section I implicitly referred to four boundary objects enabling coordination of activity in spite of lack of consensus (see Bechky, 2003b: 724-725; Lainer-Vos, 2013: 515-517, 529; Nicolini et al., 2012: 614, 616; Star, 2010: 602; Star & Griesemer, 1989: 393, 408; Wenger, 1998: 105-108, 247) between the parties involved in service delivery – a vague definition of the project used in early negotiations with the client's business staff, a technical definition that is gradually refined and eventually becomes the signed-off RSD, a software prototype and the SLA. I must emphasise that the first two pertain to the same artefact (i.e. the RSD), albeit in different states (see Carlile, 2002: 446) and used in different boundary interactions – MonTech-client business staff and MonTech-client technical staff, respectively. A further object that I have not explicitly mentioned, which is nonetheless integral to the interactions between MonTech and the client organisation, is the software solution itself after it has been delivered. Its use in responding to client-raised issues (see Will 8, Francis, 6, Will 11 and Will 15) epitomises how boundary objects, particularly ones which have a material form (see Bechky, 2003a: 324-327), act as shared means of representing knowledge through which collaborators can learn about what sets them and their practices apart and engage in joint problem solving (see Carlile, 2002: 451-453; 2004: 559-560; Fox, 2011: 72; Lainer-Vos, 2013: 515-516; Star & Griesemer, 1989: 393, 410-413). What distinguishes it from the other four, as well as some artefacts used within MonTech (e.g. Stories added by Support to the DBMT Backlog, checklists Molly relies on to collect information relevant to

Support), is that it does not simultaneously contribute to either construction or reconstruction of power and work relations (see Bechky, 2003b: 724-725; Hawkins et al., 2017: 305-306; Huvila, 2011: 2536-2537) between MonTech and the client or among the practices within MonTech, respectively. The reason for this is that, at least in the case of service delivery at MonTech, establishing and maintaining primacy of a particular practice over others concerns being able to represent the object of activity and the process through which it is to be achieved in terms consistent with that practice and not the object itself. Because I am primarily concerned with how the primacy of Development practice is established within a project rather than within MonTech, I will limit my discussion to the four boundary objects. However, the insights that follow are also relevant to those performing similar functions within MonTech, which I mentioned above.

In my explanation, I draw on the idea that boundary objects contribute to the construction, reinforcement and alteration of power relations between practitioners because they can be used as a means of exercising control and influence (see Bechky, 2003b: 724-725, 729, 735-736; Hawkins et al., 2017: 295-297; Huvila, 2011: 2528, 2530, 2535-2537). However, rather than treating them as givens that simply appear in the boundary interaction, I take the position that they are carefully selected and produced in anticipation of interactions with others (see Barley, 2015: 1612-1613, 1624-1625). Combining these two views facilitates a more thorough exploration of how boundary objects are used to shape power relations in the early stages of service delivery. This enables me to explore how the manner in which MonTech initially construct and continuously reconstruct the relative authority of Development practice throughout the service delivery process does not depend exclusively on the performances described in the preceding section (see 4.5.2.2), but also stems from the selection and use of boundary objects which accuracy and ambiguity can be exploited in the circumstances of those performances (see Hawkins et al., 2017: 295).

When MonTech first liaise with the client's business staff, the vague description (i.e. initial RSD) and, possibly, prototype can be regarded as 'ideal type' boundary objects, which do not embed knowledge specific to either practice (see Star & Griesemer, 1989: 410; also Wenger, 1998: 107). As the particulars specific to Development practice (i.e. technical details which business staff neither understand nor are interested in (see Jack 7)) are absent from both of them, the business staff cannot become aware of what sets their and Development's understandings apart (see Carlile, 2002: 452; 2004: 560). As the RSD moves to a later state, whereby the vague description becomes a set of functional

requirements, an increasing number of particulars specific to business staff are represented (see Will 14). However, Development's concerns and, through them, their practice become increasingly reflected only after the customer's business staff withdraw and their technical staff become involved. Conversely, having not understood what the Development practice is, the client's business staff pull out from the project unaware of the possibility that they may not necessarily receive exactly what they thought they were requesting (see Jack 15 and Will 15). As far as the subsequent interactions between MonTech and the technical staff are concerned, the RSD still acts as an 'ideal type' boundary object, albeit with a progressively lesser degree of ambiguity (see Star & Griesemer, 1989: 410). Through the inclusion of further technical detail, the RSD increasingly reifies (see Wenger, 1998: 58) the Development practice and, in doing this, also elevates its status over that of the client's business staff and the understanding of the project associated with it (see Bechky, 2003b: 725, 746; Hawkins et al., 2017: 295-297). The shift towards a more technical RSD does not produce immediate empowering or disempowering effects between the two parties at MonTech (i.e. Development and Support) and the client's technical staff, all of whom share authority over the creation and interpretation (see Bechky, 2003b: 725; Wenger, 1998: 108) of the RSD, because of the aforementioned similarities between their practices (see 5.5.2.2) and the fact they all welcome a more technical understanding of the project.

Changes in power relations that occur as the project transitions into subsequent stages, particularly as it moves into Acceptance Testing and, eventually, Maintenance (see 4.5.2.1), alter how the RSD performs as a boundary object (see Hawkins et al., 2017: 305-306). In conjunction with the SLA, it is used to structure interactions between Support, who represent the Development's interests and practice, and the client's technical staff in a manner more consistent with 'standardised forms', which remove practice-specific uncertainties from collaborative interactions but may reveal discontinuities of meaning (see Star & Griesemer, 1989: 411; Swan et al., 2007: 1821). However, the latter does not pose a risk. The Development's practice can still be protected (see Jack 15, Francis 11 and Will 15) (i.e. its power can be reconstructed) from sudden realisations originating in the solution's use by the client's business or technical staff, because it has been reified in the signed off RSD in great detail (i.e. its particulars are amply represented). Effectively, assessments of the suitability of the software or its particular functions are performed on Development's terms (see Bechky, 2003b: 736; Wenger, 1998: 59-60). In comparison, with its role in Requirement Gathering, the technical definition embedded in the RSD

becomes an instrument used to empower Development to the disadvantage of the client's technical staff.

As for the SLA, fundamentally, its use in responding to client-raises issues resembles that of the signed-off RSD and can be regarded as another 'standardised form' (see Star & Griesemer, 1989: 411; Swan et al., 2007: 1821). The SLA prescribes a communication channel, specifies what a fault report should consist off and provides a severity-based issue classification system; including response timeframes (see 4.4.2 and Appendix E). The classification system originates in the Development practice, thus reifying it in the SLA. As for the fault report requirements, these correspond with what the Helpdesk and Support request from the client for investigative purposes and for the same reasons can be treated as reifying Development practice (see 4.5.2.2). The requirement for all communication to occur via email represents the power relations between the three areas of service delivery, which as aforementioned are projected on the interactions with each client (see 4.5.2.1), and if invoked is used to reconstruct them (see Molly 3). Overall, as with the RSD, the SLA can be regarded as reifying the practice of the Development team (see Bechky, 2003b: 736; Wenger, 1998: 58-60), which enables them to influence, albeit indirectly, how faults with the solution are addressed, thus reconstructing their primacy (see Bechky, 2003b: 724-725). However, what distinguishes the SLA from the RSD is that the particulars of Development practice which pertain to what constitutes different classes of issues are omitted in a similar manner to how the technical understanding of a project was absent from the initial RSD used in collaboration with the client's business staff. As with engineering drawings in Bechky (2003: 739), ambiguity of the SLA makes it possible for Support, acting as proxies for Development, to allege that the client has misinterpreted the severity of a call (see Jack 16, Francis 15 and Molly 6). Thus, while the final RSD's role in reaffirming the relational power of Development practice is derived from its relatively high level of accuracy, the capacity of the SLA to be used for the same purpose stems from its selective ambiguity.

4.5.2.4 Organising of service delivery from a CoP perspective

When it is assumed that knowing resides in practice (Brown & Duguid, 1991: 42; Carlile, 2002: 442-443, 445-446, 453; Gherardi et al., 1998: 278; Lave & Wenger, 1991: 122), analytical attention shifts away from what the parties involved in service delivery know and how they express it. Instead, concerns over remaining in control of the uncertain process of service delivery are brought to the limelight. These concerns take on the form

of potential and real threats practices pose to each other, as well as the knowledge and identities derived from them, at pragmatic boundaries (Carllie, 2002: 446; 2004: 559-560, 563), which drive members of MonTech to act in a way which preserves their way of working not only within individual projects, but across multiple projects at the same time.

From this perspective organising of service delivery becomes explicable in terms of power-imbued performances (see Contu, 2014: 292-293, 311-312; Fox, 2000: 858-862; Swan et al., 2002: 482) through which practices, relations between them, identities and established ways of working are ongoingly reproduced (Contu, 2014: 293, 311-312; Fox, 2000: 859-860; also Lave & Wenger, 1991: 58). In case of service delivery at MonTech, these performances are oriented towards the preservation of the historical primacy of the Development practice within MonTech and its projection onto each client project. They do not necessarily involve members of Development who only rarely liaise with MonTech's clients. Reflective of the notion that 'practices perform power effects within and across CoPs' (Mørk et al., 2010: 587), quite often in preserving their own ways of working, members of Support and Molly at the Helpdesk reconstitute the primacy of Development practice. These performances often involve boundary objects (i.e. RSDs and SLAs), which ultimately reify (see Wenger, 1998: 58) the practice of Development even though they mostly feature in interactions between Support and the Helpdesk and the client's technical staff (see Cox, 2005: 531; Wenger, 1998: 206). Overall, the organising of service delivery is presented as a political process characterised by attempts to enrol, challenge and control others (Fox, 2000: 863; Mørk et al., 2010: 587; Mørk et al., 2012: 281-283; Orr, 2006: 1809).

4.5.3 LoP-based interpretation

4.5.3.1 The software revealing itself

The distinction between practices, which are defined as 'spatial-temporal manifolds of action' (Schatzki, 2005: 471; 2006: 1863-1864; also Schatzki, 2001: 56) and 'assemblages of material objects', which are referred to, used or causally support practices (Schatzki, 2006: 1864-1865, 1870; also Nicolini, 2011: 610-611) enables appreciating that the service delivery process at MonTech is not achieved solely through the work of human actors, but also their material counterparts. In this section I deal with the latter, focusing on the software being provided itself. However, I will return to the former in the immediately following section (see 4.5.3.2).

Service delivery at MonTech involves various material artefacts which influence practice in the sense that they 'constrain or set up particular possibilities for action' within a practice (Manidis & Scheeres, 2013: 1243-1244; also Bruni et al., 2007: 92, 94, 97-98; Nicolini, 2012: 185; Orlikowski, 1992: 411, 416). Most notably, these include MonTech's office with its spatial layout, which affects the pattern of everyday verbal communications at the organisation (see 4.2.3), the SMS which influences the manner in which client-raised faults with the software are responded to and how coordination across projects occurs (see 4.3.4.3 and 4.4.2) (see Molly 2 and Molly 7), the DBMT which contributes to and organises the work of Development (see 4.3.1.2 and 4.3.4.1), as well as emails, telephones and video-conferencing technologies which affect how the processes of requirement gathering and investigating faults with the software unfold (see Jack 14, Francis, 11, Francis, 15 and Molly 5). Ultimately, MonTech's software itself will become similarly involved in supporting, enabling and constraining practices of its ultimate users at the client organisation (see Jack 18). Arguably, all of these examples pertain to a form of material performativity associated with the stabilising effects of material artefacts (Nicolini, 2011: 614-615). However, the solution being provided by MonTech affects the process of service delivery in a very different manner on which I will focus throughout the remainder of this section.

Not being able to ascertain in advance what the software MonTech are developing is constitutes a major concern for members of both Development (see Will 5, Will 14, Will, 15, Will 18) and Support (Jack 1, Jack 13 and Francis 18). Their concerns are a reflection of the fact that, rather than being developed according to a plan or a blueprint, the software gradually reveals itself throughout the service delivery process as it is worked on and eventually used at the client organisation. Among others, this occurs when a member of the Development team finds himself unable to complete a Story (see Will 3) or when he is faced with a report of a failed Unit or Integration Test (see Will 19 and Fred 5). The software also reveals itself through failed Scenario Tests (see Francis 2), as well as in the daily work of its users when they realise it does not quite match their expectations (see Jack 15 and Will 15). On this basis, it is possible to argue that the solution is being gradually defined throughout the service delivery process as it is engaged with in local practices (see Knorr Cetina, 1997: 10-13; 2001: 190; Rheinberger, 1992: 310; 2005: 407). As aforementioned (see 2.5.2.3), this characteristic is one of the defining qualities of epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Nerland, 2018; Rheinberger, 1992; 2005).

Will 19: *You can't always predict the outcome of any change you've made. It might have some subtle effect elsewhere in the software you didn't anticipate [...] So for every change we see if there's any build problems, we see if there's any Integration Test problems and we get that feedback back to the developer*

Fred 5: *So, say I've submitted a change at the end of the day. In the morning when I'll come in, the first thing I look at is CIT to see which tests have failed, which have passed. So if you see a lot of red lights in the morning you know you might have done something wrong or something needs fixing.*

In comparison, with the software being developed, the other artefacts discussed in the opening paragraphs of this section can be classified as technical objects on the basis that having already been defined they serve as stable reference points around which practice is anchored (Ewenstein & Whyte, 2009: 9, 12-13, 23; Miettinen & Virkunen, 2005: 438; also Latour, 1987: 5, 21, 29, 91, 130-131). My inclusion of the software, as it is used by its ultimate users, in that list does not indicate that there comes a point in time when the software attains its final form. As Will explains (see Will 15 and Will 20), the software is never fully finished. Thus, as it can always be further improved it remains an epistemic object (see Knorr Cetina, 2001: 191). The fact that the software can be an epistemic object and a technical object at the same time, highlights a much more important issue which I must unravel in order to understand service delivery at MonTech. Specifically, the manner in which service delivery proceeds depends on how those involved in it act towards the solution being provided.

Will 20: *There's usually some Stories left over [...] So the software is never really finished. It's just, you know, this is a workable version*

Before proceeding, I must offer an important clarification as to what exactly constitutes the epistemic object discussed in the remainder this section. The concept of epistemic object was introduced to explain the power of actual material objects in scientific discovery rather than ideas or concepts (Rheinberger, 2005: 406). Reflective of this, I consider the RSD, Stories developed on its basis and Incidents raised in response to reports of software faults to be partial instantiations of the software, as an epistemic object,

rather than epistemic objects in their own right (see Knorr Cetina, 2001: 190-193). Relatedly, I avoid drawing a distinction between MonTech's solution and the IT infrastructure on which it 'lives' at the client organisation on the basis that the latter is implicated in the design of the former (see Will 2, Will 5, Jack 1, Francis 1, Francis 2, Will 7, Francis 9, Will 13 and Jack 12).

For epistemic objects to reveal themselves in practice, those attending to them must be receptive to their 'backtalk' (see Knorr Cetina, 1997: 10-19; also Ewenstein & Whyte, 2009: 11-12, 22; Engeström & Blackler, 2005: 310; Nicolini et al., 2012: 619). Such openness invariably characterises the attitudes of MonTech's members throughout the entirety of the service delivery process. They always seek clarifications, ask questions and investigate (see Will 1, Will 3, Will 5, Jack 1, Francis 2, Francis 7, Jack 12, Will 14, Molly 4). Unfortunately for MonTech, this is not always the case with their clients. These differences affect not only how a project unfolds over time, but whether MonTech choose to take it on in the first place.

In case of some of MonTech's clients and their staff, the software is treated as 'a thing like a washing machine' (see Will 1), akin to an already clarified technical instrument (see Ewenstein & Whyte, 2009: 9, 12-13, 23; Miettinen & Virkunen, 2005: 438; Rheinberger, 2005: 407). Because the customer's staff perceive the software as if it had already been defined, MonTech's efforts to further clarify it seem redundant to them (see Will 14). Correspondingly, it does not make sense for them to participate in the prolonged, iterative process of Requirement Gathering. This unwillingness is not symptomatic of a lack of commitment to the project, as much as of a lack of recognition of the solution as an epistemic object. As with all epistemic objects, what the software reveals about itself depends on the meaning invested in it by the people acting towards it (Rheinberger, 2005: 408; also Ewenstein & Whyte, 2009: 27). Correspondingly, the reason why, in these circumstances, MonTech are faced with 'too many unknowns' (see Jack 13, Will 16, Jack 20 and Will 18), which may lead to the rejection of a project, is that they are unable to answer the questions posed by the software on their own.

While Requirement Gathering is an important part of the service delivery process, from MonTech's perspective it is crucial for members of the client organisation to remain committed to the software and allow it to preoccupy them throughout the entire service delivery process (Knorr Cetina, 1997: 17-19; also Nicolini et al., 2012: 619). Arguably, clarification of an epistemic object is an inherently reflective process since those involved

in it must open themselves up to its ‘backtalk’ (see Engeström & Blackler, 2005: 310; Yanow & Tsoukas, 2009: 1342, 1348-1349; also Nicolini et al., 2012: 621). Unfortunately, human capacity for reflection is limited. Although practitioners can anticipate how their existing practices unfold over time (Sandberg & Tsoukas, 2011: 344; also Styhre, 2003: 19-22, 24; also Miettinen, 1999: 189), they can only reflect on the past or in the present (see Yanow & Tsoukas, 2009: 1340; also Ewenstein & Whyte, 2007: 691). At the same time, epistemic objects cannot be unravelled all at once because they change over time. Specifically, each interaction with an epistemic object increases rather than reduces its complexity (Knorr Cetina, 2001: 190-193). This is reflected in the limited benefit of the use of prototypes in Requirement Gathering whereby they only afford a more compelling discussion to be had about what the solution ought to be but do not fully clarify it (see Jack 19). It also explains why MonTech insist that clients perform Acceptance Tests rigorously and without replicating MonTech’s processes (see Francis 8 and Jack 10). Furthermore, it expounds on why ‘grey areas’ in the RSD come from both the client (see Jack 15 and Will 15) and MonTech (see Francis 11). More importantly, it offers an explanation as to why the software may ultimately prove not to work as intended once it has been delivered to the client (see Will 11). Finally, it is the very reason why service delivery at MonTech is an iterative process (see 4.3.1).

While the proceeding discussion explains why software development at MonTech cannot proceed without the continuous, active and object-committed involvement of the client, this is not the only means in which the concept of epistemic object (see Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Nerland, 2018; Rheinberger, 1992; 2005) can contribute to our understanding of service delivery at MonTech. Specifically, by highlighting that uncertainty is to some extent unavoidable in service delivery because of the impossibility of the software ever being fully defined (see Will 19), it invites us to rethink the protection offered by RSDs and SLAs.

With regard to the former, it is necessary to account for two qualities of epistemic objects. Firstly, epistemic objects are defined as much by what they are and what they are not. Secondly, individual instantiations of an object are inherently partial (Knorr Cetina, 2001: 191). Consequently, the protection afforded by an RSD, as a single instantiation of the software, can never be complete. However, by partially framing what the software could be and, equally importantly, what it could not be, it allows MonTech to close off certain avenues for its unfolding. For this reason, the RSD only prevents the client from radically redefining the scope of the project (see Jack 15 and Will 15).

With regard to the SLA, recognising that the solution being provided constitutes an epistemic object, enables appreciating why MonTech commit to solving problems within a stipulated timeframe only post-Acceptance (see Molly 5 and Francis 15). As aforementioned, what the software reveals about itself depends on the meaning invested in it by the people acting towards it (Rheinberger, 2005: 408; also Ewenstein & Whyte, 2009: 27). With Acceptance Tests being the first opportunity for the client's technical staff to subject the software to their own praxis following its development at MonTech, it is not surprising that they lead to the discovery of a large number of faults despite rigorous internal testing at MonTech (see Francis 7). With the SLA not covering these faults, MonTech protect themselves from having to suddenly commit considerable resources to one project at the expense of others.

4.5.3.2 Positionality in a landscape of practices

As the discussion in the preceding section illustrates, whether an individual project progresses favourably for MonTech depends largely on the commitment of the client's technical staff (see Jack 9, Jack 10 and Francis 8). This is the case not only with regard to defining a project during Requirement Gathering (see Will 14) but also with respect to the investigation of faults with the software during Acceptance Testing and Maintenance (Francis 13 and Francis 14). Naturally, in some circumstances their commitment leads to conflict over the classification of the severity a fault (see Francis 15 and Molly 6). In case of some projects, they also bring security concerns which negatively the design of the solution and the manner in which the service is delivered as a whole (see Francis 4, Jack 2 and Francis 5). In this section, I explore why members of MonTech and the client's technical staff act in particular ways, as well as why these actions sometimes become the source of conflict.

As aforementioned (2.4.3.3), Schatzki's (2001: 55, 57-58) explanation of human conduct is that people's mental states determine what it makes sense for people to do. However, these mental states are not subjective constructs but a feature of practice itself since they emerge as a result of the differential incorporation of its structure in the human mind (Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62). The term 'differential' denotes that different combinations of the structuring elements of practice are incorporated into people's minds depending on their individual circumstances, including 'training, experience, intelligence, powers of observation, and status' (Schatzki, 2005: 480). While this provides a good point of departure for the current discussion, it offers only a partial

explanation of how members of MonTech and the client's technical staff act within the service delivery process. As I will demonstrate, their behaviours are not explicable solely in terms of the practices in which they are directly involved. Rather, they are also derived from the connections through which practices are connected to one another to form landscapes (see Nicolini, 2012: 174; also Schatzki, 2001: 63), which in case of service delivery at MonTech extend far beyond the locality of a single project.

Having recognised the importance of the client's technical staff to how service delivery unfolds over time, it seems suitable to start the exploration of the landscape of practices of service delivery at MonTech with them. As aforementioned, the client's technical staff are the people who have been made responsible for it by the client's business staff, who are the final users of MonTech's software (see Jack 6, Jack 7, Jack 8 and Will 11). Arguably, as a result of their relationship of accountability, the former's mental states are influenced by the latter (see Nicolini, 2012: 173; Schatzki, 2005: 474). However, everyday working practices also connect MonTech's clients with other actors outside of their organisations, including their customers and regulatory bodies that exercise influence over them (see Araujo, 1998: 318, 326-331; Schatzki, 2005: 476). Most notably, these relations transpire in concerns about information confidentiality, which often lead to access restrictions being imposed on MonTech (see Francis 4, Jack 2, Will 8 and Francis 5). The number of interconnected practices is even greater if past business considerations at the customer organisation led to the decision to lease rather than own their IT infrastructure (see Francis 10 and Will 13) or if the service is being delivered via a distributor (see Jack 11, Jack 17 and Francis 12). This highlights that what happens within an individual project is not explicable solely in terms of the local practicing of the client's technical staff and the members of MonTech who engage with them (see Nicolini, 2011: 603-605, 614-615; Nicolini et al., 2018: 307, 310, 313-315, 319). Their local practicing is merely a site of a much wider knowing (see Nicolini, 2011: 610-612, 615-616; Schatzki, 2001: 53; 2005: 471-474).

The above is not the only direction in which the landscape of practices of service delivery stretches. At MonTech, within individual projects, the practices of Development, Support and the Helpdesk form chains by providing each other with inputs (see Nicolini, 2012: 173; Schatzki, 2005: 474). Overall, a reciprocal relation connects the practices of Support and Development whereby the former is feeding information in the form of RSDs and Stories added to the DBMT Backlog to the latter, who then provide them with a software build for Scenario Testing (see 4.3.1-4.3.2). A similar relation exists between Molly at

the Helpdesk and members of the Support team for whom she collects information as clients report issues with the software (see Molly 4 and Molly 6). However, this still presents an incomplete picture of the landscape since MonTech are never working on individual projects, but always on multiple projects at the same time (see Jack 3, Will 10, Fred 2 and Jack 5).

Relations that weave individual projects together transpire through many of the activities and concerns comprising the service delivery process. The level of MonTech's commitment to achieving the clearest possible understanding of a project before taking it on (see Jack 12, Will 14 and Jack 13), whereby they are even willing to aggravate their clients (see Will 18), appears somewhat excessive from an individual project standpoint. However, this is not the case if it is considered that these behaviours of Support and Development staff are not driven solely by within project considerations, such as protection of MonTech's bottom line (see Will 18). The manner in which requirements are gathered (see Francis 11), as well as how signed off RSDs (see Jack 15), SLAs (see Jack 16) and Acceptance Tests (see Francis 8) are used for protection are a manifestation of relations that tie together potentially mutually affecting projects (see Jack 9). These relations permeate through the practices of all three areas of service delivery and their work at all times. In fact, the superiority of DMB over DMA as a more flexible methodology (see Jack 4, Will 17 and Fred 4) stems from these very connections (see Sandberg & Tsoukas, 2011: 343). Relatedly, Sprint planning meetings under DMB in course of which the Development team attempt to balance their responsibilities across multiple projects (see Will 10 and Fred 2) and the possibility of 'dropping things' if necessary (see Fred 4) are significant because services are delivered across potentially mutually disruptive projects, not because they enable this form of delivery. The same argument can be extended to activities comprising practices of other areas of service delivery, including negotiating fault resolution timelines with clients (see Francis 15 and Francis 16) or altering priorities on-the-fly as customers report issues at Support (see Jack 5), as well as Molly's daily SMS Incident reviews at the Helpdesk (see Molly 2). Finally, the very arrangement connecting the practices of Development, Support and the Helpdesk can be regarded to be a manifestation of inter-project relations as it essentially protects Development from disruptions within individual projects. It effectively acts as a system of two floodgates (i.e. the Helpdesk and Support) whereby information on the issue is collected and the problem is then investigated (see Molly 4, Francis 14, Molly 5, Molly

6 and Francis 17) to ascertain whether Development input is required at all, thus giving them greater control over how they prioritise work for their various clients.

There is a further direction in which the landscape stretches. Specifically, MonTech as a whole are connected with their new owners who also influence how members of Development, Support and the Helpdesk act on a daily basis. Their arrival led to greater importance being attached to supporting existing clients (see Jack 3), which manifested in the subsequent changes in in the composition of the organisation (see Will 8). However, it also made it easier for MonTech to work flexibly across projects by relaxing quality control protocols as a result of the decision not to pursue quality reaccreditation (see Francis 6 and Will 9).

In light of the preceding discussion, it is no longer possible to argue that the mental states which guide actions of Development, Support, the Helpdesk and the client's technical staff are the result of the incorporation of the structure of their respective practices in their minds alone (see Schatzki, 2001: 55, 57-58). The attitudes, concerns and actions described in the preceding paragraphs quite simply do not make sense unless we account for the fact that each single practice involved in service delivery feeds 'upon the connections established and maintained' with other practices near and far (i.e. is translocal) (Nicolini et al., 2018: 307; 310, 319) and, in doing so, is a site of a much wider knowing (Nicolini, 2011: 603-605, 614-615). Therefore, what is incorporated within the human mind is not only the local practice in which a person participates, but also the arrangement of the landscape of practices in which that practice is embedded. As with the structures of individual practices (see Schatzki, 2005: 480), the arrangement of the landscape of practices is differentially incorporated. I refer to the result of this incorporation as positionality. Positionality, alongside the structuring of local practice, informs practical intelligibility (see Schatzki, 2001: 55) whereby in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice.

In order to understand positionality and its significance to the organising of service delivery at MonTech, it is useful to turn to the description of the landscape of practices within which service delivery proceeds, which I presented earlier in this section. Taking MonTech as a point of departure, the landscape stretches from MonTech into multiple client organisations and beyond. As aforementioned, the multiplicity of these connections transpires through the practices of Development, Support and the Helpdesk. However,

this is not the case for the technical staff at each client organisation who liaise with MonTech throughout the service delivery process. The connections emphasised and reconstituted in their practicing stretch deeper into their organisation and in some cases beyond (e.g. to regulators and infrastructure providers). This is evident in their attempts to contact Development or Support directly (see Molly 3) and their efforts to have faults resolved quicker than stipulated in the SLA (see Francis 15 and Molly 6). The tensions that arise in these instances are the result of differences in how the arrangement of the landscape of practices has been incorporated into the mental states of the client's technical staff and members of MonTech. In short, actions which make sense to the former reconstitute connections which stretch along project lines, whereas those which make sense to the latter reconstitute connections which stretch across projects. Although this state itself is an effect of the arrangement of practices forming the landscape, since it is the result of its differential incorporation, it is not inconsequential for it because of three characteristics of such arrangements – their provisional stability, contestability (see Nicolini, 2011: 610-612, 615-616; Schatzki, 2001: 53; 2005: 471-474) and dependence on human action and, arguably, inaction for stability and change (see Schatzki, 2005: 476, 480; Nicolini, 2012: 164, 169-170). If MonTech were to give way to their clients it would no longer be possible to perform service delivery in the same way. Reflective of this, they find themselves in a paradoxical position whereby to deliver their services concurrently to multiple clients they must act in a way which is not entirely in the best interest of any one of them.

4.5.3.3 Organising of service delivery from a LoP perspective

A LoP-based interpretation of service delivery at MonTech and its organising provides two important insights. The first one pertains to the active role non-humans play in service delivery. The second one elucidates why tensions are inherent in it whereby, in order to deliver their services concurrently to multiple clients, MonTech must act in a way which is not necessarily serving the best interests of any one of them.

Regarding the former, due to its post-humanist orientation (see 2.3.2.3 and 2.4.3.3), the LoP interpretation of service delivery elucidates that its organising is not explicable solely in terms of human actions. While humans carry out its constituent practices (see Schatzki, 2005: 480; Nicolini, 2012: 164, 169-170), various material artefacts influence how they are performed by constraining and enabling action (Manidis & Scheeres, 2013: 1243-1244; also Bruni et al., 2007: 92, 94, 97-98; Nicolini, 2012: 185; Orlikowski, 1992: 411,

416). More importantly, drawing on the concept of epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Nerland, 2018; Rheinberger, 1992; 2005), the LoP interpretation of service delivery at MonTech demonstrates how, through its gradual unfolding, the solution being delivered itself affects how the service delivery process proceeds, including what type of commitment is sought from the client's technical staff, how certain activities are emphasised and the manner in which RSDs and SLAs are used by MonTech for protection.

With regard to the latter, the LoP interpretation of service delivery at MonTech enables appreciating that the manner in which individual projects proceed and how people within them act is not as an exclusively local affair, but a translocal one (see Nicolini et al., 2018: 307; 310, 319). Through the introduction of the concept of positionality, which conveys the idea that in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice, the LoP interpretation highlights how actions of MonTech and the client's technical staff generate unavoidable tensions within the service delivery process. In effect, MonTech find themselves in a paradoxical position whereby to deliver their services concurrently to multiple clients they must act in a way which is not necessarily in the best interest of any one of them.

4.6 Concluding remarks

In this chapter, I have presented three alternative interpretations of service delivery at MonTech and its organising. Although they share a number of commonalities, including an emphasis on the uncertainty of the service delivery process, the tensions inherent in it and the means by which MonTech attempt to remain in control over it, each explanation is unique because of its underlying conceptual assumptions.

The radical differences between them almost demand a statement about the superiority of one over the others. However, such a declaration cannot be made. Attempting this would be methodologically inconsistent with the aim of diffractive analysis, which is to irrupt understanding (Jackson & Mazzei, 2012: 14), rather than to arrive at a foreclosed interpretation (Davies, 2014: 740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271-272, 274-275; Mazzei, 2014: 742-744), by emphasising multiplicity and suppleness of meaning afforded by each theoretical lens (Davies, 2014:

740; Jackson & Mazzei, 2012: 4-5, 9-10, 12, 34, 2013: 263-264; Lenz Taguchi, 2014: 271, 274-275; Mazzei, 2014: 742-744). For the same reason, it would be inappropriate to conclude this chapter with a synthetic explanation (see Langley, 1999: 699, 706). Either would imply the existence of a 'true' interpretation (Jackson & Mazzei, 2012: 91). Arguably, no interpretation can be deemed truthful when the empirical material is not perceived as static, complete or representational of reality (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470). However, this does not preclude the possibility of engaging with the tensions between the three interpretations and the theoretical perspectives that inspired them, which I attempt in the next chapter (see Chapter 5) as part of my effort to answer the remaining research questions.

5 Discussion

5.1 Introduction

In this chapter, I address the remaining research questions by subjecting the three theoretical interpretations of service delivery at MonTech and its organising presented in the preceding chapter (see 4.5), as well as the relationship between them to extensive theoretical scrutiny. My ultimate aim is to demonstrate that contrary to the dismissive attitude of some leading practice-based scholars towards possession-based theorising and the overall historic alienation of the two approaches to the study of organisational knowledge (see 2.3.3.3), they can be deployed together in a productive manner.

I begin with a discussion of how the KCT-, CoP- and LoP-based interpretations engage with and extend the reasoning presented in the extant literature associated with each perspective. In doing this, I provide the answer to the second research question:

- (2) *How is each theoretical perspective engaged with in its associated theoretical reading?*

Building on this answer, I subsequently scrutinise how the conceptual foundations of each perspective affected what was revealed and concealed about the organising of service delivery at MonTech within their associated theoretical interpretations (see 5.3). Thus, I answer the third research question:

- (3) *How do the theoretical foundations of each perspective affect what is revealed and concealed in its associated theoretical reading?*

I proceed with an examination of the complementarity of the KCT-, CoP- and LoP-based interpretations of service delivery at MonTech. As part of this effort, I consider the similarities and differences in their respective explanations to conclude that neither perspective on its own is adequate for understanding service delivery at MonTech and its organising. Conversely, I do not only argue that they are complementary, but also that not a single one of them should be disregarded (see 5.4). In doing this, I provide the answer to the fourth research question:

- (4) *How do the three perspectives together facilitate attaining a more comprehensive understanding of the organising of service delivery at MonTech?*

Drawing on the preceding discussion, I conclude the chapter with a brief introduction to a possession-and-practice-based perspective (see 5.5), in which the two approaches to the theorising of organisational knowledge work alongside one another to facilitate development of increasingly comprehensive understandings of empirical phenomena.

5.2 Engagement with individual theoretical perspectives

5.2.1 Practicality of individual knowledge

Extant KCT literature argues that how individuals justify their knowledge reflects their commitment to particular practices (Essers & Schreinemakers, 1997: 25; Nonaka, 1991: 98; 1994: 24; Spender, 1996a: 68, 71; 2003: 273-274). However, no explanations are offered as to why or how this occurs. Arguably, this is the result of equating knowledge with the capacity to act knowledgeably (Nonaka et al., 2006: 1181-1182; Nonaka & von Krogh, 2009: 638, 642; Spender, 1996a: 64). A person's commitment to practice does not require explanation if the latter is simply a representation of knowledge (Blackler et al., 1993: 1017; Nicolini, 2011: 602; Orlikowski, 2002: 250; Tsoukas, 1996: 16) constructed in the confines of the individual mind. Relatedly, the primacy of mind over action reduces the problems which arise when people who know differently must work together to the effective sharing of tacit knowledge – mental models, beliefs and other elements of their cognitive context that influence their thinking (Cohendet & Steinmueller, 2000: 204; Cowan et al., 2000: 216; Nonaka, 1991: 99; Nonaka, 1994: 16; Nonaka & Konno, 1998: 42).

However, my interpretation of service delivery at MonTech and its organising from a KCT perspective suggests that practices merit closer consideration. Specifically, both the problems associated with designing a tool to be used by people, rather than one which is intended to replace them (see Gourlay, 2006; Nonaka, 1991; Ribeiro & Collins, 2007), and the communication difficulties that persist throughout the entire duration of a project

highlight the role of practice in the formation of individual knowledge. This supports the view that what individuals know tacitly is, at least partially, derived from practice (see Tsoukas, 1996: 16-17; 2009: 943; also Cook & Brown, 1999: 382-383, 388, 392-393). However, it never goes as far as to reject the possibility of knowledge existing as a substance in its entirety (see Gherardi, 2006: 19), either residing in individual minds or embedded in artefacts (Gherardi, 2001: 133; 2006: 41; 2009: 354; 2016: 681; Marabelli & Newell, 2012: 19). Rather, members of both MonTech and their client organisations can be seen as expressing their respective knowledge when not engaging in the practices it pertains to (see Gärtner, 2013: 342). Conversely, the existence of individual knowledge is not denied. However, its transcendental characteristics are dismissed as its inseparability from practice is recognised. The implications of this are fourfold.

Firstly, practice ties individual knowledge to the present, through which it may also be tied to the past but not the future. People cannot articulate knowledge of what they are yet to experience in practice with clarity and certainty because articulations of knowledge are always made against the tacit backdrop comprising distinctions derived from current practice (Tsoukas, 1996: 17; 2009: 942-943; Nonaka & von Krogh, 2009: 642). At MonTech, this manifests in the problems associated with the inability to define the software in advance, the limited utility of prototypes in gathering project requirements and the manner in which the longer the software is used at the client organisation, the more informed fault reports and enhancement requests become.

Secondly and relatedly, practicality of individual knowledge implies that sharing knowledge though its articulation does not render it objective or context-independent (*cf.* Nonaka, 1991: 98; 1994: 16, 25; Nonaka & von Krogh, 2009: 640-641). The problem of making knowledge increasingly explicit is not that people cannot communicate what they had acquired in an unarticulated form (*cf.* Balconi, 2002: 360; Cowan et al., 2000: 217; Gourlay, 2006: 1422), but that what is being made explicit is always embedded in the tacit knowledge from which it is derived. To claim that tacit knowledge is required to understand explicit knowledge (Nonaka & von Krogh, 2009: 640; Spender, 1996a: 68, 71), but not to recognise that tacit knowledge makes articulation possible (Cohendet & Steinmueller, 2000: 206) in the first place is a major oversight. Both must be accounted for to appreciate why explicit knowledge shared with others may not be fit for their purposes (i.e. relevant to their practice). This explains why the process of service delivery at MonTech is one in which knowledge is recursively made meaningful anew (see Hargadon & Fanelli, 2002: 295; Ribeiro & Collins, 2007: 1430; Spender, 1996a: 64-65)

as the project progresses, as well as MonTech's preference for direct access to the systems on which their solutions function and direct participation in fault resolution. The former is the consequence of the 'tacitness' of explicit knowledge, whereas the latter is a means of avoiding having to deal with it by obtaining the required explicit knowledge without having to rely on another party. I must emphasise that this does not negate other qualities associated with making knowledge increasingly explicit – the ease with which it can be shared and disseminated (Nonaka, 1991: 98; 1994: 16, 25; Nonaka & von Krogh, 2009: 640), as well as its susceptibility to computerised processing (Massey & Montoya-Weiss, 2006: 101; Nonaka, 1994: 19; Nonaka & Konno, 1998: 47; Nonaka & Toyama, 2003: 5). As I pointed out in my analysis, the former makes it possible for MonTech's members to work on problems they do not experience themselves, while the latter is instrumental to the coordination of activities across projects. However, it highlights that their ability to do either ultimately rests on communication of explicit knowledge that is relevant to the practical circumstances of those activities. This argument further emphasises the importance of the shared aspect of collective knowledge (see 2.5.1.1), which pertains to understanding how different bodies of complementary knowledge are interrelated, to the successful coordination of activity (Hecker, 2012: 432, 434; also Mylonopoulos & Tsoukas, 2003: 139).

Thirdly, accepting that individual knowledge is not only personal but also practical undermines, to some extent, claims that successful collaboration requires a synthesis of participants' contradictory understandings (Kodama, 2005: 904-905; Nonaka, 1994: 21, 24-25; Nonaka & Konno, 1998: 47; Nonaka & Toyama, 2003: 5, 9; 2005: 421-422; Tsoukas, 2009: 942-949). Previous research has shown that this is not necessary when the purpose of the cooperation is to design a machine which mechanically replicates human action since this requires neither sharing nor understanding the tacit knowledge on which the action is founded (Gourlay, 2006: 1420-1421; Ribeiro & Collins, 2007: 1418, 1423-1428). As my analysis of service delivery at MonTech further indicates, development of a tool to be used by other people also does not require the parties involved in the development process, including its users, to share a universal frame of reference (*cf.* Nonaka, 1994: 25; Nonaka & Toyama, 2003: 5; Nonaka et al., 2000: 15). On the contrary, as MonTech's efforts to define the software in increasingly technical terms demonstrate, pursuit of such shared understanding may be counterproductive. In fact, the success of service delivery rests of the effectiveness with which MonTech act in the interests of the knowledge associated primarily with the Development team. This does

not suggest that individuals act in isolation and with disregard for others and their knowledge since individual and social levels of thought are mutually constituted (Hecker, 2012: 432-434; Spender, 1996a: 69-70, 74; also Spender, 1996b: 53, 58-59). However, it challenges the proposition that success of collective efforts depends on each individual 'realising himself within the environment on which his life depends' (Nonaka & Konno, 1998: 41; also Nonaka, 1994: 25; Nonaka & Toyama, 2003: 5; Tsoukas, 2009: 992-995). Speculatively, this may be necessary when the objective is future practical cooperation (i.e. a joint practice). However, as the case of service delivery at MonTech illustrates, success may equally depend on the prioritisation of a particular individual's knowledge and the practice in which it is embedded over those of others' that are incongruent with them. It is more likely that individuals act first and foremost in the interest of their own knowledge (Dougherty, 1992: 191, 196; Essers & Schreinemakers, 1997: 29-31; Gourlay, 2006: 1416) and only pursue synthesis of contradictory understandings when the situation at hand requires it. Interestingly, this reasoning resonates with the argument expressed in CoP literature that the distinctiveness of individual perspectives does not need to be sacrificed for multidisciplinary work to proceed (Boland & Tenkasi, 1995: 355-356; Gherardi, 2006: 135).

The final implication of individual knowledge being inherently tied to practice stems directly from the immediately preceding one and concerns the use of dialogue in interdisciplinary work. Driven by their commitment to particular knowledge and practice, individuals may use dialogue to inflect their understanding of the joint enterprise on others (Giroux & Taylor, 2002: 498) rather than pursue self-distanciation (see Kodama, 2007: 129-130; Tsoukas, 2009: 942-945, 499). As service delivery at MonTech illustrates, when dialogue is used towards such means, individuals may resolve to excluding parties who could undermine their efforts from dialogue, provided their participation is not instrumental. They may also mobilise explicit knowledge generated in earlier dialogue for protection by capitalising on its contractually binding status. Finally, they may rely on dialogue to anticipate and prepare for future conflicts and compromises where such protection is not available.

5.2.2 A practice-focused analysis of power

In comparison with the KCT-based reading of the empirical material, the CoP interpretation refrains from challenging the fundamental assumptions of CoP theory. Rather, it expands on the ideas expressed in the extant literature advocating greater

consideration of issues of power and conflict (see Contu & Wilmott, 2000: 271-272; Fox, 2000: 857, 860; Huzzard, 2004: 351-352; Roberts, 2006: 626-628; Swan et al., 2002: 482). Specifically, it builds on analyses of these issues in work involving multiple CoPs (Bechky, 2003b; Carlile, 2002; 2004; Contu, 2014; Hawkins et al., 2017; Mørk et al., 2010), contributing further insights as to how practicing generates power effects. Nevertheless, I must emphasise that this contribution rests on a somewhat different approach it adopts to the consideration of power. It does not explore it by focusing on individual actors' struggles associated with the construction and reproduction of their practitioner identities and relations with others (see Contu, 2014; Fox, 2000) or power dynamics within and between CoPs (Bechky, 2003b; Mørk et al., 2008; Mørk et al., 2010; Mørk et al., 2012). Instead, recognising the ontological primacy of practice (see Gherardi, 2006: 108, 110; Gherardi et al., 1998: 278-279; Nicolini, 2012: 94; Orr, 2006: 1807, 1814), the consideration of power in my CoP-based interpretation of service delivery at MonTech focuses directly on practices and their relations.

Focusing on practices better elucidates the relational aspect of power in work involving multiple CoPs whereby practicing produces power effects which extend beyond the immediately interacting practices (see Foucault, 1984: 92; Fox, 2000: 859; Mørk et al., 2010: 587). In the case of service delivery at MonTech, this manifests in the manner in which the historical primacy of Development practice within MonTech is first projected and subsequently maintained within the relation with each customer. As aforementioned, Development rarely liaise with clients themselves. Thus, their relative empowerment in relation to them cannot be viewed as a result of their actions alone. In fact, with the exception of their direct involvement in deciding whether or not to take a project on, their empowered position is reconstituted in the practicing of Support and Molly at the Helpdesk. Effectively, in maintaining their own practices they are simultaneously reconstituting the primacy of Development practice as if they were their proxies.

Relatedly, diverting attention away from practitioners and communities towards practices provides new insights with regard to the notion that practices are 'at stake' at pragmatic boundaries (Carlile, 2002: 444-446; 2004: 559-560) and the implications it has for the 'contests of power' that play out among CoPs attempting to maintain their practices and influence others (see Fox, 2000; Mørk et al., 2010; Mørk et al., 2012; Orr, 2006). As service delivery at MonTech illustrates, even though practices may be incommensurable and thus, potentially threatening, the manner in which practitioners act depends on whether they are aware of this incommensurability. This is particularly evident in the

manner in which the primacy of Development practice is established early on in projects. Specifically, the ambiguous terms in which the software is defined early on prevent the client's business staff from realising the differences between the understanding of the software associated with their practice and the one embedded in the practice of the Development team at MonTech. As I explained in the analysis, this acts to the advantage of the latter as far as establishing its primacy within an individual project is concerned. The reason why the practice of Development is not perceived as threatening is that the knowledge associated with it is not represented to the extent which enables the client's business staff to appreciate how it is different from their own (see Boland & Tenkasi, 1995: 358-359; also Bechky, 2003a: 314). In other words, to assess each other's knowledge (Carlile, 2004: 555) and attempt to assert their viewpoints over those of others (Gherardi, 2006: 148) members of interacting CoPs must first be aware of what sets their practices apart in order to realise their practice may be 'at stake'. In fact, MonTech's success in establishing the primacy of Development within individual projects depends to a significant extent on the effectiveness with which they appear as non-threatening to both the client's business and technical staff until the final RSD is signed off. However, it also rests on their own ability to identify potential threats to Development practice. This manifests in the pre-emptive actions taken by MonTech to prevent Development practice from being undermined post-Requirement Gathering, which include relying as little as possible on third-party infrastructure providers and insisting in rigorous Acceptance Tests, with the latter preventing the client's technical staff from exercising control over Development once the software is deployed on a production system by reducing the likelihood of critical faults being reported.

Turning to how boundary objects feature in work involving multiple CoPs when it is viewed as comprising of power-imbued performances (e.g. Bechky, 2003b; Hawkins et al., 2017; Huvila, 2011), while my analysis supports the view that they are used to reinforce or alter existing power relations (Bechky, 2003b: 724-725, 728, 735, 746; Hawkins et al., 2017: 293-297), it also reveals that they are involved in their initial construction having been deliberately chosen and produced for that purpose (see Barley, 2015: 1612-1615, 1624-1626). I must emphasise that this does not occur simply on the basis that the creation of boundary objects is itself an exercise of power (Boland & Tenkasi, 1995: 362; Huvila, 2011: 2528, 2530, 2535; Swan et al., 2007: 1826). As the example of the RSD demonstrates, neither its creation nor involvement in the early stages of a project contributes towards the production of power effects. In fact, throughout

Requirement Gathering, the RSD performs an exclusively mediatory function (see Carlile, 2002: 451-453; 2004: 559-560; Fox, 2011: 72; Lainer-Vos, 2013: 515-516; also Star & Griesemer, 1989: 393) by allowing members of Support and Development to better understand the expectations of the client's business staff and, later on, the technical challenges associated with the functioning of the IT systems at the customer organisation. It is only during and after Acceptance Testing when the RSD starts to contribute to the ongoing (re)construction of the primacy of the Development team's practice. This highlights that not only the mediatory function of a boundary object (Fox, 2011: 74; Hawkins et al., 2016: 299-304), but also its capacity to produce power effects may change as the relationship between the CoPs it links evolves over time. Moreover, recognising that the RSD facilitates the ongoing reconstitution of the primacy of Development practice in conjunction with the SLA, suggests that not only the flow of knowledge across pragmatic boundaries (Nicolini et al., 2012: 617; Star, 2010: 602; Wenger, 1998: 107) but also the capacity of practitioners to exercise influence over other CoPs may be facilitated not by individual boundary objects, but configurations of multiple objects. More fundamentally, my analysis reveals that the capacity of boundary objects to be used in contest of power does not stem exclusively from their interpretive flexibility (Hawkins et al., 2017: 295) but also from the extent to which they reify (see Wenger, 1998: 58-70) particular practices.

Before concluding the discussion of how my analysis of service delivery at MonTech extended the ideas expressed in the extant CoP literature, I must reflect on the wider applicability of my findings to other contexts. As previously indicated, one of the unique features of T-KIBS is that the service they provide can only be scrutinised by people who have the necessary technical expertise (see 3.5.1). As indicated in my analysis, the people who commission MonTech's projects at the client organisation (i.e. the client's business staff) generally lack such expertise. Arguably, this has implications for the processes of perspective-taking (see Boland & Tenkasi, 1995: 355-356; Gherardi, 2006: 135), whereby it is inherently difficult for the client's business staff to assess differences between their way of knowing and those associated with MonTech, particularly their Development team. This is the main reason why MonTech are able to establish the primacy of Development practice in each project with minimal opposition and using means which are oriented towards disclosing as few particulars of their practice as absolutely necessary. Speculatively, this would not be the case for organisations providing C-KIBS and P-KIBS, which services are more susceptible to scrutiny (see

3.5.1), as well as other forms of work involving multiple CoPs which members are either already aware of the differences between their respective practices on the basis of having worked together for a considerable period of time (e.g. Bechky, 2003b; Carlile, 2002) or who are better positioned to appreciate such divergence because differences between their practices are not as radical (e.g. Fox, 2011; Hawkins et al., 2017; Huvila, 2011; Mørk et al., 2008; Mørk et al., 2010; Mørk et al., 2012).

5.2.3 Human agency and material performativity

As with the CoP interpretation, my LoP-based analysis of service delivery at MonTech does not radically redefine the conceptual foundations of the theory which inspires it. It merely extends the idea that the ordering of the world in local practices (Gherardi, 2006: 35) cannot be explained without the consideration of the network of practices in which they are embedded. Instead, activities, organisations and social orders must be viewed as ‘the outcome and effect or order-establishing nexuses of practices’ (Nicolini, 2012: 174; also Schatzki, 2001: 63). Recognising that the LoP perspective I ‘plugged into’ the empirical material was inspired by the work of Schatzki (2001, 2005, 2006), the ideas expressed in this and the immediately preceding chapters are related primarily to his theorising. However, they also build on the work of other authors whose scholarship I drew upon to augment Schatzki’s (2001; 2005; 2006) ideas. In particular, my LoP-based interpretation contributes to the literature on epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005), which I will consider first.

The extant literature has emphasised that when epistemic objects are universally recognised as such and are treated with affection by those who interact with them within local practices, they contribute towards the coordination of activity among them (Ewenstein & Whyte, 2009: 21; Nicolini et al., 2012: 619-620, 626; Nerland, 2018: 346). Service delivery at MonTech paints a somewhat less optimistic picture.

As indicated in my analysis, one of the greatest potential threats to both the progression of individual projects, as well as MonTech’s ability to work simultaneously for multiple clients, is the lack of commitment of the particular customer’s staff to the solution being delivered. Because what an epistemic object reveals about itself depends on the meaning invested in it by the people acting towards it (Rheinberger, 2005: 408; also Ewenstein & Whyte, 2009: 27), MonTech are not able to develop their software if they are the only ones who allow it to preoccupy them (see Knorr Cetina, 1997: 17-19; also Nicolini et al., 2012: 619), thus making them responsive to the questions it asks (Ewenstein & Whyte,

2009: 22; Knorr Cetina, 1997: 13; Miettinen & Virkunen, 2005: 438; Rheinberger, 2005: 408; also Pickering, 1993: 574-577). Correspondingly, when clients are unwilling to commit to the solution being provided during Requirement Gathering, it is safer for MonTech to simply not take on the project. However, with the software never being finished and due to the limitations of human capacity for reflection (see Yanow & Tsoukas, 2009: 1340; also Ewenstein & Whyte, 2007: 691), the extent of client commitment has implications for service delivery both within individual projects and across projects for as long as the software is used at the client organisation. Unfortunately, within the contractual relationship between MonTech and their client, the latter's object-committed involvement is, arguably, not as certain as in the case of physicists working to develop a new particle detector (Knorr Cetina, 1999, 2001), collaborations between architects and structural engineers (Ewenstein & Whyte, 2009) or even sensor specialists and bioengineers working together on a new bioreactor (Nicolini et al., 2012). In effect, rather than contributing towards the coordination of activity (Ewenstein & Whyte, 2009: 21; Nicolini et al., 2012: 619-620, 626; Nerland, 2018: 346), the software, as an epistemic object, makes it necessary for MonTech to ensure the continuous commitment of their client throughout the project not only for its benefit, but also to avoid disruptions in the work done for other customers. A further difference between the extant literature (Ewenstein & Whyte, 2009; Knorr Cetina, 1999, 2001; Nicolini et al., 2012) and service delivery at MonTech concerns the fact that even if members of the client organisation are committed to the software, they do not necessarily participate in its unfolding at the same time. As aforementioned, in case of service delivery this has implications for how MonTech seek to protect themselves from potential disruptions to their work stemming from individual projects. Summarising, my analysis of service delivery at MonTech elucidates the potential consequences the lack of universal recognition of objects as epistemic objects, divergence in levels of commitment to them and differences in the temporal aspects of such commitment may have for interdisciplinary work.

With regard to the manner in which my analysis extends the Schatzkian (2001; 2005; 2006) understanding of human agency, its main contribution stems from the introduction of the concept of positionality, which conveys the idea that in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice. I must emphasise that positionality does not pertain to adopting a position in relation to other human and non-human entities (see Gherardi, 2006: 135; Gherardi & Nicolini, 2002b: 428-431; Schatzki,

2001: 51, 61). Rather, it concerns the process through which practical intelligibility (i.e. knowingly performing actions which make sense for a person to do) is mentally determined (Schatzki, 2001: 55-56), as well as the manner in which local practices are connected via the influence they exercise on the mental states of participants' in other practices (Nicolini, 2012: 173; Schatzki, 2005: 474).

The concept of positionality extends the argument that people's mental states are the product of differential incorporation of the structure of the practices in which they engage in their mind (see Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62; Shotter & Tsoukas, 2014: 383; Tsoukas, 1996: 20; Yanow & Tsoukas, 2009: 1349) in a manner consistent with the notions of site-ness (Nicolini, 2011; Schatzki, 2001; 2005) and translocality (Nicolini et al., 2018) whereby understanding knowing in a landscape of practices requires accounting for the connections between its local instances (Gherardi, 2006: 194, 215; Nicolini et al., 2015: 8; Schatzki, 2005: 476). In case of service delivery at MonTech, this is necessary since the actions of the people involved in it are not explicable in terms of their local practicing (i.e. the immediate work interactions involving members of MonTech and the client's staff). For example, concerns with security raised by the client's technical staff, which have implications for the service delivery process, cannot be explained without accounting for the fact that many of MonTech's customers operate in highly regulated sectors where data confidentiality is paramount. Likewise, the manner in which MonTech exercise control over fault resolution to prevent disruptions to other projects cannot be understood without accounting for how their practices are connected with those of multiple clients at the same time. By recognising that what is differentially incorporated within the human mind is not only the local practice in which a person participates, but also the arrangement of the landscape of practices in which that practice is embedded, the concept of positionality enables appreciating why local practicing reconstitutes relations between some practices, but not others, depending on who is the person carrying out the action. As aforementioned, in case of service delivery at MonTech, actions which make sense to the client's technical staff contribute towards the reconstitution of relations between practices which stretch along project lines. In comparison, actions of MonTech's members are oriented towards the reconstitution of connections between practices which stretch across projects. By recognising differences in positionality between them, it is possible to appreciate why MonTech find themselves in the difficult position of having to upset their customers in order to keep them satisfied with the service they receive. More generally, the concept of

positionality has the potential to elucidate a better understanding of how human agency affects the stability and change of the arrangements of practices forming a landscape (see Schatzki, 2005: 476, 480; Nicolini, 2012: 164, 169-170).

5.3 Partiality of individual interpretations

Diffraction analysis recognises that what constitutes data in general and good data in particular is ascertainable through recourse to theory (St. Pierre & Jackson, 2014: 715-716). If this is indeed the case, then depending on which theoretical lens the empirical material is interpreted with, the researcher's attention is likely to be directed towards different aspects of the phenomenon. Consequently, it is rather unlikely for an individual theoretical interpretation to offer a complete explanation. In fact, theoretical readings of data are inherently partial. The partiality of each of my interpretations of service delivery at MonTech is represented in Table 5.1, which shows that in none of the readings (see 4.5.1-4.5.3) have I referred to every direct quotation provided in the text of Chapter 5. A closer scrutiny of the quotes which only featured in a single interpretation and those which were excluded from it but featured in the other two readings of the empirical material, enables appreciating how the theoretical foundations of the KCT, CoP and LoP perspectives affected what was revealed and was concealed about service delivery at MonTech and its organising.

For example, two of the four quotes I referred to exclusively in the CoP interpretation of service delivery at MonTech (see Molly 9 and Francis 19) pertain to how the people involved in service delivery associate themselves with others involved in the same practice. This is reflective of the CoP literature's concern with the relationship between individual identity, community membership and the practice around which the latter develops (Brown & Duguid, 1991: 47; 2001: 200-202; Handley et al., 2006: 642-645; Wenger, 1998: 56-57, 149-151; 2000: 238-239). Inclusion of another quote (see Molly 8) only in this interpretation reflects CoP theory's concern with development of relations of mutual action intelligibility and accountability among collaborating CoPs (Gherardi, 2006: 154, 156; Gherardi & Nicolini, 2002b: 429). In a similar manner, the inclusion of three of the six quotes unique to the KCT-interpretation of service delivery (see Will 4, Molly 1 and Fred 3) can be explained by the fact that they pertain to the content of

Table 5.1 Overview of how respondents' articulations featured across the three theoretical interpretations of service delivery at MonTech.

		Respondent				
		Jack	Will	Francis	Molly	Fred
Quote number	1	KCT, LoP	KCT, LoP	LoP	KCT	KCT
	2	KCT, CoP, LoP	LoP	KCT, LoP	KCT, LoP	KCT, LoP
	3	KCT, LoP	KCT, LoP	CoP	CoP, LoP	KCT
	4	LoP	KCT	KCT, CoP, LoP	KCT, CoP, LoP	KCT, LoP
	5	CoP, LoP	KCT, LoP	KCT, CoP, LoP	KCT, LoP	LoP
	6	KCT, CoP, LoP	KCT	LoP	CoP, LoP	
	7	KCT, CoP, LoP	KCT, LoP	LoP	KCT, LoP	
	8	CoP, LoP	KCT, CoP, LoP	KCT, CoP, LoP	CoP	
	9	KCT, CoP, LoP	LoP	KCT, CoP, LoP	CoP	
	10	KCT, LoP	LoP	KCT, CoP, LoP		
	11	KCT, CoP, LoP	KCT, CoP, LoP	KCT, CoP, LoP		
	12	KCT, CoP, LoP	KCT, CoP	KCT, CoP, LoP		
	13	KCT, CoP, LoP	KCT, CoP, LoP	KCT, CoP, LoP		
	14	KCT, CoP, LoP	KCT, CoP, LoP	CoP, LoP		
	15	KCT, CoP, LoP	KCT, CoP, LoP	KCT, CoP, LoP		
	16	KCT, CoP, LoP	KCT, LoP	KCT, LoP		
	17	KCT, CoP, LoP	KCT, LoP	KCT, CoP, LoP		
	18	KCT, LoP	KCT, CoP, LoP	KCT, CoP, LoP		
	19	KCT, CoP, LoP	LoP	CoP		
	20	KCT, LoP	LoP			

Notes: KCT – quote referred to in the KCT-based interpretation;
 CoP – quote referred to in the CoP-based interpretation;
 LoP – quote referred to in the LoP-based interpretation.

articulations, which resonates with one of the main concerns of the KCT perspective – the limits of articulation of individual knowledge (Nonaka, 1991: 98-99; 1994: 16; Nonaka et al., 2003: 494; Spender, 2003: 267, 271, 273, 275-276). In comparison, the omission of three quotes (see Jack, 5, Francis 14 and Molly 3) in the KCT interpretation of the empirical material is evocative of the tradition's emphasis on what people know rather than what they do (see Blackler, 1995: 1039; Blackler et al., 2000: 281; Gherardi, 2001: 134; Nicolini et al., 2015: 8; Whittington, 1996: 732). Each of these quotations focuses on actions rather than the cognitive states guiding them. Furthermore, the shared characteristic of some of the quotations referred to exclusively in the LoP-based reading of service delivery at MonTech (Will 2, Will 19, Will 20, Francis 7 and Fred 5) is that they highlight that the problems of developing MonTech's software are not reducible to human actors' lack of knowledge about the solution or the problems it intends to resolve,

but pertain to the active role it plays in its own design process and the fact that it is never fully finished, which the LoP perspective is capable of capturing as a result of its post-humanist orientation (see 2.4.3.3 and 2.5.2.3). The LoP interpretation of service delivery is also the only one which takes into account the influence of MonTech's owners on the service delivery process via their decision not to pursue quality recertification (see Francis 6 and Will 9). The reason for this is that unlike the KCT and CoP perspectives, the LoP literature encourages exploration of the connections between local and distant events (Nicolini et al., 2018: 307, 310, 313-315, 319).

While the argument in the immediately preceding paragraph accentuates the inherent partiality of the KCT-, CoP- and LoP-based interpretations of service delivery at MonTech and its organising, I must reflect on a further, somewhat erroneous conclusion which can be drawn from Table 5.1 before bringing the discussion in this section to a close. Specifically, the LoP explanation makes use of the highest number of quotations among the three theoretical interpretations. However, this is by no means an indication of its superiority. As aforementioned (see 4.1), depending on the theory (i.e. KCT, CoP and LoP) 'plugged' into the empirical material, the latter comes to matter in a new way, which results in different issues being brought to our attention. This highlights that partiality of individual interpretations is qualitative rather than quantitative. In fact, it can be argued that recognising that the empirical material undergoes a continuous process of becoming as it is attended to with theory (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470; also Contu & Willmott, 2000: 273) renders quantitative differences between alternative theoretical interpretations meaningless. For this reason, appreciating the partiality of individual interpretations is insufficient as far as comparing and contrasting them is concerned. It is also necessary to reflect on their suppleness, which I attempt in the next section.

5.4 Suppleness of individual interpretations

Even though the empirical material in diffractive analysis (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271-272) and other forms of abductive inquiry (Alvesson & Sköldberg, 2009: 3-6; Brinkmann, 2013: 56; 2014: 722-724; Cunliffe, 2011: 663-664) challenges existing theory, how the latter is extended ultimately follows the path paved by its conceptual foundations. Knowledge is self-referential whereby it 'refers not only

to past knowledge but also to potential future knowledge' (von Krogh et al., 1994: 58) regardless of whether it is scholarly or not. If this was not the case, the three perspectives would have converged within the analysis of service delivery at MonTech itself. However, this happened only to a very limited extent, mostly through the recognition of the practicality of individual knowledge in the KCT-based interpretation (see 4.2.1). Regardless, this resulted in the narrowing of the conceptual gap between KCT and the two practice-based theories (i.e. CoP and LoP) by elevating the status of practice from being a mere representation of individual knowledge (see 2.4.1.1). A more complete convergence could have not been achieved through my analysis because the theoretical underpinnings of each of the traditions I drew upon not only made me see different aspects of service delivery at MonTech, but also made it anew each time I attended to it with a different theoretical lens (see Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470). It is for this reason why my analysis produced three 'supple' (see Jackson & Mazzei, 2013: 264-266) and seemingly competing interpretations of service delivery (see 4.5.1.-4.5.3). I must emphasise that suppleness does not imply separateness. In fact, service delivery at MonTech is the thread that simultaneously weaves the KCT-, CoP- and LoP-based interpretations together, whilst also preventing any one of them from achieving the status of a 'true' representation (Jackson & Mazzei, 2012: 91; Lenz Taguchi, 2012: 274). As such, suppleness provides the means for overcoming the limitations of any particular interpretation with the help of others.

5.4.1 **KCT-based interpretation**

Despite the shift to a more practically-oriented view of individual knowledge (see 5.2.1), the explanation of service delivery at MonTech from a KCT perspective remains problematic. Specifically, it essentially depicts the software as not letting itself be known or not working as expected because the people who interact with it before or after it attains a material form do not have the knowledge which is required to make sense of the solution within their respective practice. This highlights that simply acknowledging the practicality of individual knowledge does not resolve the problem of 'infinite regress' whereby an infinite number of thoughts is necessary to perform any action (Tsoukas, 1996: 16). This can only be achieved through the recognition of the epistemic work done in course of engaging with the world in practice (Cook & Brown, 1999: 382-383, 388, 392-393; Tsoukas, 2002: 422), which constitutes one of the distinct features of practice-based theorising of organisational knowledge (e.g. CoP and LoP perspectives) (see 2.3.2).

Despite the above issue, the contribution made by KCT to the understanding of service delivery at MonTech ought not to be disregarded in its entirety since the importance of communication and meaning, on which the KCT-based interpretation focuses (see 4.5.1.3), cannot be completely ignored. This is the case because of the extent to which service delivery at MonTech relies on asynchronous dialogical exchanges between the people contributing to it, which pertain to practices in which they do not jointly participate. Although dialogue is critical to developing awareness of what pragmatic considerations set them apart in a manner consistent with CoP literature (see Carlile, 2004: 562-563; Swan et al., 2007: 1817), this is not its only significance to service delivery at MonTech. As the KCT-based interpretation of service delivery illustrates (see 4.5.1), what is being conveyed in dialogue, as well as how differences in meaning affect dialogue and the utility of what is being communicated to its recipients are equally important considerations as far as both the solution and its delivery process are concerned. Correspondingly, it is necessary to consider how articulations convey knowledge of practice in which their intended recipients are not involved themselves rather than only explore dialogue as part of practice (see Gherardi, 2006: 85-88; Gherardi et al., 1998: 275, 277, 283; Gherardi & Nicolini, 2002a: 206-210) or as a means of representing one's knowledge and making it available to others in order to allow them to recognise, scrutinise and understand differences in ways of knowing (Boland & Tenkasi, 1995: 358-359; also Bechky, 2003a: 314), which is the case in CoP literature.

Although the KCT perspective directs our attention to what is being said, its suitability for the recipient and how meaning motivates particular utterances and responses, its explanation of these issues continues to suffer from two limitations. Firstly, while my elaboration of the KCT perspective recognises that practicality of individual knowledge is at the heart of meaning-based tensions and communication problems thwarting service delivery, it does not explain how those differences arise as a result of the involvement of practice in the construction of individual knowledge. Thus, the KCT-based interpretation continues to suffer from the same limitation as all cognitive approaches – it fails to explain ‘what makes people act and form goals in the first place’ (Engeström, 1995: 410-411). Secondly and relatedly, it does not satisfactorily explore how these tensions are acted on and what effect those actions have on the service delivery process. The latter limitation manifests in particular in how it fails to explain how the SLA and the RSD afford MonTech protection even though, as far as their content is concerned, they are relatively

ambiguous (see 4.5.1.2). Both of these issues are fleshed out in detail in the other theoretical interpretations of service delivery at MonTech.

5.4.2 CoP-based interpretation

The CoP interpretation of service delivery at MonTech focuses on the constitutive role of power performances in its organising (see 4.5.2.3). Its fundamental argument – that differences in meaning between participants in MonTech’s client projects are derived from their involvement in distinct practices across the two participating organisations (Brown & Duguid, 2001: 202; Carlile, 2002: 446; Tsoukas, 2002: 421, 423) – can be drawn upon to overcome the first limitation of the KCT interpretation of the case (see 5.4.1). The thorough analysis of the dynamics of power performances (see 4.5.2.1) and use of boundary objects within them (see 4.5.2.2) it offers, not only provides insights relevant to the second omission of the KCT-based interpretation, but yields further unanticipated ideas pertaining to one of the findings that did not appear to be problematic in it at all. Specifically, it reveals that the consensus that enables the three areas of service delivery at MonTech to effectively work together is not as egalitarian as it first may seem. Although Development, Support and the Helpdesk are content with it (i.e. they perceive it as consensus) it is actually the outcome of historically constituted and continuously reproduced power relations with MonTech characterised by the primacy of Development practice (see 4.5.2.1).

Asserting that the CoP interpretation provides insights that supplement and go beyond those offered by the KCT-based reading of service delivery at MonTech is not indicative of its superiority. On the contrary, both interpretations build on each other. Specifically, although my analysis with a CoP lens acknowledges that knowledge articulations (Carlile, 2004: 562-563; Swan et al., 2007: 1817) and boundary objects (Carlile, 2002: 451-453; 2004: 559-560; Fox, 2011: 72; Lainer-Vos, 2013: 515-516; also Star & Griesemer, 1989: 393) sensitise collaborators to pragmatic differences between them, it does not explain how practice becomes represented in utterances and material artefacts. As previously indicated, explanation of these processes is central to my KCT-based reading of the data (see 5.4.1). Moreover, the CoP interpretation suffers from further limitations that the LoP-based analysis of service delivery at MonTech can help overcome. The first one stems from the former’s traditional disregard for the active role of the material world (Fenwick et al., 2012: 5; Fox, 2000: 863-864; Nicolini, 2012: 86, 94-95), which results in the solution being provided itself being largely absent from the analysis despite extensive

consideration of the role played in power performances by its representations, as boundary objects (see 4.5.2.2). Naturally, with the help of the concept of epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005), the post-humanist orientation of the LoP perspective (see 2.4.3.3 and 2.5.2.3) enables these issues to be elucidated in its corresponding interpretation of service delivery (see 4.5.3.1). However, it could also be argued that even the KCT-based interpretation provides relevant insights considering that it features the solution extensively as an object of activity around which dialogue between participants in service delivery revolves (see 4.5.1.1). Turning to the second limitation, while the notion of practices being ‘at stake’ is central to the explanation offered by the CoP-based reading of the empirical material, it is still insufficient as far as explaining how the actors involved in service delivery at MonTech behave is concerned. In the extant CoP literature, threat to a practice stems from incongruity between practices which becomes apparent at pragmatic boundaries (see Carlile, 2002: 446; 2004: 559-560). However, within service delivery at MonTech, experiences of threat to one’s practice are also associated with the possibility of work being done on one project having a negative impact on others. As a locally-focused form of practice-based theorising (see Marabelli & Newell, 2012: 20; Nicolini et al., 2015: 24), the CoP perspective fails to explore this issue in sufficient detail. Again, by recognising that the ordering of the world in local practices (Gherardi, 2006: 35) cannot be understood without the consideration of the network of practices in which they are embedded (Nicolini, 2012: 174; also Schatzki, 2001: 63), the LoP-based interpretation of service delivery is able to provide these missing insights (see 4.5.3.2)

5.4.2 LoP-based interpretation

As can be implied from the preceding discussion of the limitations of the KCT- (see 5.4.1) and CoP-based (see 5.4.2) interpretations, one of the major contributions the LoP perspective makes towards understanding service delivery at MonTech and its organising stems from its post-humanist orientation (see 2.4.3.3 and 2.5.2.3). On the one hand, this enables appreciating how the various artefacts involved in service delivery, including the SMS and the DBMT, shape and constrain possibilities for action (Manidis & Scheeres, 2013: 1243-1244; also Bruni et al., 2007: 92, 94, 97-98; Nicolini, 2012: 185; Orlikowski, 1992: 411, 416). On the other, the software itself is elevated from a background role through its recognition as an epistemic object (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005). This enables accounting for how its continuous unfolding shapes the service delivery process (see 4.5.3.1). Firstly, it explains

the importance of the client's technical staff's commitment to the solution. Secondly, it elucidates why MonTech insist on rigorous Acceptance Tests being performed, as well as the extent of protection afforded to them by RSDs and SLAs. Thus, the LoP perspective enables overcoming the limitations inherent in the KCT and CoP literatures pertaining to the inadequate treatment of the material world (see 2.5.2.1 and 2.5.2.2). I must emphasise that while this could have been anticipated in case of the latter on the basis that this limitation of the CoP perspective is widely acknowledged (see Fenwick et al., 2012: 5; Fox, 2000: 863-864; Nicolini, 2012: 86, 94-95), it was somewhat unexpected as far the KCT-based interpretation of service delivery at MonTech is concerned. Reflective of the fact that KCT literature does not scrutinise the appropriateness of how the material aspects of the world have been incorporated in its reasoning, my interpretation of service delivery from this perspective seemed unproblematic on its own. Rather, this limitation was exposed via the LoP-based interpretation.

A further contribution of the LoP perspective pertains to the limitations I identified in the final paragraph of my discussion of the suppleness of the KCT-based reading of the empirical material (see 5.4.1) – its failure to explain 'what makes people act and form goals in the first place' (Engeström, 1995: 410-411). As I already discussed in the immediately preceding section, even though the CoP-based interpretation offers some relevant insights with regard to this issue, it does not acknowledge the significance of the fact that MonTech deliver services concurrently to multiple clients and the implications this has for the service delivery process (see 5.4.2). The concept of positionality, which I introduced within my LoP-based interpretation of the empirical material, enables overcoming this limitation by recognising that in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice. Overall, this reveals that the organising of service delivery at MonTech reflects the paradox whereby to deliver their services concurrently to multiple clients they must act in a way which is not entirely in the best interest of any one of them.

While the LoP-based reading of service delivery at MonTech provides a remedy for the limitations of the other two interpretations, it suffers from a major flaw itself, which stems from 'zooming out' to examine connections between practices forming a landscape (Nicolini, 2009a: 1392, 1401-1402, 1407; 2012: 213. 219-220). The price paid for developing a better understanding of the forces that make people involved in service delivery act in specific ways, via the appreciation of the differential incorporation of the

structures of their local practices (Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62) and the arrangement of the landscape of practices in which they are embedded (see 4.5.3.2) in their minds, is the concealment of the particularities of local practicing (Nicolini et al., 2018: 318). Arguably, if it is recognised that the stability and change of practice arrangements hinges on human (in)action (see Schatzki, 2005: 476, 480; Nicolini, 2012: 164, 169-170), then local happenings whether they pertain to disagreements, which the KCT perspective elucidates, or ‘contests of power’ (Mørk et al., 2010: 576), which a CoP-based theoretical lens accentuates, cannot be disregarded.

5.5 A possession-and-practice-based perspective

What becomes apparent from my discussion of the ‘suppleness’ (see Jackson & Mazzei, 2013: 264-266) of the three interpretations of service delivery at MonTech is that each theoretical perspective does in its intra-action with the empirical material (Jackson & Mazzei, 2012: ix, 3; 2013: 262, 264-265, 269; Davies, 2014: 470) what the others cannot because of its distinct conceptual foundations. This is the reason why the organising of service delivery at MonTech is simultaneously explicable in terms of: 1) subjective experiences and meanings, as well as articulations made in dialogical exchanges (see 4.5.1); 2) power performances involving boundary objects through which the primacy of Development practice is established and perpetuated (see 4.5.2); and 3) differences in the influences of material performativity and human agency, with the latter explained via reference to the arrangement of the landscape of practices comprising service delivery (see 4.5.3). In light of the unique, complementary contributions made by the KCT, CoP and LoP perspectives towards developing a comprehensive understanding of service delivery at MonTech, it is difficult to resist the temptation of attempting to synthesise them within a single approach to the study of organisational knowledge. However, there are several reasons why any form of integration should not be pursued and, instead, possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) theorists should more willingly engage in dialogue.

Firstly, the pursuit of synthesis or any other form of integration, such as subsuming one approach under another, would contradict Easterby-Smith et al.’s (1998: 261-262) call for dialogue among the perspectives comprising the critique of the view of organisational knowledge associated with strategic management literature. Arguably, in all

circumstances, integration does not facilitate discourse across competing theoretical traditions as much as replaces them with a new perspective based on a different set of assumptions. As I previously explained, this was one of the problems with Cook and Brown's (1999) attempt to bridge the epistemologies of practice and possession (see 2.3.3.3). Even if this pitfall is avoided, a potential integrated perspective may quite simply be too broad in scope or too unwieldy depending on the inquiry at hand.

Secondly, integration of possession- and practice-based theorising would first require integration of the latter. This would undermine over twenty years of intellectually stimulating debate within practice-based theorising of organisational knowledge (see 2.3.3.1). It would also disregard the fact that the strength of practice-based theorising stems from the plurality of approaches comprising it (see Blackler et al., 2000: 297-298; Miettinen, 1999: 171, 174-179, 181-182; 185, 191-192; Nicolini, 2012: 1, 9-10, 213; Swan et al., 2007: 1833).

While development of a synthetic or integrated possession-and-practice-based perspective may not be desirable or feasible, this does not imply that the two approaches to the study of organisational knowledge should continue to develop in relative isolation (see 2.3.3.3). As my analysis of service delivery at MonTech illustrates, possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) perspectives can be deployed together to develop increasingly comprehensive understandings of empirical phenomena. Naturally, the conceptual differences between them are incomparably greater than those separating the different strands of practice-based theorising (see 2.3.1 and 2.3.2). However, this does not preclude the possibility of mutual engagement with their respective foundations through dialogue, which can be facilitated in three ways. Firstly, discourse between possession- and practice-based theorising may be engaged in through the complementary use of lenses based on approaches associated with both of them within a single study. My research serves as an exemplar of this approach, whilst also being an extension of Nicolini's (2009, 2012) similar efforts within practice-based theorising. Secondly, it may be facilitated through an in-depth theoretical comparison, which is not oriented towards the attainment of intellectual dominance (e.g. Gherardi, 2000a; Tsoukas, 1996), but appreciation of differences, such as the ones carried out by Miettinen (1999) and Nicolini (2012) within practice-based scholarship. Thirdly and finally, interdisciplinary dialogue may accompany conceptual borrowing between possession- and practice-based perspectives. However, this must invariably involve a close consideration of the potential

tensions between the approaches involved in the borrowing (see Easterby-Smith et al., 1998: 262; Ewenstein & Whyte, 2009: 8-10; Scoles, 2018: 274-278).

6 Conclusions

6.1 Introduction

The purpose of this chapter is to bring my thesis to a conclusion and offer some closing remarks. I begin with a summary of the key findings of my analysis of service delivery at MonTech and their discussion in relation to the research objective of the thesis – to reinvigorate dialogue between possession- and practice-based theorising of organisational knowledge (see 6.2). I subsequently outline the theoretical, empirical and methodological contributions of the current study (see 6.3). I then proceed to discuss its limitations (see 6.4) before offering future recommendations (see 6.5).

6.2 Summary of key findings

The objective of the current research was to reinvigorate dialogue between possession- and practice-based theorising of organisational knowledge (see 1.4.1), with the former represented by KCT and the latter by the CoP and LoP perspectives. The study succeeded in realising this objective by providing answers to the four research questions I had set, which pertained to the explanatory potential of each perspective, as well as their complementarity in explaining the organising of service delivery at MonTech (see 1.4.2). Diffractive analysis was crucial to this effort since it enabled the development of an understanding of service delivery at MonTech, which simultaneously retained and went beyond both the theory and the empirical material ‘plugged into’ within the analysis (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271) (see 1.5.2, 3.6.1.2 and 3.6.2).

6.2.1 Uniqueness of individual interpretations

Firstly, the KCT-based interpretation revealed that making knowledge increasingly explicit (see Nonaka, 1991: 98; 1994: 16, 19, 25; Nonaka & von Krogh, 2009: 637, 640-641) was not only integral to the progression of the service delivery process within individual client projects but was also instrumental to the coordination of activity across projects. However, it also highlighted a number of reasons why articulations of customers’ needs and problems were limitedly useful to MonTech. This often made it necessary for

MonTech's members to seek clarifications from the client's staff, thus explaining the iterative nature of the service delivery process, as well as MonTech's preference for having as much direct access to the customer site as possible (see 4.5.1.1). Furthermore, the KCT theoretical lens elucidated the inherent incongruity of the meanings that were brought together within individual projects. This provided insights as to why MonTech were willing to alter the design of their software in order to restrict their reliance on third-party infrastructure providers, as well as why they were reluctant to rely on distributors in service delivery (see 4.5.1.2). As I explained in Chapter 6, all of these issues could be regarded to be the consequences of the practicality of individual knowledge (see 5.2.1).

Secondly, the CoP-based analysis highlighted that the manner in which Development, Support and the Helpdesk interacted with the organisation's clients was a reflection and perpetuation of the historically constituted and continuously reproduced power dynamics between them within MonTech. Overall, the primacy of the Development team's practice was being projected onto the relationship with each client by Support and the Helpdesk in course of their own practicing (see 4.5.2.1). The notion of practice and knowledge invested in it being 'at stake' in interactions between CoPs (see Carlile, 2002: 444-446; 2004: 559-560) was instrumental to explaining how this occurred. The explanation focused on the power effects produced in interactions involving boundary objects (see 4.5.2.2), which ultimately reified (see Wenger, 1998: 58) the practice of Development, but featured in interactions between Support, the Helpdesk and the client's technical staff (see Cox, 2005: 531; Wenger, 1998: 206). Overall, the organising of service delivery was presented as a political process characterised by attempts to enrol, challenge and control others (Fox, 2000: 863; Mørk et al., 2010: 587; Mørk et al., 2012: 281-283; Orr, 2006: 1809).

Thirdly and finally, the LoP-based interpretation of service delivery was unique in two ways. On the one hand, its post-humanist orientation (see 2.3.2.3 and 2.4.3.3) allowed it to elucidate that the organising of service delivery at MonTech was not explicable solely in terms of human actions. In particular, with the help of the concept of epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005), it revealed how, through its gradual unfolding, the solution being delivered exercised influence over how service delivery proceeded, including what type of commitment was sought from the client's technical staff, how certain activities were emphasised and the manner in which RSDs and SLAs were used by MonTech for protection (see 4.5.3.1). On the other hand, through the introduction of the concept of positionality, which conveys

the idea that in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice, the LoP interpretation revealed that the manner in which individuals from both MonTech and the client organisation acted towards each other and the tensions this created were a reflection of the translocal (Nicolini et al., 2018: 307; 310, 319; also Nicolini, 2011: 603-605, 614-615; Schatzki, 2001: 51, 61) nature of service delivery (see 4.5.3.2).

6.2.2 Complementarity and potential for dialogue

While the preceding section summarises how the theoretical lenses derived from the KCT, CoP and LoP literatures illuminated different aspects of service delivery at MonTech, what is more important as far as the objective of reinvigorating discourse between possession- and practice-based theorising of organisational knowledge is concerned, is that neither one of them was able to capture and explain service delivery at MonTech and its organising in its full complexity. As indicated in the preceding chapter, because what constitutes data in general and good data in particular is ascertainable only through recourse to theory (St. Pierre & Jackson, 2014: 715-716), the three lenses did not direct my attention to the same aspects of the phenomenon I was investigating. Moreover, even though the KCT perspective converged to some extent with the two practice-based theories (i.e. CoP and LoP) because of the emphasis on the practicality of personal knowledge, which transpired in its corresponding interpretation (see 5.2.1), each of the three theory-imbued explanations of service delivery at MonTech was partial at best (see 5.3). This was a consequence of the limitations stemming from their conceptual foundations. Nevertheless, the three interpretations were complementary in the sense that they helped overcome each other's shortcomings (see 5.4). This insight made it possible for me to argue that possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) approaches to the theorising of organisational knowledge could be deployed alongside each other to develop increasingly comprehensive understandings of empirical phenomena. Thus, I was able to demonstrate that the reversal of the historical alienating tendencies (see 2.3.3.3), which drove them apart, was not only possible, but also desirable (see 5.5).

6.3 Contributions

6.3.1 Theoretical

While the main theoretical contribution of my thesis lies in demonstrating that dialogue between possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) perspectives is possible and desirable (see 5.5), it also provides insights relevant to the three strands of theory I brought together for this purpose. Recognising that diffractive analysis generates understandings that push theory and the empirical material beyond their limits and open them up beyond their ordinary, easy sense while preventing the analysis from straying away from either (Jackson & Mazzei, 2012: 137-138; Lenz Taguchi, 2014: 271-272; also Kvale & Brinkmann, 2009: 238-239; Langley, 1999: 699, 706), it seems appropriate to discuss the contributions I made to the individual theoretical strands first.

6.3.1.1 *KCT literature*

Having acknowledged the practicality of individual knowledge, my research highlights the role of practice in its formation. Thus, it provides some clarification with regard to the often taken-for-granted claim that knowledge reflects a person's commitment to particular practices (Essers & Schreinemakers, 1997: 25; Nonaka, 1991: 98; 1994: 24; Spender, 1996a: 68, 71; 2003: 273-274). In course of doing this, it aligns KCT more closely with the idea expressed in practice-based theorising that what individuals know tacitly is derived from practice (see Tsoukas, 1996: 16-17; 2009: 943), albeit without rejecting the possibility of knowledge existing as a substance in its entirety (Gherardi, 2006: 19).

Consequently, it sheds new light on the challenges involved in the development of material artefacts, focusing on tools which are used by humans rather than replicate their actions (Gourlay, 2006; Nonaka, 1991; Ribeiro & Collins, 2007). It also expounds on the limits of articulation of individual knowledge (see Balconi, 2002: 360; Cohendet & Steinmueller, 2000: 206; Cowan et al., 2000: 217; Gourlay, 2006: 1422) and provides new insights with regard to the use of dialogue in interdisciplinary work, which challenge its idealistic portrayal in the extant KCT literature (see Kodama, 2005: 904-905; Nonaka, 1994: 21, 24-25; Nonaka & Konno, 1998: 47; Nonaka & Toyama, 2003: 5, 9; 2005: 421-422; Tsoukas, 2009: 942-949).

6.3.1.2 CoP literature

My research contributes to the practice-focused variety of CoP theory (e.g. Contu & Willmott, 2000; 2003; Gherardi, 2006; Gherardi et al., 1998; Gherardi & Nicolini, 2002b; Nicolini, 2012). Specifically, it builds on analyses of power in work involving multiple CoPs (Bechky, 2003b; Carlile, 2002; 2004; Contu, 2014; Hawkins et al., 2017; Mørk et al., 2010), contributing further insights as to how practicing generates power effects.

Specifically, my research extends the idea that practices, as well as knowledge and identities derived from participation in them, are 'at stake' at pragmatic boundaries (see Carlile, 2002: 444-446; 2004: 559-560). As my analysis suggests, it is not only the practices of the interacting parties that may be under threat. Moreover, it is possible for the empowered position of a particular practice to be actively reconstituted in the work of others, which is consistent with the idea that 'practices perform power effects within and across CoPs' (Mørk et al., 2010: 587; also Lave & Wenger, 1991: 36). As indicated in the extant literature (e.g. Bechky, 2003b; Hawkins et al., 2017, Huvila, 2011), such power effects are often produced with the help of boundary objects. However, their use is not limited to the reinforcement or alteration of existing power relations (Bechky, 2003b: 724-725, 728, 735, 746; Hawkins et al., 2017: 293-297), but also their initial construction in a manner consistent with the notion of anticipative performativity (Barley, 2015: 1612-1615, 1624-1626). Relatedly, their capacity to contribute to the performance of power effects is not explicable solely in terms of their interpretive flexibility (Hawkins et al., 2017: 295), but also with regard to the extent to which they reify particular practices (see Wenger, 1998: 58-70).

6.3.1.3 LoP literature

My research makes a two-fold contribution to the literature I drew upon in defining the LoP perspective in the current study (see 2.4.3, 2.5.1.3, 2.5.2.3 and 2.5.3.3).

Firstly, it provides new insights with regard to the concept of epistemic objects (Ewenstein & Whyte, 2009; Knorr Cetina, 1997; 1999; 2001; Rheinberger, 1992; 2005) pertaining to situations in which their unfolding ontology is not universally recognised, thus preventing them from contributing towards the coordination of activity among collaborators (Ewenstein & Whyte, 2009: 21; Nicolini et al., 2012: 619-620, 626; Nerland, 2018: 346). As my analysis indicates, whether they are successfully unravelled or not, as well as how their unfolding proceeds, in such circumstances, may depend on the efforts

of the collaborating parties to secure the continuous, simultaneous, object-committed involvement of others.

Secondly, through the introduction of the concept of positionality (see 4.5.3.2), my research extends the Schatzkian (2001; 2005; 2006) explanation of human conduct, focusing on the manner in which practical intelligibility (i.e. knowingly performing actions which make sense for a person to do) (Schatzki, 2001: 55) is mentally determined (Schatzki, 2001: 56). Specifically, the concept of positionality extends the argument that people's mental states are the product of differential incorporation of the structure of the practices in which they engage in their mind (see Schatzki, 2005: 480-481; also Schatzki, 2001: 61-62; Shotter & Tsoukas, 2014: 383; Tsoukas, 1996: 20; Yanow & Tsoukas, 2009: 1349) in a manner consistent with the notions of site-ness (Nicolini, 2011; Schatzki, 2001; 2005) and translocality (Nicolini et al., 2018) whereby understanding knowing in a landscape of practices requires accounting for the connections between its local instances (Gherardi, 2006: 194, 215; Nicolini et al., 2015: 8; Schatzki, 2005: 476). This enables appreciating that in knowingly performing actions which make sense for them to perform, people reconstitute connections between practices which transpire the most profusely in their local practice.

6.3.1.4 Dialogue between possession- and practice-based theorising

The main contribution of my thesis pertains to the interaction between possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) theorising of organisational knowledge. By demonstrating how perspectives associated with both of them can be used productively and complementarily to develop an increasingly comprehensive understanding of the same empirical phenomenon, it advocates greater dialogue between them in the spirit of the call made by Easterby-Smith et al. (1998: 261-262). In doing this, it constitutes the first step in the reversal of the historical alienating tendencies which drove them apart, which transpire through practice-based scholars' attempts to dismiss possession-based theorising altogether (see Gherardi, 2000a: 211; Collins, 2001: 122-123; Tsoukas, 1996: 13-15; Turner, 2001: 138) or portray it as inferior to practice-based explanations of organisational knowledge (see Blackler, 1995: 1033-1035; Blackler et al., 2000: 298; Engeström, 1995: 410-411; 2000: 967-968; 2001: 151; Gherardi & Nicolini, 2002a: 192-194; Giroux & Taylor, 2002: 499-503).

6.3.2 Empirical

In light of the theoretical orientation of my thesis, it is difficult for me to claim any empirical contributions. Nevertheless, it seems appropriate for me to highlight some notable differences between my study and the extant research on the delivery of KIBS, which relied on the conceptualisation of organisational knowledge advocated by strategic management scholars (see 2.2.1). As aforementioned (see 1.3), consideration of knowledge in the explanations of service delivery processes in these publications revolved around organisational- and inter-organisational-level constructs, including characteristics of desirable clients and tools for managing them (Bettencourt et al., 2002), innovation modes and strategies (Corrocher et al., 2009; Freel, 2006; Leiponen, 2006; Möller, Rajala & Westerlund, 2008), learning strategies (Leiponen, 2006), knowledge exchange strategies (Landry, Amara & Doloreux, 2012), variability in intensity of client involvement (Lehrer et al., 2012) and trust mechanisms (Scarso & Bolisani, 2012). As with the strategic management literature in general, this indicates a managerialist orientation of these explanations (see 2.2.1-2.2.2). In comparison, owing to its embeddedness in the critique of the conceptualisation of knowledge associated with it, my research highlights that the knowledge and knowing involved in the delivery of KIBS cannot be adequately explained in terms of managerial attempts to exercise control via rules, blueprints and plans (Nicolini, 2012: 2). Rather, appreciating it in its full complexity requires consideration of the social practices and social interactions (Charreire Petit & Huault, 2008: 76-77; Tsoukas, 2009: 941) comprising the service delivery process. Arguably, this understanding is more consistent with the sceptical perspective on KIBS, which emphasises the coexistence of competing interests, use of rhetoric, asymmetric power relations, and client management and manipulation efforts on part of the practitioners involved in the provision of KIBS (see Alvesson, 1993: 1007-1008; 2004: 26, 29, 72-73, 82-86, 88-89, 102-103, 113-117; 2011: 1649, 1651).

6.3.3 Methodological

Although the overall quality of the methodological contributions made by my thesis can be questioned as a result of the limited volume of empirical material I was able to collect because of access-related difficulties (see 3.5.2, 3.5.3, 3.5.4.1), I would like to highlight that, to the best of my knowledge, my research constitutes the first attempt to employ diffractive analysis (Davies, 2014; Jackson & Mazzei, 2012, 2013; Lenz Taguchi, 2012; Mazzei, 2014) in the field of organisation, management and business studies. Its strength

stems from how the iterative interplay between data and theory afforded by abductive reasoning (see Alvesson & Sköldbberg, 2009: 3-6; Brinkmann, 2013: 56; 2014: 722-724; Cunliffe, 2011: 663-664) is operationalised. As aforementioned, asking analytical questions, based on selected theoretical concepts, of the empirical material and developing alternative explanations by providing answers to them (Davies, 2014: 740; Kvale & Brinkmann, 2009: 236-237; Jackson & Mazzei, 2012: 13; 2013: 264; Mazzei, 2014: 744) is intended to irrupt understanding rather than confine it to a fixed, organised system (Jackson & Mazzei, 2012: 4-6, 9-10, 12, 14, 34, 137-138; 2013: 263-265, 269; see also Davies, 2014: 734-735, 740; Lenz Taguchi, 2014: 274-275; Mazzei, 2014: 742-744). This renders diffractive analysis ideally suited to research which attempts to examine the relationship between competing theoretical perspectives, such as the current study. The reason why this is the case can be attributed to how diffractive analysis facilitates theorising through three types of breakdowns.

The first one is the one typically associated with abductive reasoning whereby theory is challenged by the empirical material, thus prompting creation of new constructs or redevelopment of existing ones (see Alvesson & Sköldbberg, 2009: 3-6; Brinkmann, 2013: 56; 2014: 722-724; Cunliffe, 2011: 663-664). My individual engagements with the KCT, CoP and LoP literatures involve this type of breakdown (see 5.2). The other two are specific to diffractive analysis and entail breakdown by another theoretical interpretation (i.e. by empirical material that 'became' with another theory) from which diffractive analysis derives its irruptive qualities. Some of these can be anticipated on the basis of extant literature. For example, I could have anticipated that the LoP interpretation would have elucidated a completely different understanding of how the solution being provided featured in MonTech's service delivery process, in comparison with the CoP-based theoretical reading, on the basis of the former's unique, post-humanist orientation (see 2.3.2.3 and 2.4.3.3) as well as the widely acknowledged under-theorisation of the material world in the latter (Fenwick et al., 2012: 5; Fox, 2000: 863-864; Nicolini, 2012: 86, 94-95). Speculatively, similar insights could be produced through conceptual borrowing from competing perspectives (see Easterby-Smith et al., 1998: 262). However, other breakdowns by theoretical interpretation cannot be as easily predicted. Moreover, they have the ability to alter our understanding of what are the limitations of the perspectives 'plugged' into the analysis. This form of breakdown is evident in the manner in which the LoP interpretation invited me to reflect on the taken-for-granted treatment of the material

world in KCT literature and its corresponding interpretation of service delivery at MonTech (see 5.4.2).

6.4 Limitations

As aforementioned, because epistemologically interpretive research can only generate accounts that are made possible by the complex assumptions of the particular theoretical approach rather than real pictures of organisations (Contu & Willmott, 2000: 273), it cannot be evaluated using traditional criteria associated with positivism (see Guba & Lincoln, 2005: 205-209; Johnson, Buehring, Cassell & Symon, 2006: 133). However, a universal set of criteria for the evaluation of non-positivist research does not exist. Rather, what constitutes good research is determined by the philosophical assumptions of the particular study (Johnson et al., 2006: 133). On the basis of my repudiation of any representational aspirations (see Guba & Lincoln, 2005: 205, 208-209; Johnson et al., 2006: 144), which transpires through my epistemological stance (see 3.2.2), the adoption of an interpretive case study research strategy (see 3.3.2.1) and employment of diffractive analysis (see 3.6.1.2 and 3.6.2) in the current study, it seems appropriate to evaluate the quality of my research from a postmodernist standpoint (see Johnson et al. 2006: 143-145).

While some postmodernists consider the existence of any evaluation criteria to be a 'modernist (i.e. positivist) anachronism' (*ibid.*: 144), I believe that postmodernist research must be authentic whereby it produces interpretations which are trustworthy, defensible, reflexive, rigorous and informative to participants (Guba & Lincoln, 2005: 205-210), whilst also being subversive whereby they reveal the multiplicity of meaning at the level of both the investigated empirical phenomenon and its interpretation (*ibid.*: 208-209; Johnson et al., 2006: 145-146). Arguably, although the extent to which I went in documenting how my theorising of service delivery proceeded (see 3.6.2 and 4.1) contributes to the rigour and trustworthiness of my interpretations (see Lincoln & Guba, 2005: 207), as well as renders my study informative to its participants by allowing them to draw their own naturalistic generalisations (see Flyvbjerg, 2006: 222, 238-239; Stake, 1978: 6-7; 1995: 85-88; 2008: 134; Thomas, 2011: 31-32), the quality of the empirical material I had collected casts a shadow on the particulars of service delivery at MonTech revealed through my analysis. As aforementioned, my research does not conform with the standards of empirical rigour associated with practice-based theorising, as a result of

its strong association with observational methodologies (see Bechky, 2003: 1758-1759, 1761; Feldman & Orlikowski, 2011: 1249; Nicolini, 2009b: 202-203; 2012: 63, 218; Yanow, 2006: 1746, 1748). In fact, it is also possible to question whether its portrayal of service delivery at MonTech meets the standard of descriptive richness expected from interpretive case study research (see Creswell, 2007: 75; Flyvbjerg, 2006: 237-238; Stake, 1995: 63-64; 2008: 125, 127). Nevertheless, I do not believe that its empirical shortcomings should result in the dismissal of its primarily theoretical contributions.

6.5 Future recommendations

Perhaps the greatest problem with diffractive analysis (Davies, 2014; Jackson & Mazzei, 2012, 2013; Lenz Taguchi, 2012; Mazzei, 2014) is that it opens too many possible avenues to explore. Correspondingly, with the objective of the current study being the reinvigoration of dialogue between possession- (e.g. KCT) and practice-based (e.g. CoP and LoP) approaches to the theorising of organisational knowledge, its contributions to the individual strands of theory it brought together are somewhat underdefined. In light of this, KCT scholars may wish to unravel further the notion of practicality of individual knowledge to better understand its implications for the creation of material artefacts, negotiation of meaning and dialogue (see 5.2.1 and 6.3.1). Simultaneously, the manner in which non-humans, as boundary objects and reifications of particular practices at once, contribute towards the production of power effects in interdisciplinary collaboration may merit closer consideration from a CoP perspective (see 5.2.2 and 6.3.2). Moreover, LoP scholars may wish to explore the utility of the concept of positionality in other contexts, as well as provide further insights with regard to the role epistemic objects play in interdisciplinary work in which continuous, simultaneous and object-committed involvement is uncertain (see 5.2.3 and 6.3.3). Finally, as my thesis advocates, possession- and practice-based scholars should more willingly engage in dialogue between their respective perspectives (see 5.5).

REFERENCES

- Alliance Manchester Business School (2016). *Ethical approval for research involving human participants: Guidelines for postgraduate research students*.
- Alvesson, M. & Sköldbberg, K. (2009). *Reflexive methodology: New vistas for qualitative research* (2nd ed.). London, UK: SAGE.
- Alvesson, M. (1993). Organizations as rhetoric: Knowledge-intensive firms and the struggle with ambiguity. *Journal of Management Studies*, 30(6), 997-1015.
- Alvesson, M. (2004). *Knowledge work and knowledge-intensive firms*. Oxford, UK: OUP.
- Alvesson, M. (2011). De-essentializing the knowledge intensive firm: Reflections on sceptical research going against the mainstream. *Journal of Management Studies*, 48(7), 1640-1661.
- Alvesson, M., Hardy, C. & Harley, B. (2008). Reflecting on reflexivity: Reflexive textual practices in organization and management theory. *Journal of Management Studies*, 45(3), 480-501.
- Amin, A. & Roberts, J. (2008). Knowing in action: Beyond communities of practice. *Research Policy*, 37, 353-369.
- Angrosino, M. V. & Mays de Pérez, K. A. (2000). Rethinking observation: From method to context. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 673-702). London, UK: SAGE.
- Annels, M. (1996). Grounded theory method: Philosophical perspectives, paradigm of inquiry, and postmodernism. *Qualitative Health Research*, 6(3), 379-393.
- Araujo, L. (1998). Knowing and learning as networking. *Management Learning*, 29(3), 317-336.

- Atkinson, P. & Hammersley, M. (1994) Ethnography and participant observation. In Handbook of Qualitative Research. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (pp. 248-260). London, UK: SAGE.
- Balconi, M. (2002). Tacitness, codification of technological knowledge and the organisation of industry. *Research Policy*, 31, 357-379.
- Barad, K. (2003). Posthumanist performativity: Toward an understanding of How matter comes to matter. *Signs: Journal of Women in Culture and Society*, 28(3), 801-830.
- Barley, W. C. (2015). Anticipatory work: How the need to represent knowledge across boundaries shapes work practices within them. *Organization Science*, 26(6), 1612-1628.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bate, S. P. (1997). Whatever happened to organizational anthropology? A review of the field of organizational ethnography and anthropological studies. *Human Relations*, 50(9), 1147-1175.
- Bechara, J. & Van de Ven, A. H. (2011). Triangulating philosophies of science to understand complex organizational and managerial problems. In Tsoukas, H. & Chia, R. (Eds.), *Research in the sociology of organizations* (Vol. 32, pp. 343-364). Bingley, UK: Emerald Group Publishing.
- Bechky, B. A. (2003a). Sharing meaning across occupational communities: The transformation of understanding on a production floor. *Organization Science*, 14(3), 312-330.
- Bechky, B. A. (2003b). Objects lessons: Workplace artifacts as representations of occupational jurisdiction. *American Journal of Sociology*, 109(3), 720-752.
- Bechky, B. A. (2006). Talking about machines, thick description, and knowledge work. *Organization Studies*, 27(12), 1757-1768.

- Bell, E. & Bryman, A. (2007). The ethics of management research: An exploratory content analysis. *British Journal of Management*, 18, 63-77.
- Berger, P. L. & Luckmann, T. (1966). *The social construction of reality*. London, UK: Penguin Books.
- Berthoin Antal, A. & Krebsbach-Gnath, C. (2003). Consultants as agents of organizational learning: The importance of marginality. In Dierkes, M., Berthoin Antal, A., Child, J. and Nonaka, I. (Eds.) *Handbook of organizational learning & knowledge* (pp. 462-486). Oxford, UK: Oxford University Press
- Bettencourt, L. A., Ostrom, A. L., Brown, S. W. & Roundtree, R. I. (2002). Client co-production in knowledge-intensive business services. *California Management Review*, 44(4), 100-128.
- Blackler, F. & Regan, S. (2009). Intentionality, agency, change: Practice theory and management. *Management Learning*, 40(2), 161-176.
- Blackler, F. (1993). Knowledge and the theory of organizations: Organizations as activity systems and the reframing of management. *Journal of Management Studies*, 30(6), 864-884.
- Blackler, F. (1995). Knowledge, knowledge work and organizations: An overview and interpretation. *Organization Studies*, 16(6), 1021-1046.
- Blackler, F., Crump, N. and McDonald, S. (2000). Organizing process in complex activity networks. *Organization*, 7(2), 277-300.
- Blackler, F., Reed, M. & Whitaker, A. (1993). Epilogue – An agenda for research. *Journal of Management Studies*, 30(6), 1017-1020.
- Boisot, M. & McKelvey, B. (2010). Integrating modernist and postmodernist perspectives on organizations: A complexity science bridge. *Academy of Management Review*, 35(3), 415-433.

- Boland, R. J. & Tenkasi, R. V. (1995). Perspective making and perspective taking in communities of knowing. *Organization Science*, 6(4), 350-372.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Brewer, J. D. (2004). Ethnography. In C. Cassell and G. Symon (Eds.), *Essential Guide to Qualitative Methods in Organisational Research* (pp. 312-322). London, UK: SAGE.
- Bridwell-Mitchell, E. N. (2016). Collaborative institutional agency: How peer learning in communities of practice enables and inhibits micro-institutional change. *Organization Studies*, 37(2), 161-192.
- Brinkmann, S. (2013). *Qualitative interviewing: Understanding qualitative research*. Oxford, UK: Oxford University Press.
- Brinkmann, S. (2014). Doing without data. *Qualitative Inquiry*, 20(6), 720-725.
- Brooks, J. & King, N. (2012). *Qualitative psychology in the real world: The utility of template analysis*. Paper presented at the British Psychological Society Annual Conference, 18th-20th April 2012, London, UK.
- Brown, J. S. & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, 2(1), 40-57.
- Brown, J. S. & Duguid, P. (2001). Knowledge and organization: A social-practice perspective. *Organization Science*, 12(2), 198-213.
- Bruni, A., Gherardi, S. & Parolin, L. L. (2007). Knowing in a system of fragmented knowledge. *Mind, Culture, and Activity*, 14(1-2), 83-102.
- Bryman, A. & Bell, E. (2011). *Business research methods* (3rd ed., 121-146). Oxford, UK: Oxford University Press.

- Burrell, G. & Morgan, G. (1979). *Sociological paradigms and organisational analysis*. London, UK: Heinemann Educational Books.
- Calás, M. B. & Smircich, L. (1999). Past postmodernism? Reflections and tentative directions. *Academy of Management Review*, 24(4), 649-671.
- Callon, M. (1984). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. *The Sociological Review*, 32, 196-233.
- Carlile, P. R. (2002). A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, 13(4), 442-455.
- Carlile, P. R. (2004). Transferring, translating and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, 15(5), 555-568.
- Cepede, G. & Vera, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, 60, 426-437.
- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 509-536). London, UK: SAGE.
- Charmaz, K. (2005). Grounded theory in the 21st century: Applications for advancing social justice studies. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 507-536). London, UK: SAGE.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London, UK: SAGE.
- Charreire Petit, S. & Huault, I. (2008). From practice-based knowledge to the practice of research: Revisiting constructivist research works on knowledge. *Management Learning*, 39(1), 73-91.

- Chia, R. & Holt, R. (2006). Strategy as practical coping: A Heideggerian perspective. *Organization Studies*, 27(5), 635-655.
- Chou, S.-W. & Wang, S.-J. (2003). Quantifying 'ba': An investigation of the variables that are pertinent to knowledge creation. *Journal of Information Science*, 29(3), 167-180.
- Coakes, E. & Smith, P. (2007). Developing communities of innovation by identifying innovation champions. *The Learning Organization*, 14(1), 74-85.
- Cohendet, P. & Steinmueller, W. D. (2000). The codification of knowledge: a conceptual and empirical explanation. *Industrial and Corporate Change*, 9(2), 195-209.
- Collins, H. M. (2001). *What is tacit knowledge?* In Schatzki, T., Knorr Cetina, K. & von Savigny, E. (Eds.), *The practice turn in contemporary theory* (pp. 115-128). London, UK: Routledge.
- Conklin, T. A. (2007). Method or madness: Phenomenology as knowledge creator. *Journal of Management Inquiry*, 16(3), 275-287.
- Contu, A. & Willmott, H. (2000). Comment on Wenger and Yanow. Knowing in practice: A 'delicate flower' in the organizational learning field. *Organization*, 7(2), 269-276.
- Contu, A. & Willmott, H. (2003). Re-embedding situatedness: The importance of power relations in learning theory. *Organization Science*, 14(3), 283-296..
- Contu, A. (2014). On boundaries and difference: Communities of practice and power relations in creative work. *Management Learning*, 45(3), 289-316.
- Cook, S. D. N. & Brown, J. S. (1999). Bridging epistemologies: The generative dance between organizational knowledge and knowing. *Organization Science*, 10(4), 381-400.
- Cook, S. D. N. & Yanow, D. (1993). Culture and organizational learning. *Journal of Management Inquiry*, 20(4), 355-372.

- Corradi, G., Gherardi, S. & Verzelloni, L. (2010). Through the practice lens: Where is the bandwagon of practice-based studies heading. *Management Learning*, 41(3), 265-283.
- Corrocher, N., Cusmano, L. & Morrison, A. (2009). Modes of innovation in knowledge intensive business services evidence from Lombardy. *Journal of Evolutionary Economics*, 19, 137-196.
- Cowan, R., David, P. A. & Foray, D. (2000). The explicit economics of knowledge codification and tacitness. *Industrial and Corporate Change*, 9(2), 211-253.
- Cox, A. (2005). What are communities of practice? A comparative review of four seminal works. *Journal of Information Science*, 31(6), 527-540.
- Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches* (2nd ed.). London, UK: SAGE.
- Cunliffe, A. L. (2003). Reflexive inquiry in organizational research: Questions and possibilities. *Human Relations*, 56(8), 983-1003.
- Cunliffe, A. L. (2008). Orientations to social constructionism: Relationally responsive social constructionism and its implications for knowledge and learning. *Management Learning*, 39(2), 123-139.
- Cunliffe, A. L. (2011). Crafting qualitative research: Morgan and Smircich 30 years on. *Organizational Research Methods*, 14(4), 647-673.
- Czarniawska, B. (2004). On time, space, and action nets. *Organization*, 11(6), 773-791.
- Davies, B. (2014). Reading anger in early childhood intra-actions: A diffractive analysis. *Qualitative Inquiry*, 20(6), 734-741.
- Deetz, S. (1996). Describing differences in approaches to organization science: Rethinking Burrell and Morgan and their legacy. *Organization Science*, 7(2), 191-207.

- den Hertog, P. (2000). Knowledge-intensive business services as co-producers of innovation. *International Journal of Innovation Management*, 4(4), 491-528.
- Denzin, N. K. & Lincoln, Y. S. (2005). Introduction: The discipline and practice of qualitative research. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 1-32). London, UK: SAGE.
- Dougherty, D. (1992). Interpretive barriers to successful product innovation in large firms. *Organization Science*, 3(2), 179-202.
- Duff, C. & Sumartojo, S. (2017). Assemblages of creativity: Material practices in the creative economy. *Organization*, 24(3), 418-432.
- Duguid, P. (2006). What Talking about machines tells us. *Organization Studies*, 27(12), 1794-1804.
- Dyck, B., Starke, F. A., Mischke, G. A. & Mauws, M. (2005). Learning to build a car: An empirical investigation of organizational learning. *Journal of Management Studies*, 42(2), 387-416.
- Dyer, J. H. & Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*, 21(3), 345-367.
- Dyer, J. H. & Singh, H. (1998). The relational view: Cooperative strategy and sources of competitive advantage. *Academy of Management Review*, 23(4), 660-679.
- Dyer, W. G. & Wilkins, A. L. (1991). Better stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt. *Academy of Management Review*, 16(3), 613-619.
- Easterby-Smith, M., Crossan, M. & Nicolini, D. (2000). Organizational learning: Debates past, present and future. *Journal of Management Studies*, 37(6), 783-796.
- Easterby-Smith, M., Snell, R. & Gherardi, S. (1998). Organizational learning: Diverging communities of practice?. *Management Learning*, 29(3), 259-272.

- Eisenhardt, K. M. & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25-32.
- Eisenhardt, K. M. & Martin, J. A. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, 21, 1105-1121.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Engeström, Y. & Blackler, F. (2005). On the life of the object. *Organization*, 12(3), 307-330.
- Engeström, Y. (1995). Objects, contradictions and collaboration in medical cognition: An activity-theoretical perspective. *Artificial Intelligence in Medicine*, 7, 395-412.
- Engeström, Y. (2000a). Comment on Blackler et al. activity theory and the social construction of knowledge: A story of four umpires. *Organization*, 7(2), 301-310.
- Engeström, Y. (2000b). Activity theory as a framework for analyzing and redesigning work. *Ergonomics*, 43(7), 960-974.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133-156.
- Englander, M. (2012). The interview: Data collection in descriptive phenomenological human scientific research. *Journal of Phenomenological Psychology*, 43, 13-35.
- Essers, J. & Schreinemakers, J. (1997). Nonaka's subjectivist conception of knowledge in corporate knowledge management. *Knowledge Organization*, 24(1), 24-32.
- Ewenstein, B. & Whyte, J. (2007). Beyond words: Aesthetic knowledge and knowing in organizations. *Organization Studies*, 28(5), 689-708.
- Ewenstein, B. & Whyte, J. (2009). Knowledge practices in design: The role of visual representations as 'epistemic objects'. *Organization Studies*, 30(1), 7-30.
- Feldman, M. S. & Orlikowski, W. J. (2011). Theorizing practice and practicing theory. *Organization Science*, 22(5), 1240-1253.

- Fendt, J. & Sachs, W. (2008). Grounded theory method in management research: Users' perspectives. *Organizational Research Methods*, 11(3), 430-455.
- Fenwick, T., Nerland, M. & Jensen, K. (2012). Sociomaterial approaches to conceptualising professional learning and practice. *Journal of Education and Work*, 25(1), 1-13.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, 12(2), 219-245.
- Fong, P. S. W. (2003). Knowledge creation in multidisciplinary project teams: An empirical study of the processes and their dynamic interrelationships. *International Journal of Project Management*, 21, 479-486.
- Fontana, A. & Frey, J. H. (2000). The interview: From structured questions to negotiated text. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 645-672). London, UK: SAGE.
- Foucault, M. (1980). *Power/knowledge: Selected interviews and other writings 1972–1977*. London, UK: Penguin Random House.
- Foucault, M. (1984). *The history of sexuality, volume 1: An introduction*. Harmondsworth, UK: Penguin.
- Fox, N. J. (2011). Boundary objects, social meanings and the success of new technologies. *Sociology*, 45(1), 70-85.
- Fox, S. (2000). Communities of practice, Foucault and actor-network theory. *Journal of Management Studies*, 37(6), 853-867.
- Freel, M. (2006). Patterns of technological innovation in knowledge-intensive business services. *Industry and Innovation*, 13(3), 335-358.
- Friedman, V. J., Lipshitz, R. & Popper, M. (2005). The mystification or organisational learning. *Journal of Management Inquiry*, 14(1), 19-30.

- Gadrey, J. & Gallouj, F. (1998). The provider-customer interface in business and professional services. *The Service Industries Journal*, 18(2), 1-15.
- Gallouj, F. & Savona, M. (2009). Innovation in services: a review of the debate and a research agenda'. *Journal of Evolutionary Economics*, 19, 149-172.
- Gallouj, F. & Weinstein, O. (1997). Innovation in services. *Research Policy*, 26, 537-556.
- Galunic, D. C. & Rodan, S. (1998). Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation. *Strategic Management Journal*, 19(12), 1193-1201.
- Gärtner, C. (2013). Cognition, knowing and learning in the flesh: Six views on embodied knowing in organization studies. *Scandinavian Journal of Management*, 29, 338-352.
- Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist*, 40(3), 266-275.
- Gerring, J. (2004). What is a case study and what is it good for?. *American Political Science Review*, 98(2), 341-354.
- Gherardi, S. & Nicolini, D. (2002a). Learning the trade: A culture of safety in practice. *Organization*, 9(2), 191-223.
- Gherardi, S. & Nicolini, D. (2002b). Learning in a constellation of interconnected practices: Canon or dissonance. *Journal of Management Studies*, 39(4), 119-436.
- Gherardi, S. & Perrotta, M. (2014). Between the hand and the head: How things get done, and how in doing the ways of doing are discovered. *Qualitative Research in Organizations and Management*, 9(2), 134-150.
- Gherardi, S. (2000a). Practice-based theorizing on learning and knowing in organizations. *Organization*, 7(2), 211-223.
- Gherardi, S. (2000b). Where learning is: Metaphors and situated leaning in a planning group. *Human Relations*, 53(8), 1057-1080.

- Gherardi, S. (2001). From organizational learning to practice-based knowing. *Human Relations*, 54(1), 131-139.
- Gherardi, S. (2006). *Organizational knowledge: The texture of workplace learning*. Oxford, UK: Blackwell.
- Gherardi, S. (2009). Knowing and learning in practice-based studies: An introduction. *The Learning Organization*, 16(5), 352-359.
- Gherardi, S. (2016). To start practice theorising anew: The contribution of the concepts of agencement and formativeness. *Organization*, 23(5), 680-698.
- Gherardi, S. (2017). Has practice theory run out of steam?. *Revue d'Anthropologie des Connaissances*, 11(2), bk-bu.
- Gherardi, S., Jensen, K. & Nerland, M. (2017). Shadow organizing: A metaphor to explore organizing as intra-relating. *Qualitative Research in Organizations and Management*, 12(1), 2-17.
- Gherardi, S., Meriläinen, S., Strati, A. & Valtonen, A. (2013). Editors' introduction: A practice-based view on the body, sense and knowing in organization. *Scandinavian Journal of Management*, 29, 333-337.
- Gherardi, S., Nicolini, D. & Odella, F. (1998). Toward a social understanding of how people learn in organizations: The notion of situated curriculum. *Management Learning*, 29(3), 273-297.
- Gibbert, M. & Ruigrok, W. (2010). The “what” and “how” of case study rigor: Three strategies based on published work. *Organizational Research Methods*, 13(4), 710-737.
- Giddens, A. (1979). *Central problems in social theory: Action, structure and contradiction in social analysis*. Basingstoke, UK: Palgrave Macmillan.
- Giddens, A. (1984). *The constitution of society: outline of the theory of structuration*. Berkley, CA: University of California Press.

- Gill, M. J. (2015). Elite identity and status anxiety: An interpretive phenomenological analysis of management consultants. *Organization*, 22(3), 306-325.
- Gioia, D. A. & Pitre, E. (1990). Multiparadigm perspectives on theory building. *Academy of Management Review*, 15(4), 584-602.
- Giroux, H. & Taylor, J. R. (2002). The justification of knowledge: Tracking the translations of quality. *Management Learning*, 33(4), 497-517.
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. London, UK: AldineTransaction.
- Goulding, C. (2005). Grounded theory, ethnography and phenomenology: A comparative analysis of three qualitative strategies for marketing research. *European Journal of Marketing*, 39(3/4), 294-308.
- Gourlay, S. (2006). Conceptualizing knowledge creation: A critique of Nonaka's theory. *Journal of Management Studies*, 43(7), 1415-1436.
- Grandori, A. & Kogut, B. (2002). Dialogue on organization and knowledge. *Organization Science*, 13(3), 224-231.
- Grant, R. M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, 33(3), 114-135.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17, 109-122.
- Guba, E. G. & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions and emerging confluences. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 191-216). London, UK: SAGE.
- Gubrium, J. F. & Holstein, J. A. (2000). Analyzing interpretive practice. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 487-508). London, UK: SAGE.

- Hall, R. (1993). A framework linking intangible resources and capabilities to sustainable competitive advantage. *Strategic Management Journal*, 14(8), 607-618.
- Handley, K., Sturdy, A., Fincham, R. & Clark, T. (2006). Within and beyond communities of practice: Making sense of learning through participation, identity and practice. *Journal of Management Studies*, 43(3), 641-653.
- Hargadon, A. & Fanelli, A. (2002). Action and possibility: Reconciling dual perspectives of knowledge in organisations. *Organization Science*, 13(3), 290-302.
- Hassard, J. & Wolfram Cox, J. (2013). Can sociological paradigms still inform organizational analysis? A paradigm model for post-paradigm times. *Organization Studies*, 34(11), 1701-1728.
- Hassard, J. (1991). Multiple paradigms and organisational analysis: A case study. *Organization Studies*, 12(2), 275-299.
- Hawkins, B., Pye, A. & Correia, F. (2017). Boundary objects, power and learning: The matter of developing sustainable practice in organizations. *Management Learning*, 48(3), 292-310.
- Hecker, A. (2012). Knowledge beyond the individual? Making sense of a notion of collective knowledge in organization theory. *Organization Studies*, 33(3), 423-445.
- Hipp, C. & Grupp, H. (2005). Innovation in the service sector: The demand for service-specific innovation measurement concepts and typologies. *Research Policy*, 34, 517-535.
- Hipp, C., Tether, B. S. & Miles, I. (2000). The incidence and effects of innovation in services: evidence from Germany. *International Journal of Innovation Management*, 4(4), 417-453.

- Hodder, I. (2000). The interpretation of documents and material culture. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 703-716). London, UK: SAGE.
- Holt, R. & Morris, A. W. (1993). Activity theory and the analysis of organizations. *Human Organization*, 52(1), 99-109.
- Holt, R. & Sandberg, J. (2011). Phenomenology and organization theory. In Tsoukas, H. & Chia, R. (Eds.), *Research in the sociology of organizations* (Vol. 32, pp. 215-249). Bingley, UK: Emerald Group Publishing.
- Hook, G. (2015). "Plugging in" epistemology: A theoretical and methodological manoeuvre in qualitative research. *The Qualitative Report*, 20(7), 982-995.
- Huvila, I. (2011). The politics of boundary objects: Hegemonic interventions and the making of a document. *Journal of the American Society for Information Science and Technology*, 62(12), 2528-2539.
- Huzzard, T. (2004). Communities of domination? Reconceptualising organisational learning and power. *Journal of Workplace Learning*, 16(5-6), 350-361.
- Hydle, K., Kvålshaugen, R. & Breunig, K. J. (2014). Transnational practices in communities of task and communities of learning. *Management Learning*, 45(5), 609-629.
- Jackson, A. Y. & Mazzei, L. A. (2012). *Thinking with theory in qualitative research: Viewing data across multiple perspectives*. London, UK: Routledge.
- Jackson, A. Y. & Mazzei, L. A. (2013). Plugging one text into another: Thinking with theory in qualitative research. *Qualitative Inquiry*, 19(4), 261-271.
- Jackson, P. & Carter, N. (1991). In defence of paradigm incommensurability. *Organization Studies*, 12(1), 109-127.
- Jackson, P. & Carter, N. (1993). 'Paradigm wars': A response to Hugh Willmott. *Organization Studies*, 14(5), 721-725.

- Johnson, P. & Duberley, J. (2003). Reflexivity in management research. *Journal of Management Studies*, 40(5), 1279-1303.
- Johnson, P., Buehring, A., Cassell, C. & Symon, G. (2006). Evaluating qualitative management research: Towards a contingent criteriology. *International Journal of Management Reviews*, 8(3), 131-156.
- Kao, S.-C., Wu, C.-H. & Wu, P.-C. (2011). Which mode is better for knowledge creation?. *Management Decision*, 49(7), 1037-1060.
- Karataş-Özkan, M. & Murphy, W. D. (2010). Critical theorist, postmodernist and social constructionist paradigms in organizational analysis: A paradigmatic review of organizational literature. *International Journal of Management Reviews*, 12, 453-465.
- King, N. & Horrocks, C. (2010). *Interviews in qualitative research*. London, UK: SAGE.
- King, N. (2004a). Using interviews in qualitative research. In C. Cassell and G. Symon (Eds.), *Essential Guide to Qualitative Methods in Organisational Research* (pp. 11-22). London, UK: SAGE.
- King, N. (2004b). Using templates in the thematic analysis of text. In C. Cassell and G. Symon (Eds.), *Essential Guide to Qualitative Methods in Organisational Research* (pp. 256-270). London, UK: SAGE.
- Kislov, R. (2014). Boundary discontinuity in a constellation of interconnected practices. *Public Administration*, 92(2), 307-232.
- Kislov, R., Harvey, G. & Walshe, K. (2011). Collaborations for leadership in applied health research and care: Lessons from the theory of communities of practice. *Implementation Science*, 6(64), 1-10.
- Kislov, R., Walshe, K. & Harvey, G. (2012). Managing boundaries in primary care service improvement: A developmental approach to communities of practice *Implementation Science*, 7(97), 1-14.

- Knorr Cetina, K. (1997). Sociality with objects: Social relations in postsocial knowledge societies. *Theory, Culture & Society*, 14(4), 1-30.
- Knorr Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*. Cambridge, MA: Harvard University Press.
- Knorr Cetina, K. (2001). Objectual practice. In Schatzki, T., Knorr Cetina, K. & von Savigny, E. (Eds.), *The practice turn in contemporary theory* (pp. 184-197). London, UK: Routledge.
- Kodama, M. (2005). New knowledge creation through leadership-based strategic community – a case of new product development in IT and multimedia business fields. *Technovation*, 25, 895-908.
- Kodama, M. (2007). Innovation and knowledge creation through leadership-based strategic community: Case study on high-tech company in Japan. *Technovation*, 27, 115-132.
- Kogut, B. & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-397.
- Kogut, B. & Zander, U. (2003). A memoir and reflection: Knowledge and an evolutionary theory of the multinational firm 10 years later. *Journal of International Business Studies*, 34(6), 505-515.
- Koliba, C. & Gajda, R. (2010). “Communities of practice” as an analytical construct: Implications for theory and practice. *International Journal of Public Administration*, 32, 97-135.
- Kvale, S. & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing* (2nd ed.). London, UK: SAGE.
- Kvale, S. (1983). The qualitative research interview: A phenomenological and a hermeneutical mode of understanding. *Journal of Phenomenological Psychology*, 14(2), 171-196.

- Lainer-Vos, D. (2013). Boundary objects, zones of indeterminacy, and the formation of Irish and Jewish transnational socio-financial networks. *Organization Studies*, 34(4), 515-523.
- Landry, R., Amara, N. & Doloreux, D. (2012). Knowledge-exchange strategies between KIBS firms and their clients. *The Service Industries Journal*, 32(2), 291-320.
- Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691-710.
- Lämsäsalmi, H., Peiró, J.-M. & Kivimäki, M. (2004). Grounded theory in organizational research. In C. Cassell and G. Symon (Eds.), *Essential Guide to Qualitative Methods in Organisational Research* (pp. 242-255). London, UK: SAGE.
- Larsen, J. N. (2001). Knowledge, human resources and social practice: The knowledge-intensive business service firm as a distributed knowledge system. *The Service Industries Journal*, 21(1), 81-102.
- Latour, B. & Woolgar, S. (1986). *Laboratory life: The construction of scientific facts*. Princeton, NJ: Princeton University Press.
- Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Cambridge, MA: Harvard University Press.
- Latour, B. (1996a). On interobjectivity. *Mind, Culture and Activity*, 3(4), 228-245.
- Latour, B. (1996b). On actor-network theory: A few clarifications. *Soziale Welt*, 47(4), 369-381.
- Lave, J. & Wenger, E. (1991) *Situated learning: Legitimate peripheral participation*. Cambridge, UK, University of Cambridge Press.
- Lave, J. (2012). Changing practice. *Mind, Culture, and Activity*, 19(2), 156-171.
- Law, J. (1992). Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity. *Systems Practice*, 5(4), 379-393.

- Lee, G. K. & Cole, R. E. (2003). From a firm-based to a community-based model of knowledge creation: The case of the Linux kernel development. *Organization Science*, 14(6), 633-649.
- Lehrer, M., Ordanini, A., DeFillippi, R. and Miozzo, M. (2012). Challenging the orthodoxy of value-creation theory: A contingent view of co-production in design-intensive business services. *European Management Journal*, 30, 499-509.
- Leiponen, A. (2006). Managing knowledge for innovation: The case of business-to-business services'. *Journal of Product Innovation Management*, 23, 238-258.
- Lenz Taguchi, H. (2012). A diffractive and Deleuzian approach to analysing interview data. *Feminist Theory*, 13(3), 265-281.
- Levina, N. & Vaast, E. (2005). The emergence of boundary spanning competence in practice: Implications for implementation and use of information systems. *MIS Quarterly*, 29(2), 335-363.
- Lewis, M. W. & Gimes, A. J. (1999). Metatriangulation: Building theory from multiple paradings. *Academy of Management Review*, 24(4), 672-690.
- Lewis, M. W. & Kelemen, M. L. (2002). Multiparadigm inquiry: Exploring organizational pluralism and paradox. *Human Relations*, 55(2), 251-275.
- Lincoln, Y. S. (2010). "What a long, strange trip it's been...": Twenty-five years of qualitative and new paradigm research. *Qualitative Inquiry*, 16(1), 3-9.
- Linstead, S. (1997). The social anthropology of management. *British Journal of Management*, 8, 85-98.
- Majchrzak, A., More, P. H. B. & Faraj, S. (2012). Transcending knowledge differences in cross-functional teams. *Organization Science*, 23(4), 951-970.
- Manidis, M & Scheeres, H. (2013). Practising knowing: Emergence(y) teleologies, *Educational Philosophy and Theory*, 45(12), 1230-1251.

- Marabelli, M. & Newell, S. (2012). Knowledge risks in organizational networks: The practice perspective. *Journal of Strategic Information Systems*, 21, 18-30.
- Marabelli, M., Rajola, F., Frigerio, C. & Newell, S. (2013). Managing knowledge in large-scale virtual projects: A community-based approach. *International Journal of Managing Projects in Business*, 6(2), 310-331.
- Massey, A. P. & Montoya-Weiss, M. M. (2006). Unravelling the temporal fabric of knowledge conversion: A model of media selection and use. *MIS Quarterly*, 30(1), 99-114.
- Mazzei, L. A. (2014). Beyond an easy sense: A diffractive analysis. *Qualitative Inquiry*, 20(6), 742-746.
- Mengis, J., Nicolini, D. & Swan, J. (2018). Integrating knowledge in face of epistemic uncertainty: Dialogically drawing distinctions. *Management Learning*, 49(5), 595-612.
- Metcalf, J. S. & James, A. (2000). Knowledge and capabilities: A new view of the firm. In Foss, N. J. & Robertson, P. L. (Eds.), *Resources, technology and strategy: Explorations in the resource-based perspective* (pp. 31-51). London, UK: Routledge.
- Miettinen, R. & Virkkunen, J. (2005). Epistemic objects, artefacts and organizational change. *Organization*, 12(3), 437-456.
- Miettinen, R. (1999). The riddle of things: Activity theory and actor-network theory as approaches to studying innovations. *Mind, Culture, and Activity*, 6(3), 170-195.
- Miettinen, R., Samra-Fredericks, D. & Yanow, D. (2009). Re-turn to practice: An introductory essay. *Organization Studies*, 30(12), 1309-1327.
- Miles, I. (2005). Knowledge intensive business services: prospects and policies. *Foresight*, 7(6), 39-63.

- Miles, I. (2012). Knowledge and knowledge dynamics in client-supplier interaction. In Di Maria, E., Grandinetti, R. & Di Bernardo, B. (Eds.), *Exploring knowledge-intensive business services: Knowledge management strategies* (pp. 13-34). Basingstoke, UK: Palgrave Macmillan.
- Miles, I., Kastrinos, N., Flanagan, K., Bilderbeek, R., den Hertog, P., Huntink, W. and Bouman, M. (1995). *Knowledge intensive business services: Their role as users, carriers and sources of innovation* (Research Report). Manchester, UK: PREST.
- Miozzo, M. & Grimshaw, D. (2005). Modularity and innovation in knowledge-intensive business services: IT outsourcing in Germany and the UK. *Research Policy*, 34, 1419-1439.
- Miozzo, M. & Grimshaw, D. (2011). Capabilities of large services outsourcing firms: the “outsourcing plus staff transfer model” in EDS and IBM. *Industrial and Corporate Change*, 20(3), 909-940.
- Miozzo, M. & Soete, L. (2001). Internationalization of services: A technological perspective. *Technological Forecasting and Social Change*, 67, 159-185.
- Mittendorff, K., Geisel, F., Hoeve, A., de Laat, M. & Nieuwenhuis, L. (2006). Communities of practice as stimulating forces for collective learning. *Journal of Workplace Learning*, 18(5), 298-312.
- Möller, K., Rajala, R. & Westerlund, M. (2008). Service innovation myopia: A new recipe for client-provider value creation. *California Management Review*, 50(3), 31-48.
- Morgan, G. & Smircich, L. (1980). The case for qualitative research. *Academy of Management Review*, 5(4), 491-500.
- Mørk, B. E., Aanestad, M., Hanseth, O. & Grisot, M. (2008). Conflicting epistemic cultures and obstacles for learning across communities of practice. *Knowledge and Process Management*, 15(1), 12-23.

- Mørk, B. E., Hoholm, T., Ellingsen, G., Edwin, B. & Aanestad, M. (2010). Challenging expertise: On power relations within and across communities of practice in medical innovation. *Management Learning*, *41*(5), 575-592.
- Mørk, B. E., Hoholm, T., Maaninen-Olsson, E. & Aanestad, M. (2012). Changing practice through boundary organizing: A case from medical R&D. *Human Relations*, *65*(2), 263-288.
- Nerland, M. (2018). Knowledge practices and relations in professional education. *Studies in Continuing Education*, *40*(3), 242-256.
- Newell, S. (2015). Managing knowledge and managing knowledge work: what we know and what the future holds. *Journal of Information Technology*, *30*, 1-17.
- Newton, T., Deetz, S. & Reed, M. (2011). Responses to social constructionism and critical realism in organization studies. *Organization Studies*, *32*(1), 7-26.
- Nicolini, D. & Meznar, M. B. (1995). The social construction of organizational learning: Conceptual and practical issues in the field. *Human Relations*, *48*(7), 727-746.
- Nicolini, D. (2006). The work to make telemedicine work: A social and articulative view. *Social Science & Medicine*, *62*, 2754-2767.
- Nicolini, D. (2009a). Zooming in and out: Studying practices by switching theoretical lenses and trailing connections. *Organization Studies*, *30*(12), 1391-1418.
- Nicolini, D. (2009b). Articulating practice through the interview to the double. *Management Learning*, *40*(2), 195-212.
- Nicolini, D. (2010). Medical innovation as a process of translation: A case from the field of telemedicine. *British Journal of Management*, *21*, 1011-1026.
- Nicolini, D. (2011). Practice as the site of knowing: Insights from the field of telemedicine. *Organization Science*, *22*(3), 602-620.

- Nicolini, D. (2012). *Practice theory, work & organization: An introduction*. Oxford, UK: OUP.
- Nicolini, D., Gherardi, S. & Yanow, D. (2015). Introduction: Towards a practice-based view of knowing and learning in organizations. In Nicolini, D., Gherardi, S. & Yanow, D. (Eds.), *Knowing in organizations: A practice-based approach* (pp. 3-31). Abingdon, UK: Routledge.
- Nicolini, D., Mengis, J. & Swan, J. (2012). Understanding the role of objects in cross-disciplinary collaboration. *Organization Science*, 23(3), 612-629.
- Nicolini, D., Mørk, B. E., Masovic, J. & Hanseth, O. (2018). The changing nature of expertise: insights from the case of TAVI. *Studies in Continuing Education*, 40(3), 206-322.
- Nonaka, I. & Konno, N. (1998). The concept of “ba”: Building a foundation for knowledge creation. *California Management Review*, 40(3), 40-54.
- Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company*. New York, NY: OUP.
- Nonaka, I. & Toyama, R. (2003). The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*, 1, 2-10.
- Nonaka, I. & Toyama, R. (2005). The theory of the knowledge-creating firm: subjectivity, objectivity and synthesis. *Industrial and Corporate Change*, 14(3), 419-436.
- Nonaka, I. & von Krogh, G. (2009). Tacit knowledge and knowledge conversion: Controversy and advancement in organizational knowledge creation theory. *Organization Science*, 20(3), 635-652.
- Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review*, 69(6), 96-104.

- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., Toyama, R. & Byosière, P. (2003). A theory of organizational knowledge creation: Understanding the dynamic process of creating knowledge. In Dierkes, M., Berthoin Antal, A., Child, J. and Nonaka, I. (Eds.) *Handbook of organizational learning & knowledge* (pp. 491-517). Oxford, UK: Oxford University Press
- Nonaka, I., Toyama, R. & Konno, N. (2000). SECI, ba and leadership: a unified model of dynamic knowledge creation. *Long Range Planning*, 33, 5-34.
- Nonaka, I., von Krogh, G. & Voelpel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, 27(8), 1179-1208.
- O'Reilly, K., Paper, D. & Marx, S. (2012). Demystifying grounded theory for business research. *Organizational Research Methods*, 15(2), 247-262.
- Obembe, D. (2012). Knowledge sharing, sustained relationships and the habitus. *Management Learning*, 44(4), 355-372.
- Oborn, E. & Dawson, S. (2010). Learning across communities of practice: An examination of multidisciplinary work. *British Journal of Management*, 21, 843-858.
- Omidvar, O. & Kislov, R. The evolution of communities of practice approach: Toward knowledgeability in a landscape of practice – An interview with Etienne Wenger-Trayner. *Journal of Management Inquiry*, 23(3), 266-275.
- Orlikowski, W. (2002). Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science*, 13(3), 249-273.
- Orlikowski, W. (2005). Material works: Exploring the situated entanglement of technological performativity and human agency. *Scandinavian Journal of Information Systems*, 17(1), 183-186.

- Orlikowski, W. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435-1448.
- Orr, J. E. (1996). *Talking about machines: An ethnography of a modern job*. Ithaca, NY: Cornell University Press.
- Orr, J. E. (2006). Ten years of Talking about machines. *Organization Studies*, 27(12), 1805-1820.
- Pattison, S., Preece, D. & Dawson, P. (2016). In search of innovative capabilities of communities of practice: A systematic review and typology for future research. *Management Learning*, 47(5), 506-524.
- Penrose, E. G. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.
- Pentland, B. T. (1995). Information systems and organizational learning: The social epistemology of organizational knowledge systems. *Accounting, Management & Information Technologies*, 5(1), 1-21.
- Pickering, A. (1993). The mangle of practice: Agency and emergence in the sociology of science. *American Journal of Sociology*, 99(3), 559-589.
- Polanyi, M. (1966). *The tacit dimension*. Chicago, IL: University of Chicago Press.
- Prasad, A. & Prasad, P. (2002). The coming of age of interpretive organisational research. *Organizational Research Methods*, 5(1), 4-11.
- Putnam, L. L., Bantz, C., Deetz, S., Mumby, D. & Van Maanen, J. (1993). Ethnography versus critical theory: Debating organizational research. *Journal of Management Inquiry*, 2(3), 221-235.
- Rheinberger, H.-J. (1992). Experiment, difference, and writing: I. Tracing protein synthesis. *Studies in the History of Philosophy of Science*, 23(2), 305-331.
- Rheinberger, H.-J. (2005). A reply to David Bloor: "Toward a sociology of epistemic things". *Perspectives of Science*, 13(3), 406-410.

- Ribeiro, R. & Collins, H. (2007). The bread-making machine: Tacit knowledge and two types of action. *Organization Studies*, 28(9), 1417-1433.
- Roberts, J. (2006). Limits of communities of practice. *Journal of Management Studies*, 43(3), 623-639.
- Rothaermel, F. T. & Hess, A. M. (2007). Building dynamic capabilities: Innovation driven by individual-, firm-, and network-level effects. *Organization Science*, 18(6), 898-921.
- Rubin, H. J. & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). London, UK: SAGE.
- Ruddin, L. P. (2006). You can generalize stupid! Social scientists, Bent Flyvbjerg, and case study methodology. *Qualitative Inquiry*, 12(4), 797-812.
- Ryan, G. W. & Bernard, H. R. (2000). Data management and analysis methods. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 769-802). London, UK: SAGE.
- Sandberg, J. & Tsoukas, H. (2011). Grasping the logic of practice: Theorizing through practical rationality. *Academy of Management Review*, 36(2), 338-360.
- Sanders, P. (1982). Phenomenology: A new way of viewing organisational research. *Academy of Management Review*, 7(3), 353-360.
- Scarbrough, H., Robertson, M., Swan, J. & Nicolini, D. (2007). Introduction: Organizational learning, knowledge and capabilities conference issue. *Management Learning*, 38(3), 259-263.
- Scarso, E. & Bolisani, E. (2012). Trust in knowledge exchanges between service providers and clients: a multiple case study of KIBS. *Knowledge Management Research & Practice*, 10, 16-26.

- Schatzki, T. R. (2001). Practice mind-ed orders. In Schatzki, T., Knorr Cetina, K. & von Savigny, E. (Eds.), *The practice turn in contemporary theory* (pp. 50-63). London, UK: Routledge.
- Schatzki, T. R. (2005). The sites of organizations. *Organization Studies*, 26(3), 465-484.
- Schatzki, T. R. (2006). On organizations as they happen. *Organization Studies*, 27(12), 1863-1867.
- Schultz, M. & Hatch, M. J. (1996). Living with multiple paradigms: The case of paradigm interplay in organizational culture studies. *Academy of Management Review*, 21(2), 529-557.
- Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 189-214). London, UK: SAGE.
- Shotter, J. & Tsoukas, H. (2014). Performing phronesis: On the way to engaged judgment. *Management Learning*, 45, 377-396.
- Silverman, D. (2000). Analyzing talk and text. In . In Denzin, N. K. & Lincoln, Y. S. (Eds.), *The SAGE handbook of qualitative research* (2nd ed., pp. 821-834). London, UK: SAGE.
- Smith, J.A., Flower, P. & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research*. London, UK: SAGE.
- Spender, J. C. (1996a). Organizational knowledge, learning and memory: Three concepts in search of a theory. *Journal of Organizational Change Management*, 9(1), 63-78.
- Spender, J. C. (1996b). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, 17(S2), 45-62.

- Spender, J. C. (2003). Exploring uncertainty and emotion in the knowledge-based theory of the firm. *Information Technology & People*, 16(3), 266-288.
- St. Pierre, E. A. & Jackson, A. Y. (2014). Qualitative data analysis after coding. *Qualitative Inquiry*, 20(6), 715-719.
- Stablein, R. (2002). Using existential phenomenology to study a work team. In Sondak, H. (Ed.), *Toward Phenomenology of Groups and Group Membership* (Vol. 4, pp. 1-26). Bingley, UK: Emerald Group Publishing.
- Stake, R. E. (1978). The case study method in social inquiry. *Educational Researcher*, 7(2), 5-8.
- Stake, R. E. (1995). *The art of case study research*. London, UK: SAGE.
- Stake, R. E. (2008). Qualitative case studies. In Denzin, N. K. & Lincoln, Y. S. (Eds.), *Strategies of Qualitative Inquiry* (3rd ed., pp. 119-150). London, UK: SAGE.
- Star, S. L. & Griesemer, J. R. (1989). Institutional ecology, 'translations' and boundary objects: Amateurs and professionals in Berkley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, 19, 387-420.
- Star, S. L. (2010). This is not a boundary object: Reflections on the origin of a concept. *Science, Technology, & Human Values*, 35(5), 601-617.
- Strati, A. (2007). Sensible knowledge and practice-based learning. *Management Learning*, 38(1), 61-77.
- Styhre, A. (2003). Knowledge as a virtual asset: Bergson's notion of virtuality and organizational knowledge. *Knowledge Culture and Organization*, 9(1), 15-26.
- Swan, J., Bresnen, M, Newell, S. & Robertson, M. (2007). The object of knowledge: The role of objects in biomedical innovation. *Human Relations*, 60(12), 1809-1837.
- Swan, J., Newell, S., Scarbrough, H. & Hislop, D. (1999). Knowledge management and innovation: Networks and networking. *Journal of Knowledge Management*, 3(4), 262-275.

- Swan, J., Scarbrough, H. & Robertson, M. (2002). The construction of 'communities of practice' in the management of innovation. *Management Learning*, 33(4), 477-496.
- Teece, D. J., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Tether, B. S. & Hipp, C. (2002). Knowledge intensive, technical and other services: Patterns of competitiveness and innovation compared. *Technology Analysis & Strategic Management*, 14(2), 163-182.
- Tether, B. S. (2003). The sources and aims of innovation in services: Variety between and within sectors. *Economics of Innovation and New Technology*, 12(6), 481-505.
- Tether, B. S. (2005). Do services innovate (differently)? Insights from the European Innobarometer survey?. *Industry and Innovation*, 12(2), 153-184.
- Tether, B. S., Hipp, C. & Miles, I. (2001). Standardisation and particularisation in services: evidence from Germany. *Research Policy*, 30, 1115-1138.
- Thomas, G. (2010). Doing case study research: Abduction, not induction, phronesis not theory. *Qualitative Inquiry*, 16(7), 575-582.
- Thomas, G. (2011). The case: Generalisation, theory and phronesis in case study. *Oxford Review of Education*, 37(1), 21-35.
- Thompson, C., Locander, W. B. & Pollio, H. R. (1989). Putting consumer experience back into consumer research: The philosophy and method of existential-phenomenology. *Journal of Consumer Research*, 16(2), 133-146.
- Thompson, C., Locander, W. B. & Pollio, H. R. (1990). The lived meaning of free choice: An existential-phenomenological description of everyday consumer experiences of contemporary married women. *Journal of Consumer Research*, 17(3), 346-361.

- Thorpe, R. & Holt, R. (2008). *The SAGE dictionary of qualitative management research*. London, UK: SAGE.
- Tsoukas, H. & Chia, R. (2011). Introduction: Why philosophy matters to organization theory. In Tsoukas, H. & Chia, R. (Eds.), *Research in the sociology of organizations* (Vol. 32, pp. 1-21). Bingley, UK: Emerald Group Publishing.
- Tsoukas, H. & Vladimirou, E. (2001). What is organizational knowledge. *Journal of Management Studies*, 38(7), 973-993.
- Tsoukas, H. (1993). Analogical reasoning and knowledge generation in organization theory. *Organization Studies*, 14(3), 323-346.
- Tsoukas, H. (1994). Refining common sense: Types of knowledge in management studies. *Journal of Management Studies*, 31(6), 761-780.
- Tsoukas, H. (1996). The firm as a distributed knowledge system: A constructionist approach. *Strategic Management Journal*, 17, 11-25.
- Tsoukas, H. (2002). Introduction: Knowledge-based perspectives on organizations: Situated knowledge, novelty, and communities of practice. *Management Learning*, 33(4), 419-426.
- Tsoukas, H. (2009). A dialogical approach to the creation of new knowledge in organizations. *Organization Science*, 20(6), 941-957.
- Tufford, L. & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work*, 11(1), 80-96.
- Turner, S. (2001). Throwing out the tacit rulebook. In Schatzki, T., Knorr Cetina, K. & von Savigny, E. (Eds.), *The practice turn in contemporary theory* (pp. 129-139). London, UK: Routledge.
- Valentine, M. A. (2018). Renegotiating spheres of obligation: The role of hierarchy in organizational learning. *Administrative Science Quarterly*, 63(3), 570-606.

- Van Maanen, J. (2011). *Tales of the field: On writing ethnography* (2nd ed.). London, UK: The University of Chicago Press.
- van Manen, M. (2007). Phenomenology of practice. *Phenomenology & Practice*, 1(1), 11-30.
- Vick, T. E., Nagano, M. S. & Popadiuk, S. (2015). Information cultures and its influences in knowledge creation: Evidence from university teams engaged in collaborative innovation projects. *International Journal of Information Management*, 35, 292-298.
- von Krogh, G. (1998). Care in knowledge creation. *California Management Review*, 40(3), 133-153.
- von Krogh, G., Roos, J. and Slocum, K. (1994). An essay on corporate epistemology. *Strategic Management Journal*, 15(S2), 53-71.
- Watson, M. (2011). Ethnography, reality, and truth: The vital need for studies of 'how things work' in organizations and management. *Journal of Management Studies*, 48(1), 202-217.
- Watts, M. (2007). They have tied me to a Stake: Reflections on the Art of Case Study Research. *Qualitative Inquiry*, 13(2), 204-217.
- Weick, K. E. & Roberts, K. H. (1993). Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly*, 38, 357-381.
- Wenger, E. & Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review*, 78, 139-145.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge, UK: University of Cambridge Press.
- Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, 7(2), 225-246.

- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5, 171-180.
- Wesley, P. W. & Buysse, V. B. (2001). Communities of practice: Expanding professional roles to promote reflection and shared inquiry. *Topics in Early Childhood Special Education*, 21(2), 114-123.
- Whittington, R. (2003). The work of strategizing and organizing: For a practice perspective. *Strategic Organization*, 1(1), 117-125.
- Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies*, 27(5), 613-634.
- Winter, S. G. (1989). Knowledge and competence as strategic assets. In Teece, D. (Ed.), *Competitive challenge : Strategies for industrial innovation and renewal* (pp. 159-184). New York, NY: Harper Business.
- Yanow, D. & Tsoukas, H. (2009). What is reflection-in-action? A phenomenological account. *Journal of Management Studies*, 46(8), 1339-1364.
- Yanow, D. (2015). Seeing organisational learning: A “cultural” view. In Nicolini, D., Gherardi, S. & Yanow, D. (Eds.), *Knowing in organizations: A practice-based approach* (pp. 32-52). Abingdon, UK: Routledge.
- Yin, R. K. (2009). *Case study research* (4th ed.). London, UK: SAGE.
- Zollo, M. & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339-351.

APPENDIX A:

PARTICIPANT INFORMATION SHEET



The Social Construction of Knowing – Evidence from a Knowledge-Intensive Business Services Firm

Participant Information Sheet

You are being invited to take part in a research study that is part of a doctoral research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

Who will conduct the research?

Doctoral researcher: Wojciech Marek Kwiatkowski

Supervisory team: Dr Matthew Allen
Prof. Marcela Miozzo

Address: Alliance Manchester Business School
University of Manchester
Booth Street East
Manchester M13 9SS
United Kingdom

Title of the Research

The Social Construction of Knowing – Evidence from a Knowledge-Intensive Business Services Firm

What is the aim of the research?

As participants in KIBS-client projects often have different knowledge bases, their perceptions and understandings of the activities in which they collectively engage may vary. This may affect how they collaborate with each other. This research examines how social interactions between diverse participants in KIBS-client projects manifest themselves through and shape knowledge-related practices involved in service delivery.

Why have I been chosen?

You have been chosen because you are a member of an organisation that is regarded as suitable for the purposes of this research (i.e. a KIBS firm). The researcher contacted you directly or through one of your colleagues or acquaintances.

What would I be asked to do if I took part?

As part of the study you will be asked to participate in a research interview that will last approximately 1 hour, with the exact length determined by the richness of your responses.

During the interview you will be asked to provide vivid descriptions of and reflect on your experiences of working on client projects. The main theme of the interview is the knowledge and information-based interactions that you engage in with other project participants, including colleagues and client representatives. These interactions may be formal or informal, face-to-face or

APPENDIX A:

PARTICIPANT INFORMATION SHEET

facilitated through the use of information communication technologies (ICT) and written forms of communication (e.g. reports, memos, meeting minutes, etc.). You will also be asked to describe and discuss any artefacts that may affect your work (e.g. forms, guidelines, models).

You are not obliged to answer any questions. You may request to return to an earlier question throughout the interview.

Unless you request otherwise, the interview will be audio-recorded. You will be allowed to ask the researcher any questions throughout the interview as well as at its conclusion. The researcher will take notes throughout the interview which will be made available to you for inspection once the interview ends.

Where will the research be conducted?

The interview will take place at a location agreed upon by you and the researcher.

What happens to the data collected?

If the interview is audio-recorded, it will be transcribed and used in conjunction with any notes taken for analysis. You have a right to request a copy of the anonymised transcript of your interview for inspection to enable you to retract, alter and clarify any statements. Excerpts from the anonymised transcript may be included alongside aggregated data in publications disseminating the findings of this research (e.g. doctoral thesis, journal articles, conference papers, books, collections of essays, etc.).

How is confidentiality maintained?

Interviewees' names will be anonymised with the use of pseudonyms. Other potential personal identifiers will be removed. However, broad descriptions of a person's educational and professional background and type of role in the organisation (i.e. project managerial, commercial, and technical) may be retained for analytical and educational purposes.

Audio-recordings will be stored securely under lock and key and used exclusively for transcription by the researcher. Once transcribed, the recordings will be erased. Transcripts will be used in accordance with the provisions of the Data Protection Act 1998. This includes their use in future research involving other researchers.

What happens if I do not want to take part or if I change my mind?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Will I be paid for participating in the research?

No compensation will be provided for participation in the study.

APPENDIX A:

PARTICIPANT INFORMATION SHEET

Contact for further information

Wojciech Marek Kwiatkowski

Alliance Manchester Business School
University of Manchester
Booth Street East
Manchester M13 9SS
United Kingdom

T: [REDACTED]

E: wojciech.kwiatkowski@manchester.ac.uk

What if something goes wrong?

If you require any assistance or further information about the research, please contact the researcher directly.

If you wish to make a formal complaint about the conduct of the research you should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL.

APPENDIX B:

CONSENT FORM



The Social Construction of Knowing – Evidence from a Knowledge-Intensive Business Services Firm

CONSENT FORM

If you are happy to participate please complete and sign the consent form below

- | | |
|---|-----------------------------------|
| | Please
Initial
Box |
| 1. I confirm that I have read the attached information sheet on the above project and have had the opportunity to consider the information and ask questions and had these answered satisfactorily. | |
| 2. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving a reason and without detriment to any treatment/service. | |
| 3. I understand that the interview in which I am about to participate will be audio-recorded unless I expressly request it not to be. | |
| 4. I understand that excerpts from the interview transcript may be included in academic publications produced from this research. | |
| 5. I understand that the interview transcript may be used in future research involving other researchers. | |

I agree to take part in the above project

Name of participant	Date	Signature
Name of person taking consent	Date	Signature

APPENDIX C:

INTERVIEW GUIDE



The University of Manchester
Alliance Manchester Business School

INTERVIEW GUIDE:

1. Introduction:

- 1.1. Welcome the interviewee and thank him for agreeing to participate;
- 1.2. Remind them that their name will be anonymised;
- 1.3. Remind them of the estimated length of the interview;
- 1.4. Inform them that the interview will be recorded unless they request it not to be;
- 1.5. Inform them that notes will be taken in course of the interview and that they can inspect them after its conclusion;
- 1.6. Inform them that they can ask any questions throughout the interview and/or once it concludes;
- 1.7. Inform them that they are not obliged to answer any question unless they want to and that they may return to a question later in the interview.

2. Opening stage:

- 2.1. Could you please tell me something about yourself (educational and professional background, experience in the organisation, past employment, responsibilities within the organisation and within your current project, etc.)?
- 2.2. Please describe what are the typical stages involved in a KIBS-client project?
- 2.3. What stages are you typically involved in?

3. Descriptive stage (repeated for each of the identified project stages):

- 3.1. Encourage the interviewee to draw on their most recent project experience, as well as past project experiences that were particularly positive/negative or productive/unproductive;
- 3.2. Please describe your participation in this stage:
 - (Follow-up) What does it involve?
 - (Follow-up) Who do you interact with?
 - (Follow-up) How do you interact with them (e.g. face-to-face, over the phone, through ICT, filing a report, formal/informal meetings, etc.)?
 - (Follow-up) How are they relevant to the work you're doing?
 - (Follow-up) How are they relevant to the project as a whole?
 - (Follow-up) What knowledge and information do these interactions involve?
 - (Follow-up) How is this knowledge and information recorded, if at all (e.g. notes, minutes, reports, intranet)?

APPENDIX C:

INTERVIEW GUIDE

- (Follow-up) How do you understand the purpose of recording that knowledge and information?
- (Follow-up) For whose use are these records kept?
- 3.3. Please describe examples of good/bad interactions you have experienced in the past and explain why they worked/didn't work?
- (Follow-up) What do you mean by referring to this as a positive/negative or productive/unproductive experience?
- (Follow-up) How did it make you feel?
- (Follow-up) What do you think were the sources of such mutual understanding/lack of mutual understanding?
- (Follow-up) How have these experiences affected you and your work on subsequent projects?
- 3.4. Are you aware of any other interactions that may not involve you but might affect you?
- (Follow-up) What's your opinion of them?
- (Follow-up) How are they relevant to your work?
- (Follow-up) How are they relevant to the project as a whole?
- 4. Reification-related section:**
- 4.1. Is the work you are doing affected by any artefacts (e.g. forms, guidelines, delivery models)?
- (Follow-up) Could you tell me about them?
- (Follow-up) What is their source?
- (Follow-up) How do they feature in your work?
- (Follow-up) How do you feel about them?
- 5. Concluding stage:**
- 5.1. Is there anything relevant that you think we might have not discussed or anything you may want to comment on further?
- 6. Final remarks:**
- 6.1. Thank the interviewee for their participation;
- 6.2. Ask the interviewee if they have any questions;
- 6.3. Offer the interviewee the opportunity to inspect any notes taken;
- 6.4. Ask the interviewee if it would be possible to contact them via telephone for clarification or a follow-up question if necessary.

APPENDIX D:

PARTICIPANTS' PEN PORTRAITS

Development	Will	<p>Will joined MonTech 20 years ago as a Junior Developer, having previously worked as a computer technician. He has since progressed in the organisation becoming a GUI Team Leader, System Architect and eventually the Development Manager leading MonTech's Development team (see 5.2.5.1.).</p> <p>He often gets involved in a new project 'at fairly early stage to pin down whether there's any technical problems or issues that might mean that it's a much longer development or even if it's feasible at all'. In case of projects that extend past developments and do not involve new technical issues, he is unlikely to as involved and instead relies on being kept informed via email of any discussions with the client.</p>
	Fred	<p>Fred joined MonTech 6 months ago as a Junior Java Developer having graduated from university three months earlier. He is currently the second most recent hire at the organisation.</p> <p>He does not experience working at MonTech as working on client projects having not liaised with a customer yet, rather his experience is structured around MonTech's different software, to which he mostly adds new features. Prior to his interview he only solved one customer reported fault he picked up in course of his work at Development (see 5.2.5.1.). Nevertheless, that single occasion allowed him to experience an additional sense of responsibility as a result of the awareness that the software was used by a customer and the effort required to emulate the issue reported.</p>
Support	Jack	<p>Jack joined MonTech 25 years ago having previously worked in an IT role at a bank for 13 years. He was initially involved in developing MonTech's software before becoming the Customer Services Manager – the main person responsible for running Support.</p> <p>In addition to Support duties (see 5.2.5.2.), he visits each customer site at least twice a year and is typically the main person involved in gathering the initial set of requirements from clients. He oversees the requirement gathering process even when this is handled by someone else (e.g. Francis or Will). Although he is no longer part of Development, he may still be asked about some of his past development work or even contribute some code if he has relevant experience. Consequently, he considers himself to be 'an extension' of both Support and Development.</p>
	Francis	<p>Francis joined MonTech 18 years ago as a Junior Systems Administrator, having previously worked in an IT hardware assembly company and completed vocational IT qualifications. Although he is still responsible for administrating MonTech's internal IT infrastructure as its current IT Manager, he is now also part of the Support team (see 5.2.5.2.). His coding knowledge enables him to investigate issues and pin point their location in the software code, but he has never developed anything from scratch.</p>
Helpdesk	Molly	<p>Molly joined MonTech 11 years ago as a Helpdesk Assistant, having previously worked as a Catering Manager. At the time, she was one of two women working at the Helpdesk. Following the departure of her colleague amidst the acquisition of MonTech by the current owner she remained as the only member of the Helpdesk team and assumed the role of Helpdesk Manager. She had never undergone any IT training and still describes herself as having only basic IT skills.</p> <p>Her main responsibility is to monitor MonTech's Support email, assign client calls to other members of the Support team and main a full case history for a every client (see 5.2.5.3.). Because of the latter she considers herself as involved in a project throughout its entire lifetime. Additionally, she performs a number of internal administrative duties, including backing up the systems and software and preparing them for offsite storage, making travel arrangements and approving expenditure.</p>

APPENDIX E: PROBLEM SEVERITY AND RESPONSE TIMES UNDER MONTECH'S SLA (REPRODUCTION)

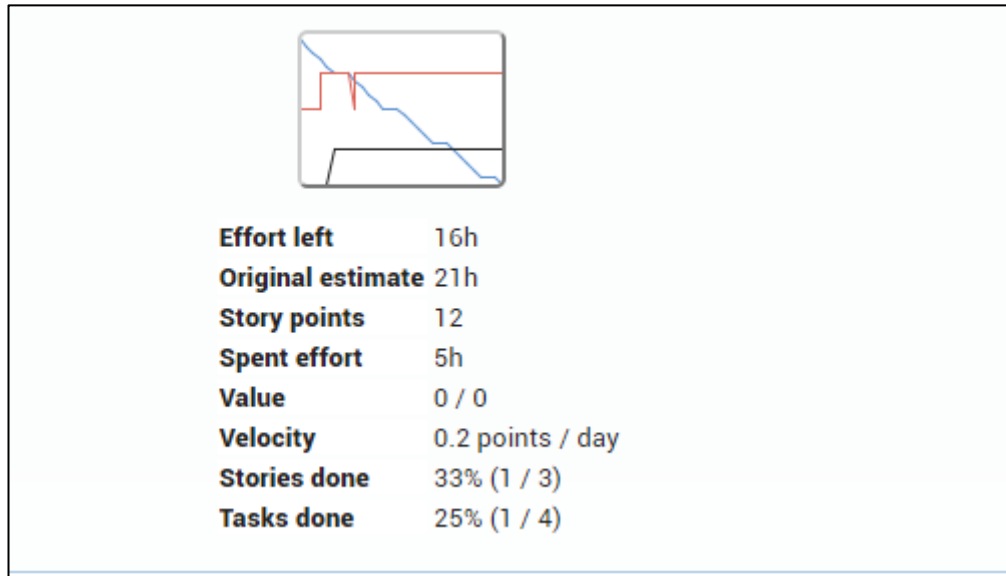
	Call severity category			
	Information	Minor	Major	Critical
Initial response target time	24 hours	2 hours	30 minutes	30 minutes
Information exchange time (business hours)	4 hours	2 hours	30 minutes	5 minutes
Information exchange time (outside business hours)	1 hour			
Restoration¹ (known problems)	n/a	5 working days	16 working hours	8 working hours
Restoration (new problems)	n/a	10 working days	5 working days	5 working days
Repair²	n/a	120 working days	90 working days	90 working days
Escalation	Individual timelines and corrective action to be agreed with the Managing Director in case of problem that cannot be resolved as detailed with the SLA.			

¹ Restoration is a work-around or a temporary fix provided as soon as reasonably possible in the circumstances where a Repair is not able to be applied immediately.

² Repair is a permanent correction or resolution provided where reasonably possible. Where applicable a Repair will subsequently be scheduled to be incorporated in the Product Release Program.

APPENDIX F:

DBMT SPRINT PERFORMANCE TRACKING DATA



Notes: The above Sprint performance review data has been taken from an ongoing Sprint. ‘Story points’ refers to the total difficulty value of Stories included in the Sprint. The value of each Story is determined collectively by the Development team. Stories are generally ‘scored’ using a Fibonacci number sequence after Scrum meetings due to the entire Development team being present. However, on some occasions the team may meet in the afternoon specifically for that purpose.