Learning in adaptive spaces: How customer experience professionals experience learning during technology-mediated interaction, and implications for organisational learning

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This thesis results entirely from my own work and has not been offered previously for any other degree or diploma.

I confirm that the word length of:

1)   the thesis, including footnotes, is 41,054 words

2)   the bibliography is 9,365 words

3)   the appendices are 1,814 words

Signed

Anthony James Reeves, PGCert, SFHEA
Doctor of Philosophy, January, 2018

Abstract

This research investigates how customer experience (CX) professionals experience learning through their use of digital technologies in organisations, and considers the implications for organisational learning. A phenomenographic methodology was used to compare the variation in employees' experiences of learning, and the research employed a conceptual framework of post-structuralism and complexity to investigate how digital technologies affect organisational learning and knowledge management. Complexity Leadership Theory was used as a way to interpret the complexity dynamics that occur through digitally mediated interactions in organisations, and provided a way to conceptualise these interactions as taking place in 'adaptive spaces'.

The research found that a lack of etiquette regarding the use of digital tools can adversely affect processes of meaning-creation during the technology-mediated work of CX professionals. The findings indicate that a more intentional use of technology – a 'digital etiquette' – can be viewed as a dynamic capability, and has the potential to improve the way in which CX professionals contribute to organisational learning. The findings also demonstrate that improving digital etiquette in adaptive spaces is an appropriate response to problems of knowledge management under conditions of complexity.

The research will be of interest to those seeking a clearer understanding of the potential of the CX function to contribute to organisational learning, and also to those

aiming to design programmes of learning that prepare students effectively for complex environments.

Contents

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Publications derived from work on the Doctoral Programme

The following publications were derived from Part 1 of the Doctoral Programme, but none appear in this thesis:

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Reeves, T. (2014) Using phenomenography to inform curriculum development in the areas of Digital Curation and Digital Sustainability. *Journal of Learning Development in Higher Education. Special Edition: Digital Technologies in Learning Development.*

List of abbreviations

CAS   complex adaptive systems

CCO   communicative constitution of organisation

CLT   Complexity Leadership Theory

CMC   computer-mediated communication

CSCL   computer-supported collaborative learning

CSCW   computer-supported cooperative work

CX   customer experience

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Chapter 1 Introduction

1.1 Background and context

The quest for organisations to achieve sustainable competitive advantage is not new (Rumelt, Schendel, & Teece, 1994; Teece, Pisano, & Shuen, 1997) and originates in the Schumpeterian argument for continuous innovation (Schumpeter, 1934, 1950). By the 1980s, the argument that society was moving from an industrial to a post-industrial age (Bell, 1973) led management scholars to investigate the impact on organisations (Huber, 1984) and to seek more innovative ways for organisations to differentiate themselves from their competitors in increasingly dynamic environments (Eisenhardt, 1989).

The customer experience (CX) function in organisations has been identified as developing out of the need for increased differentiation (Kranzbühler, Kleijnen, Morgan, & Teerling, 2017; Palmer, 2010), with foundations in the fields of marketing (Abbott, 1955), and organisational behaviour (Cyert & March, 1963). While the identification of 'customer experience' as a distinct construct (Holbrook and Hirschman, 1982) and focus on the experiential aspects of consumption has led to increased interest in the consumer perspective (Parasuraman, Zeithaml, & Berry, 1988; Richins, 1997; Van Kenhove, De Wulf, & Van Waterschoot, 1999), the recognition that organisations can and should learn from their customers, and that customers can play a valuable role in the process of value creation (Vargo & Lusch, 2004, 2008) have been acknowledged as important factors in the widespread adoption of the CX function (Manning & Bodine, 2012). But while the Harvard Business

Review article *Welcome to the Experience Economy* (Pine & Gilmore, 1998) and subsequent book are recognised as bringing CX to the attention of a wider audience, its potential as a mechanism of organisational learning – what Kranzbühler et al. (2017) term the 'organisational' perspective – is less well researched.

Although the ability for organisations to respond effectively to customers' needs has long been recognised as critical to their success (Nonaka, 1991), the desire to understand the factors responsible for their capacity to adapt over time (Cyert & March, 1963), correct mistakes to deliver successful outcomes (Argyris & Schön, 1978) and retain knowledge in increasingly dynamic and unpredictable environments (Argote, 1999) led researchers to investigate if and how organisations can learn. The term 'organisational learning' has been the focus of much debate in the literature regarding its conceptual validity, and subject to concerns regarding anthropomorphism (Caldwell, 2012; Stacey, 2003). Since it was first popularised by Argyris and Schön in 1978, organisational learning has been defined in many different ways and linked with areas of research including organisational complexity (March, 1991; Tsoukas & Hatch, 2001; Weick, 1995; Weick & Sutcliffe, 2001), knowledge creation and management (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka, von Krogh, & Ichijo, 2000), group learning and communities of practice (Brown & Duguid, 1991; Lave & Wenger, 1991; Wenger, 1998), organisational memory (Kuutti & Bannon, 1996; Stein & Zwass, 1995; Walsh & Ungson, 1991), organisational routines (Huber, 1991; Levitt & March, 1988) and more recently with dynamic capabilities (Bhatt & Grover, 2005; Easterby-Smith & Prieto, 2008; Prieto & Easterby-Smith, 2006; Teece, 2007; Teece et al., 1997; Zollo & Winter, 2002).

As the knowledge of an organisation may reside in a multitude of places including documents, policies, systems, the employees themselves and the organisational culture (Grant, 1996; Spender, 1996; Tell, 2004; Turner & Makhija, 2006), the ease with which an organisation can access and apply this knowledge has led to significant overlaps between the fields of organisational learning and knowledge management (Alavi & Leidner, 2001; Easterby-Smith & Lyles, 2003). However, the disruption caused by the increasing flexibility and diversity of digital technology in the workplace presents significant challenges for knowledge-based work in organisations (Bolden & O'Regan, 2016), and understanding the impact of new technological affordances on the social and technical challenges faced by employees is therefore increasingly important (Atherton, 2013; M. Maguire, 2014).

While effective internal networks are understood as a key organisational construct for supporting a culture of knowledge sharing (Davila, Epstein, & Shelton, 2013; Mandarano, 2009), many businesses continue to struggle to encourage employees to share information on internal knowledge management platforms (Galliers & Leidner, 2009). Allee (2009) observes a divide in business management practices between approaches to human interactions and approaches to business processes and transactions in organisations, arguing that 'business processes are out of alignment with the ways in which things actually get done' (p.428). There is a recognition that the perspective offered by the CX function offers a way to bridge this divide (Brach, Walsh, Hennig-Thurau, & Groth, 2015), firstly by providing an organisation with information about customers' holistic experiences (Harris, Harris, & Baron, 2003) and secondly by coordinating activity across functions in order to improve these experiences (Kwortnik & Thompson, 2009; Patricio, Fisk, & Cunha, 2008). These

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two perspectives have been classified as 'consumer' and 'organisational' respectively (Kranzbühler et al., 2017), and while the former has been the focus of extensive research, the lack of research into the latter has led to diverse interpretations of the CX construct (Verhoef et al., 2009). This thesis aims to contribute to the organisational perspective of CX, and interprets this perspective as using insights from CX professionals to examine how they work with employees across their respective organisation. This will be achieved by focusing specifically on how CX professionals use technology to interact with other employees, and considering how the outcomes of these interactions might contribute to organisational learning.

This research investigates the theoretical foundations of the CX function in organisations, its purpose if an organisation is understood as a complex adaptive system, and its potential value as a function of organisational learning. In this sense, the research is not concerned with the consumer-focused interpretation of CX as 'the internal and subjective responses customers have to any direct or indirect contact with a company' (Meyer & Schwager, 2007, p.3), but rather on how the internally-focused work of the CX function can contribute to organisational learning. Taking the accepted view that organisations can be conceived as complex adaptive systems (Keskinen, Aaltonen, & Mitleton-Kelly, 2003; Mitleton-Kelly, 2003), the research analyses how CX professionals experience learning through technology-mediated interaction.

Although the role of information technology in contributing to organisational learning has been recognised by researchers in the fields of knowledge management and dynamic capabilities (Ezell, 2015), it has long been acknowledged that there is a need

to focus on both the technological and social processes that support effective knowledge sharing (Prieto & Easterby-Smith, 2006; Ruggles, 1998). However, little attention has been paid to the specific ways in which CX professionals use technology in their work and how this might affect their ability to contribute to organisational learning. By interpreting their experiences through a conceptual framework of complexity, dynamic capabilities and post-structuralism, this thesis argues that CX professionals can play a valuable role in reconfiguring the sensing, learning, integrating and coordinating capabilities (Pavlou & El Sawy, 2011) that enable organisations to continuously adapt to changing environments. However, the findings show that the lack of intention with which CX professionals use digital technologies fails to maximise this potential, and indicate that a more intentional use of technology has the potential to enhance their ability to contribute to organisational learning. The research proposes that the development of a 'digital etiquette' could support a more intentional use of digital technology by CX professionals, and that such an etiquette would enable a more informed choice of digital tools to support technology-mediated interaction.

1.2 The customer experience function

The customer experience (CX) function is a relative newcomer to the organisational landscape, and its value as an 'academically robust construct' is still being debated (Palmer, 2010, p. 196). Kranzbühler et al. (2017) classify the term 'customer experience' as an umbrella construct, which can be understood as a 'broad concept used to encompass and account for a diverse set of phenomena' (Hirsch & Levin, 1999). While the origins and purpose of functions such as marketing, product

development and human resources have been well theorised by organisational scholars, conceptual foundations and definitions of CX are still the subject of much debate in the literature (Jain, Aagja, & Bagdare, 2017).

The importance of experience in customer purchasing activity has long been understood in the context of marketing (Abbott, 1955; Dewey, 1963; Holbrook & Hirschman, 1982; Pine & Gilmore, 1999), and companies have increasingly moved beyond product features towards service quality and experiential values to achieve competitive advantage (Christopher, Payne, & Ballantyne, 1991). But while CX originated in the idea of service quality and experience as a differentiator (Parasuraman et al., 1988), the CX construct has subsequently been found to differ conceptually from notions of service quality (Klaus & Maklan, 2013). CX is often used interchangeably with 'customer service' due to the way in which excellent service can generate a positive emotional response (Oliver, Rust, & Varki, 1997), and with 'user experience', as customers' interactions with businesses are increasingly mediated by technology (Novak, Hoffman, & Yung, 2000; Rose, Hair, & Clark, 2011).

Conceptual confusion regarding CX has also arisen through the growing body of research that has developed around 'Customer Relationship Management' (CRM), and 'Customer Experience Management' (CEM). While CRM developed as an attempt to develop more personal connections between organisations and their customers in order to create more tailored marketing strategies (Christopher et al., 1991), its tendency to be perceived as inauthentic often led to an adverse effect on consumers' trust in organisations (O'Malley & Prothero, 2004) and a failure to deliver

improved relationships (Barnes, 2002). The growing replacement of Customer Relationship Managers with Customer Experience Managers has been interpreted as anecdotal evidence of an increased displacement of the more marketing-orientated CRM by the more holistic CEM (Palmer, 2010). However, Palmer notes that while a common requirement of both these roles is the need to work effectively across different organisational functions, both often lack the necessary authority to coordinate cross-functional activity in support of the customer experience, and that 'the problem remains of how customer experience managers will succeed as integrators when there is widespread evidence of the failure of customer relationship managers as integrators' (p. 204).

The problem of a lack of authority is supported by recent research from the technology consultancy Gartner, which found that only 10% of CX leaders were part of a central CX function and that responsibility for CX was often distributed across an organisation (Thompson, Davies, & Carter, 2015). There is a growing acceptance that delivering an effective customer experience now involves effective coordination of the cross-functional efforts of marketing, service operation, product development, information technology, human resources, and account teams (Meyer & Schwager, 2007). More recently, the global consultancy McKinsey noted that businesses will increasingly be confronted with the need to commit to a 'customer experience transformation', advising business leaders to 'redesign the business from the customer back' (McKinsey, 2016). Kranzbühler et al. (2017) highlight the difference between a perception of CX as providing an understanding of what happens outside an organisation (an 'etic' view) to one which affords a greater understanding of what happens inside (an 'emic' view), and note that the latter aims to describe an

organisational system as a working whole. It is this shift away from the individual as the unit of analysis towards the organisation in its entirety which renders the literature on organisational complexity of relevance to an emic interpretation of the CX function.

1.3 Research questions

The specific research questions addressed during the thesis are:

1. How do CX professionals experience learning and knowledge production during technology-mediated interaction?

2. How does the knowledge produced by CX professionals contribute to organisational learning?

1.4 Definitions

The scope of the study focuses on the intersection of several areas of research, and the key concept of each area will now be defined for the purposes of this thesis:

Customer experience: Drawing on the literature on organisational communication (Poutanen, Siira, & Aula, 2016; Putnam & Nicotera, 2009; Robichaud & Cooren, 2013a; J R Taylor, 2009), communities of practice and social learning systems (Lave & Wenger, 1991; Wenger, 1998, 2000), and dynamic capabilities (Agarwal & Selen, 2009; Argote & Ren, 2012; Pavlou & El Sawy, 2011; Prieto & Easterby-Smith, 2006; Teece et al., 1997; Zollo & Winter, 2002), this thesis defines CX as 'an organisational function that synthesises external (customer) experiences with internal (employee)

experiences to improve the cross-functional interactions and capabilities of multiple communities in an organisation'.

Data, information and knowledge: Although these three concepts will be defined separately, it can be useful to consider them in relation to each other. In their examination of knowledge building in the context of collaborative cognition, Fiore, Elias, Salas, Warner, and Letsky (2010) provide a philosophical examination of the Data-Information-Knowledge-Wisdom (DIKW) transformation process first proposed by Ackoff (1989), to arrive at definitions of these concepts in the context of team work. The DIKW model proposes a hierarchy of these terms, with data understood as unstructured, unprocessed symbols (Ackoff, 1989; Hey, 2004), information as data that has been organised and made meaningful through interpretation within a specific context (ibid.), and knowledge as 'data and information that have been organised and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current problem or activity (Rowley, 2007, p.172).

However, the validity of the DIKW model has been the subject of much critical debate in the literature (see, for example, Frické, 2009; Tuomi, 1999), with Tuomi arguing that inverting the hierarchy of data-information-knowledge could inform the design of more effective systems for managing knowledge in organisations. Citing prominent philosophers including, Bergson, Husserl, Heidegger, Merleau-Ponty and Polanyi, Tuomi identifies their common insight that humans only come to know understand the world through interpretation, and that this interpretation is indivisible from meaning. From this interpretivist perspective, it is impossible for humans to view raw data without imposing their own meaning structure on it. For the purposes

of this research, data is therefore defined as 'representations of activity that have yet to be interpreted'.

To differentiate data from information, this thesis uses the definition offered by Mark Taylor (2001) that information is 'a difference which makes a difference'. This definition emerges from Taylor's critique of Shannon and Weaver's (1949) theory of communication, which argued that information could be effectively transmitted from a source to a destination providing that the sender and receiver share the same approach to encoding and decoding the information. Importantly, Shannon and Weaver's theory does not attempt to determine whether the semantic concept of the message would be conveyed correctly, merely that the receiver would be able to identify the correct message from a set of possible messages. By proposing that discerning relevant information from background 'noise' involves a conscious act of interpretation, Taylor's definition satisfies Rowley's (2007) concern that 'to be relevant and have a purpose, information must be considered within the context where it is received and used' (p.171). The importance of interpretation in this process is highlighted by Miller's (2002) argument that information itself has no intrinsic meaning, and that the same piece of information can lead to different representations of knowledge as it is interpreted by different people in different contexts.

In considering definitions of knowledge, Fiore et al. (2010) note a clear lack of consensus across disciplines. While it is beyond the scope of this thesis to undertake a philosophical exploration of knowledge, it is necessary to frame knowledge within the context of the study taking into account the researcher's ontology and epistemology. In his discussion of the problem of tacit knowledge in knowledge management,

Kimble (2013) contrasts the more positivistic view of knowledge as justified true belief with the constructivist's view of knowledge as interpreted and context-dependent (Piaget, 1950; Vygotsky, 1978). As this thesis focuses on how data, information and knowledge created through collaboration leads to learning, a combination of both perspectives is helpful in moving towards a definition of knowledge. In their discussion of the controversy surrounding the notion of 'justification', Fiore et al. (2010, p.187) suggest that 'justification is a discursive matter of answering objections to the claims we make, within some collaborative setting, in which participants are free to ask questions and challenge the statement of others'. While the idea that knowledge must be justified through a process of social construction is suitable for the interpretivist position adopted for this thesis, the notion that knowledge is 'true' is problematic. For the purposes of this research, therefore, knowledge is understood as 'an emergent property resulting from an active process of evaluation and justification on the part of team members' (Fiore et al., 2010, p.196).

Learning: the concept of learning can be understood and described in many different ways, including, but not limited to, 'cognitive processes, social aspects, memorisation, recall, creative approaches, conceptualisation, long-term educational goals, and reflection' (Passey, 2013, p. 20). In view of the extensive research on the topic of learning, it would be presumptuous for this thesis to attempt to offer an unambiguous definition. However, in view of the workplace context of the participants in this thesis and focus on the influence of digital technologies on their interactions, it is possible to narrow the scope of what is understood as learning so as to enable a consideration of how it is experienced by CX professionals. In the context of this thesis, learning is viewed from a perspective of social constructivism (Vygotsky, 1978) due to the focus

on the way in which two or more individuals learn through collaboration and dialogue. A social constructivist perspective also aligns with the researcher's epistemological belief that meaning-making is a dialogic process, that this dialogue can occur within an individual, with others, or with artefacts, and that language itself is a constantly shifting and evolving complex system (Livingstone, 2005). The adoption of a post-structuralist position in the conceptual framework reflects the researcher's understanding of texts, objects and other artefacts as 'open works' (Cham, 2010) which require us to interpret them using our prior knowledge and experience, and belief that we make sense of the world through a constant dialogue within ourselves, and with people and artefacts.

As the research focuses specifically on the use of technology to mediate learning, the literature on computer-supported collaborative learning (CSCL) was also identified as an appropriate position from which to interpret the collaborative work of CX professionals. Dillenbourg (1999) notes that the broadest definition of collaborative learning is that it is 'a situation in which two or more people learn or attempt to learn something together' (p.1), but acknowledges that this definition is problematic because each element can be interpreted in different ways. Given that the participants in this study were asked about their experiences of learning at work, the experiences of learning they described related to their attempts to collaborate on work-related tasks. For the purposes of this research, then, learning can be understood as 'the acquisition of data, information and knowledge through interaction with people and artefacts in an organisation that can be used to enhance understanding of and ability to progress work-related tasks.'

Knowledge management: To reflect the focus of this thesis on the social construction of knowledge and its potential link with organisational learning, knowledge management is defined as 'the processes through which the collective knowledge of an organisation is made available to and accessed by the members of the organisation'.

Technology-mediated interaction: the research investigates CX professionals' subjective experiences of learning while using technology to interact with colleagues in their organisation. This activity is interpreted by drawing on concepts in the literature on Computer-Mediated Communication (CMC) and Computer-Supported Collaborative Learning (CSCL) in a workplace context. Technology was understood as electronic equipment that could support interaction, such as laptop and desktop computers, desk phones, smartphones and tablets, video conferencing applications, intranets, corporate social media tools, and email. Technology-mediated interaction is therefore defined as 'an activity that involves the use of electronic equipment to send and receive data, information and knowledge to and from one or more people in an organisation'.

Organisational learning: The term 'organisational learning' is contested in the literature, and it is therefore necessary for researchers to make a clear definition of their own interpretations and assumptions (Robey, Boudreau, & Rose, 2000). Drawing on the field of organisational communication, this thesis employs the conceptualisation of organisations as metaconversations and defines organisational learning as 'the reflexive development of metaconversations that inform, and are informed by, the interactions of individuals within multiple communities of practice'.

Organisational complexity: Informed by the conception of human organisations as complex, social, adaptive systems, this thesis builds on the ideas of Mitleton-Kelly (2003) and defines organisational complexity as 'an interpretation of human organisations as complex, social, evolving open systems that bring about the emergence of data, information and knowledge through the non-linear interactions of individuals with each other and with artefacts'.

Dynamic capabilities: As with organisational learning, the concept of dynamic capabilities has also been the subject of intense debate in the literature. This study uses the definition of dynamic capabilities offered by Zollo & Winter (2002, p. 340) as 'a learned and stable pattern of collective activity through which the organisation systematically generates and modifies its operating routines in pursuit of improved effectiveness'.

Adaptive spaces: The concept of adaptive space is drawn from Complexity Leadership Theory, a theory that aims to improve conceptualisations of organisational activity under conditions of complexity by integrating 'complexity dynamics and bureaucracy, enabling and coordinating, exploration and exploitation, complex adaptive systems and hierarchy, and informal emergence and top-down control' (Arena & Uhl-Bien, 2016; Marion & Uhl-Bien, 2008; Uhl-Bien, Marion, & McKelvey, 2007a). While this theory will be explored in more detail in the Conceptual Framework, for the purposes of this thesis an adaptive space is defined as 'a virtual space created by technology that enables the emergence of data, information and knowledge through technology-mediated interaction between two or more people.'

1.5 Motivation

My interest in organisational learning and complexity has grown out of my work with students and staff at the University for the Creative Arts (UCA). My role involves advising students and staff on how best to use a range of technologies to support teaching and learning activities, and I have become particularly interested in how online, social and mobile technologies mediate collaborative learning. Having investigated how students experience learning in an educational context during Part 1 of the PhD programme, in Part 2 I wanted to look beyond universities and explore how learning is experienced in a workplace context. It was this aim that led me to become involved with the Perpetual Experience group (www.perpetualexperience.com), a CX think tank that held regular focus groups with large organisations to understand the potential of CX to drive organisational transformation. Through my involvement with this group it became apparent that digital technology posed a number of challenges for CX professionals, and these challenges informed my decision to investigate organisational learning from the perspective of CX.

1.6 Contribution to knowledge

This thesis conceptualises the potential of the CX function in large organisations as a dynamic capability with the potential to inform organisational learning. While recent reviews of the literature on CX (Jain et al., 2017; Kranzbühler et al., 2017) and CEM (J. Hwang & Seo, 2016; Palmer, 2010) have outlined a research agenda for CX, recognition of the value of CX in illuminating the internal workings of organisations has only occurred in recent years (ibid.) and little direct attention has been paid to the potential of the CX function to inform and influence organisational learning. Webster and Watson (2002) note that research can make a contribution to knowledge by bringing together previously unconnected streams of work to illuminate a phenomenon and identify implications for practice, and a review of the literature linking CX with organisational learning and complexity suggests that the intersection of these fields is under-researched.

By bringing together perspectives from organisational learning, organisational complexity, dynamic capabilities, knowledge management and technology-mediated interaction, this thesis provides an empirical study of the mediating effects of technology on the ability of CX professionals to contribute to organisational learning. Easterby-Smith and Prieto (2008) observe that relatively few studies have provided empirical insights into the mutually reinforcing interaction between knowledge management and dynamic capabilities, and Pavlou and El Sawy (2011) call for more empirical research into dynamic capabilities due to the potential for technology to facilitate their development. Similarly, Argote (2011) suggests that the relationship between organisational learning and dynamic capabilities, and the influence of social

and technological developments on this relationship, would further enhance understanding of organisational learning. This research responds to these calls by proposing that the CX function can enhance an organisation's capability to learn, and identifies how a digital etiquette could enhance the ability of CX professionals to contribute to organisational learning.

In view of the relative lack of research linking the CX function with organisational learning and complexity, it is hoped that the research will enable CX professionals to achieve a clearer conception of their role in organisational learning and transformation. By linking the concept of digital etiquette with that of intentional authorship of adaptive space, the research offers a perspective to consider how technology-mediated interactions between CX professionals could constitute a microfoundation of dynamic capabilities (Teece, 2007; Argote & Ren, 2012). Such a link contributes to research into the organisational focus of the CX function, and provides a way to consider how greater attention to the technology-mediated interactions between CX professionals could enhance the adaptive mechanism of an organisation.

This thesis will also be of interest to those working in the field of technology enhanced learning. From a theoretical perspective, viewing technology-mediated interactions from the intersection of post-structuralism and complexity provides a way to examine how communicating across a digital network can increase the divergence in meaning that emerges from these interactions (Cham, 2007, 2010). Using a post-structuralist perspective to examine how meaning emerges through technology-mediated interactions, the research examines the difficulties of attempting to learn

solely through the use of artefacts such as documents and videos and the potential benefits of synchronous conversation in minimising the emergence of divergent meaning. It is anticipated that such a viewpoint will render the thesis of interest to the educational research community, as it seeks to investigate how individual and collective learning is shaped by technology-mediated interactions. By exploring how information is transmitted across a digital network and reconstructed as meaning, the findings of the thesis will hopefully provide a useful contribution to the field of technology enhanced learning and its focus on the design of effective online learning experiences.

Chapter 2 Literature review

2.1 Inclusion and exclusion criteria

To respond to the research questions and construct an appropriate conceptual framework, this thesis draws on several areas of literature: organisational complexity, organisational learning, customer experience, information technology, knowledge management and dynamic capabilities. A systematic review of each of these areas is beyond the scope of this thesis, and so instead this chapter aims to map the intersection of these fields by reviewing relevant literature in relation to CX. Studies were included which:

- specifically addressed the role of the CX function in organisational change

- offered a position from which to critique the ability of organisations to learn

- investigated the role of technology in organisational learning and knowledge management

- used theories of complexity and complexity dynamics to interpret organisational activity

- used either review, survey, qualitative or quantitative methods of investigation

- were published in English

- were published between 1930 and the present

- reported activity anywhere in the world

The criteria used to exclude studies from the final set of publications were:

- the study does not focus on organisational learning or organisational complexity

- the study is not published in English

- the study is not published between 1930 and the present

The researcher's own judgment was used to determine whether a study should be included or excluded, and the review can therefore not be considered as systematic.

2.2 Search strategy

Figure 1 below illustrates the search strategy that was used for the literature review. Before embarking on a full database search, an exploratory search was undertaken in Google Scholar on 1st September 2017 using the following search string:

"customer experience" and "organizational learning" and "learning organization" and "information technology" and "knowledge management"

This resulted in 101 results with 5 publications being deemed as relevant after the application of the inclusion and exclusion criteria. This led to the subsequent identification of dynamic capabilities as an additional concept with relevance to organisational learning which would require further investigation. These 5 publications were then read in full and 21 new studies were identified through cross-referencing. A snowball approach was also used to trace subsequent relevant citations using Google Scholar (Greenhalgh & Peacock, 2005) and track the evolution of key concepts, resulting in an additional 8 articles and a total set of 34 publications. A second search string was then developed incorporating additional keywords from the

Search query #1 (Google Scholar): "customer experience" and "organizational learning" and "learning organization" and "information technology" and "knowledge Management"

101 references found → **96** studies excluded

5 studies screened → **21** new studies included through cross-referencing
8 new studies identified through snowballing

Total studies from search #1: **34** (5+21+8)

Search query #2 (databases): "customer experience" AND "organizational learning" OR "learning organization" AND "information technology" OR "digital technology" AND "knowledge Management" AND "organizational complexity" AND "dynamic capabilities" AND "literature review"

136 references found → **111** studies excluded
11 duplicates removed

14 studies screened → **31** new studies included through cross-referencing
20 new studies included through snowballing

Total number of studies from #2: **65** (14+31+20)

Search query #3 (databases): "CSCL" or "computer supported collaborative learning" and "organizational complexity"

175 references found → **167** studies excluded

7 studies screened → **18** new studies included through cross-referencing
5 new studies included through snowballing

Total studies included for #3: **30** (7+18+5)

Search query #4 (databases): "CMC" or "computer mediated communication" and "organizational complexity"

194 references found → **181** studies excluded

13 studies screened → **25** new studies included through cross-referencing
11 new studies included through snowballing

Total studies included for #4: **49** (13+25+11)

178 studies included

↓

99 further studies included through cross-referencing after full-text reading

↓

277 studies (total set)

Figure 1: Search strategy for literature review

papers identified through the exploratory search:

"customer experience" AND "organizational learning" OR "learning organization" AND "information technology" OR "digital technology" AND "knowledge Management" AND "organizational complexity" AND "dynamic capabilities" AND "literature review"

This string was entered into the databases IEEE Explore, Business Source Complete, Springer Link, and Science Direct, as these contained journals that had published extensively on the topics of CX and organisational learning. Search #2 generated 136 results across the four databases, and a snowball approach was again used to trace the origins and subsequent development of ideas in the selected publications which led to an additional 65 publications being included. After evaluating the articles, it was felt that a more detailed insight into technology-mediated interaction was required in the context of organisational complexity. Two further searches were therefore undertaken in the databases Academic Search Ultimate, Business Source Complete, Springer Link, Science Direct and Scopus on 14th and 17th October 2017 respectively:

Search #3 "CSCL" or "computer supported collaborative learning" and "organizational complexity"

Search #4: "CMC" or "computer mediated communication" and "organizational complexity"

Relevant publications were identified using the same criteria as search #2, with the additional criterion that the studies focus on interaction in a workplace context. This resulted in a further 69 publications being included in the literature review. After a full-text reading of the 178 publications identified through the searches, a further 99 publications were added through cross-referencing.

To enable a consideration of how the CX function might contribute to organisational learning under conditions of complexity, this literature review begins by reviewing the literature on organisational complexity in relation to CX. The role of technology in supporting the collaborative work of CX professionals is then considered in order to frame how knowledge is produced through their technology-mediated interactions. The second half of the review then considers the literature on organisational learning, focusing specifically on the overlaps with the related fields of knowledge management and dynamic capabilities.

2.2 Organisational complexity

The increasingly complex nature of organisations has led scholars to consider how features of complexity might be applied to explain complex organisational phenomena (Kaplan & Seebeck, 2001; S. Maguire, McKelvey, Mirabeau, & Ötzas, 2006; Marion, 1999; Marion & Uhl-Bien, 2011; Mitleton-Kelly, 2003; Stacey, 1996; Weick & Sutcliffe, 2001). This growing interest in the application of complexity

science to organisations is also being driven by the growing dependence on an ability to leverage the characteristics of work environments that are increasingly dependent on technology-mediated networks (Boisot, 2006; Kaplan & Seebeck, 2001; Tremblay, 2012). This thesis is concerned with understanding if and how the information and knowledge emerging from the non-linear interactions of a specific subset of components – CX professionals – might contribute to learning at the system (i.e. the organisational) level. To support the application of complexity perspectives to human organisations, the research draws extensively on Complexity Leadership Theory (CLT) which has developed as 'a framework for leadership that enables the learning, creative, and adaptive capacity of complex adaptive systems (CAS) in knowledge-producing organisations or organisational units' (Uhl-Bien et al., 2007). This theory will be examined in detail in the Conceptual Framework chapter.

For the purposes of this thesis, the concept of 'complexity' is understood as distinctly separate from 'complicated'. Noting that 'a jumbo jet is complicated, but mayonnaise is complex', Cilliers (1998, p.3) highlights a common differentiation in the literature that while something which is complicated may still be reduced to the sum of its parts, something which is complex possesses a quality or qualities that 'emerge' through the interactions of components of the systems. The concept of complexity implies that the activity of a system cannot be explained by examining the activity of individual components of the system. Cilliers (1998) use the examples of a jumbo jet or a nuclear power station to show that while both are complicated systems containing a large number of components, their output can be explained as the sum total of the activity of each individual component. In contrast, a *complex* system results in activity that cannot be reduced to a series of predictable interactions between components

because these interactions are largely 'non-linear' and give rise to 'emergent' phenomena that are not present in the components themselves (Mitchell, 2011). This perspective can be broadly understood as 'systems thinking', and Capra (1996) explains how the need to conceptualise the organising relations between components of a complex system developed in the early 20th Century as biologists, philosophers and scientists grappled with the idea of a system as constituting more than the sum of its parts.

Common features of complex systems include the need for a large number of components engaging in dynamic, non-linear interactions, the 'open-ness' of the system (meaning that the system interacts with its environment), feedback loops that inform the recurrent evolution of the system, their operation under 'far from equilibrium' conditions predicated upon a constant flow of energy and information, and their evolution over time (Cilliers, 1998). Two further properties of adaptive systems relevant to the current study are their capacity for exploration and exploitation (Holland, 1975; Kuran, 1988; March, 1991), properties that enable the system to explore new possibilities while exploiting existing resources. Organisation scholars have interpreted this capacity for exploration and exploitation as 'ambidexterity' (Gibson & Birkinshaw, 2004; He & Wong, 2004; O'Reilly & Tushman, 2008), and the relevance of this concept to CX will be considered in section 2.5.2 on dynamic capabilities.

The properties of CAS have led to extended debate regarding appropriate ways to study them. In a comprehensive review of the complexity literature, Maguire, McKelvey, Mirabeau, and Ötzas (2006) make a distinction between European and

North American approaches to studying complexity. The European School is based around the work of Prigogine (1962, 1980; Prigogine & Stengers, 1984, 1997), Haken (1983), and Allen (1988, 2001) and many others, with a focus on far-from-equilibrium conditions and the ability of components of a system to self-organise in response to an externally imposed energy source. The North American School is informed by the work of Kauffman (1993, 1995), Lorenz (1963, 1972), and the research of the Santa Fe Institute, and focuses more on computational models and agent-based approaches (Mitchell, 2011).

The application of systems approaches to understand organisational phenomena began in the 1930s with Barnard's (1938) reference to organisations as cooperative systems. This was followed by research into general systems theory (von Bertalanffy, 1950, 1968), decision-making in complex organisations (Simon, 1962), open systems (Katz & Kahn, 1966), and the behaviour of social systems (Forrester, 1971), all of which is classed as 'hard' systems thinking. In contrast, a 'soft' systems approach to organisational complexity was proposed by researchers including Checkland (1981, 1994) and Daft and Weick (1984), due to the belief that the embedded experiences of agents within a system can be as – if not more – valuable in helping managers understand what is happening in an organisation. The value of using narrative epistemologies to interpret activity in complex adaptive systems has also been illustrated by Tsoukas (2005) and Tsoukas and Hatch (2001), and is informed by the work of Lyotard (1984) will be considered in more detail in the Conceptual Framework chapter.

To fully explain the idea of emergent phenomena in complex systems, it is often

necessary to refer to concepts from both paradigms (Maguire et al., 2006), and the work of Cilliers (1998, 2001) is widely recognised as providing a valuable way of bridging the gap between the objectivist and interpretivist positions (McKelvey, 2003). The application of systems thinking to organisations is relevant to the current research due to its influence on the field of organisational learning, and this will be examined below in Section 2.5 Organisational Learning.

2.3.1 The relevance of complexity science to organisations

Organisation scholars have applied the theoretical principles of complex systems science to organisations as a way to investigate complex behaviour (Boal & Schultz, 2007; Mitleton-Kelly, 2003; Schneider & Somers, 2006; Stacey, 1995, 1996; Uhl-Bien et al., 2007; Weick, 1995, 2001), and a 'systems thinking' approach is recognised as an appropriate response to increasing complexity in organisations (Crichton-Sumners, Mansouri, & Sauser, 2013). S. Maguire et al. (2006) classify complexity research into two distinct paradigms: objectivist and interpretivist. The objectivist paradigm aligns with a positivist ontological position, with researchers aiming to 'elicit the most appropriate single representation' of a complex system (Boisot & Child, 1999, p.238; Morin, 2007). Objectivist studies of complexity commonly use methodologies that employ mathematical and statistical techniques to model complexity, an approach developed by Kauffman (1993) and understood as agent-based modelling (Lichtenstein & McKelvey, 2004). Examples include the use of cellular automata to model emerging economic structures and social behaviour (Epstein & Axtell, 1996), organisational evolution and routines (Levinthal, 1997; Levinthal & Posen, 2007) and innovation processes (Siggelkow & Rivkin, 2006). In

contrast, interpretivist studies tend to employ a metaphorical application of the features of complexity to offer a new understanding of social phenomena, such as creativity and strategic management (Stacey, 1995, 1996), society (Sawyer, 2005) and language and communication (Livingstone, 2005; Salem, 2009).

The two positions have been described as 'restricted' and 'general' complexity (Morin, 2007), where objectivists attempt to restrict complexity in order to apprehend and study it, while interpretivists aim to maintain multiple, and often conflicting, representations of a phenomenon (Boisot & Child, 1999), and embrace the subjective involvement of the researcher in the system under investigation. Poutanen et al. (2016) note that a useful way of highlighting the dialectic between these two approaches is offered by Van Uden, Richardson, and Cilliers, (2001), who argue that while objectivists believe that human organisations *are* in fact complex systems, interpretivists believe they should be viewed as if they *were* complex systems. While objectivists tend to apply scientific methods to establish legitimised truth claims (McKelvey, 2003) and are suspicious of interpretivist epistemologies, interpretivists can be of the opinion that objectivists overlook much of what is important about complex adaptive systems (Holton, 1993; Tsoukas & Hatch, 2001). This distinction helps to locate the current research firmly in the interpretivist paradigm, aligning with the researcher's ontological and epistemological beliefs. The researcher's interpretivist position also informed the choice of a phenomenographic methodology as it provides a way to maintain the complexity of the phenomenon under investigation, rather than trying to reduce it into a single, consolidated interpretation, and this will be discussed in more detail in Chapter 4 Methodology.

Common to both objectivist and interpretivist paradigms is an acceptance that the unit of analysis in complex systems research is the system itself, or the organisation in the context of organisation studies. This is due to the concept of emergence that is a core property of such systems, and represents the moment at which a CAS evolves to a new level of complexity to display new, emergent properties that do not exist at lower levels (Merali & Allen, 2011). From such a perspective, any attempt to reduce explanations to the actions of individual components will ultimately fail to represent the emergent properties of the system, as too much of the relational information will be lost in doing so (Cilliers, 1998; M. C. Taylor, 2001). It is this anti-reductionist position that has the potential to render the CX function of greater interest to organisation scholars, due to the way in which it strives to describe and evaluate the total 'emergent' output of an entire organisational system (Kranzbühler et al., 2017). At the core of customer experience work is the aim to enhance cross-functional communication and collaboration in order to provide a seamless interaction between the customer and the organisation across multiple interactions, or touch-points (Meyer & Schwager, 2007). This perspective can be understood as a 'system-level' view of an organisation, and will be examined in more detail in section 2.5 Organisational Learning.

S. Maguire et al. (2006) also make the distinction between CAS in which the constituent parts are not themselves complex systems and are governed by rules that do not change, and those in which the constituent parts are themselves complex systems. In the latter, the authors note that it is common for the parts to be referred to as 'adaptive agents guided by internal models or schemata' (p.166), and that the interactions of these adaptive agents gives rise to a whole that is referred to as a CAS

(Holland, 1995). This is useful to the current research because it supports a conceptualisation of CX professionals as adaptive agents working and interacting within a complex adaptive system, and presents important implications for organisational learning which will be considered in the Discussion chapter. The development of Complexity Leadership Theory (CLT) is one example of a theory that aims to provide better guidance on how to harness the dynamics of organisational complexity (Arena & Uhl-Bien, 2016; Hazy & Uhl-Bien, 2015). The relevance of CLT to the work of CX professionals will be examined more closely in the Conceptual Framework chapter. The focus of CX work on cross-functional communication also renders the literature examining organisational communication of relevance to the current research, and the intersection of this field with complexity will now be reviewed in relation to CX.

2.3.2 Organisational complexity and organisational communication

As this thesis focuses on the potential impact of communication between CX professionals on organisational learning, a review of literature on organisational communication from the perspective of complexity is relevant. Complexity science has been acknowledged as challenging ways of understanding organisational communication (Aula, 1996), and has led to the development of new theoretical models of the field based on complex networks (Monge & Contractor, 2003). Aula (1999) suggests that organisations can be conceptualised as being created from a recursive combination of 'bottom up' and 'top down' activity, and that attempts to describe an organisation from only one of these perspectives will fall short. In a review of the literature, Poutanen, Siira, and Aula (2016) observe that studies

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attempting to apply complexity concepts to organisational communication are located predominantly in the interpretivist paradigm with a focus on the use of metaphors. The authors found a lack of empirical evidence in complexity literature on organisational communication, and suggest possible reasons including the relatively recent adoption of complexity by communication researchers and a potential difficulty in using current research methods to investigate complex organisational phenomena (Corman, Kuhn, McPhee, & Dooley, 2002). However, to illustrate the relevance of the intersection of these two fields for the current research, it is first necessary to offer a conception of an 'organisation' to support an investigation into how an organisation might learn.

In the introduction to their book *Organisation and Organising,* Robichaud and Cooren (2013) trace the evolution of organisational communication and its interpretations from multiple perspectives. The authors observe several distinct conceptualisations of organisations, including studies that debate the discursive and non-discursive nature of organisations (Alvesson & Kärreman, 2000; Fairclough, 2005) and those which adopt a postmodernist interpretation (Chia, 1996). A substantive contribution to the field has been made by Weick (1969, 1977, 1995; Weick & Sutcliffe, 2001) with the argument that organisations are 'enacted' into existence through the actions and interactions of agents, who subsequently stabilise the experiences of their interaction through a process of 'sensemaking' to establish a collective meaning. Weick's major contribution to the field is acknowledged as shifting emphasis away from organisation-as-object and towards organising-as-process, where organising involves a continuous, reciprocal cycle of action and interpretation (J. R. Taylor, 2013). A fourth group of scholars propose a view that

organisations are constituted by their communication, also known as the 'communicative constitution of organisation' or CCO perspective (Fairhurst & Putnam, 2004; Putnam & Nicotera, 2009; J. R. Taylor & Van Every, 2000). It is the conception that an organisation emerges – and is constantly emerging – through the dynamic interactions of its members that is useful to the current research. It is too early at this point to consider how these interactions could give rise to or be interpreted as organisational learning, but investigating the relationship between communicative activity and the development of an organisation, along the role of complexity dynamics, is necessary to support such a consideration which will be made in the second half of this chapter.

The literature on organisational communication is significant, and so this thesis focuses on the CCO perspective due to its alignment with complexity dynamics and specific consideration of how the interplay of text and conversation contribute to the emergence of an organisation (J. R. Taylor & Robichaud, 2004). The body of work by J. R. Taylor has explored and developed this perspective in detail (J. R. Taylor, 2009, 2013; J. R. Taylor, Cooren, Giroux, & Robichaud, 1996; J. R. Taylor & Giroux, 2005; J. R. Taylor & Van Every, 2000; J. R. Taylor & Robichaud, 2004), and the author notes that while the 'constative' dimension of language use (using words to describe) has received much attention through literature on knowledge management and diffusion, the 'performative' dimension of language use (using words to bring about action) in the context of organisation and communication remains under-researched (J. R. Taylor, 2013). The current research contributes to this gap by examining how conversational and textual exchanges between CX professionals might influence organisational learning.

In a summary of the field, J. R. Taylor (2013) states that organisational communication has moved beyond an understanding communication as something which simply happens in organisations and has reached a crossroads, arguing that there is now a need to investigate 'why is it, and how, and when, that organisation emerges in and through communication' (p.208). For Taylor, achieving this requires breaking with a long-established tradition that stretches back to Enlightenment thinkers such as Descartes which locates the individual as the basis of theory building, and instead accepting the 'ontological primacy of relationship' (p.212).

It is this shift which causes the CCO perspective of organisational communication to overlap the connectionist perspective of complexity posited by Cilliers (1998), which emphasises the connections between agents in a system rather than the attributes of individual agents. Such a shift moves away from the individual and towards the organisation as the unit of analysis, thus aligning the CCO perspective with the literature on organisational complexity as described in section 2.2 above. The refocusing on relationships rather than on individuals is significant because it supports a conception of an organisation as a CAS, which in turn supports a consideration of how complexity dynamics might influence organisational learning. It is this refocusing on relationships and shift in the unit of analysis that is of relevance to a reconceptualisation of the CX function under conditions of complexity, due to the way in which CX work increasingly aims to take a system-level view of the total output of an organisation and use it to improve local-level activity.

While the work undertaken by Weick (1979, 1995) has been influential at interpreting organisation as a process and as a verb (i.e. organising), Nicotera (2013) notes that

this has been at the expense of a conception of an organisation as an entity and as a noun. Although Nicotera proposes that an organisation is an entity and possesses agency, J. R. Taylor (2013) questions how this is possible when an organisation has no specific capacity to act – a problem highlighted by Caldwell (2012) which will be expanded in the context of organisational learning in section 2.5.1 below. A solution to this problem is offered by Czarniawska (2013), who proposes the concept of an 'action net' to explain how 'connections between and among actors, when stabilised, are used to construct the identities of actors' (p.13). Such a conception supports the move beyond an interpretation of an organisation as some form of 'superorganism' (Latour, 2013, p,.49), and illustrates how an organisation is instead 'materialised in its agents' (J. R. Taylor, 2013, p. 215) through a constant process of emergence which co-constructs both the organisation and its agents.

To illustrate this point, J. R. Taylor draws on research by Swieringa (2008) to offer a conception of an organisation as 'a community that takes shape in the reporting activities of its members, as they account for what they are doing, as individuals, and as a community of practice to which they belong and where they establish their identity' (J. R. Taylor, 2013, p.216). The critical step is how these agents construct a 'text' (the reporting activity) which captures and reflects the identity and attitude of the organisation, and which will support and communicate a recognisable identity beyond any single conversation (Nicotera, 2013). Examples of such texts are meetings of minutes, reports, presentations and other artefacts that capture the discursive activity that has taken place. This is of particular relevance to the current research which focuses on the experiences and emergent outcomes of technology-mediated interactions, and how these outcomes might give rise to organisational learning.

Putnam (2013) then uses the concept of 'metaconversations' to illustrate how conversations between individuals gradually contribute to narratives that inform the actions and interactions of multiple communities of practice. Drawing on the work of J. R. Taylor and Giroux (2005), Putnam makes an explicit reference to complexity dynamics to argue that metaconversations form a 'loosely coupled self-organising system in which multiple types of coorientations (conversations, practices, and actions) come together as individuals make sense of ongoing activities' (p. 26). Through this process, an organisation emerges recursively through the metaconversations of and between multiple communities of practice (J. R. Taylor, 2009).

The reciprocal influence of metaconversations and co-constructed texts on their authors and on the wider communities of practice which make up an organisation is especially helpful to a consideration of organisational learning, because it aligns with a conception of 'knowing-as-practice' and of knowledge as a dynamic activity (Blackler, 1995; Cook & Brown, 1999; Nicolini & Meznar, 1995; Polanyi, 1967). This will be examined in more detail in section 2.5.2 below. However, J. R. Taylor cautions that:

> If the concept of emergence is to be sustainable, an entity generated by a process, then we must not see the side effects of organising as merely an aberration or a deformation of what Habermas (1976/1979) calls "authentic" communication – something that is due to bigness and the games of power it encourages. We must recognise the same effects as always potentially present even in the simplest of human encounters (p.215).

Acknowledging that every interaction both manifests and is a manifestation of the organisation highlights the importance of understanding the influence of technology on interactions, as this influence may fundamentally shape the constitution of the organisation. Informed by such a view, the impact and influence of technology on interactions and its potential role in organisational learning will now be considered.

2.3.3 Organisational complexity and technology-mediated interaction

As defined in the introduction, the concept of technology-mediated interaction in this thesis is derived from aspects of Computer-Mediated Communication (CMC) and Computer-Supported Collaborative Learning (CSCL) in a workplace context, and relevant aspects of both fields will now be reviewed from a perspective of organisational complexity. At its most basic level, CMC can be understood as a computer system which enables the exchange of information between two or more people across a digital network (Williams, 1977). Although CMC is widely recognised as increasing the ability of members of an organisation to interact with each other (Olson & Olson, 2000) and share knowledge across networks (Alavi & Kane, 2009; Goodwin, 2009), the ability to study CMC in complex organisations is often limited by traditional research approaches (Canessa & Riolo, 2006).

To understand how technology supports communication, it is useful to establish a basic model of communication such as that proposed by Walther (1996) consisting of senders, receivers, messages, feedback and communication channel. Following Walther's model, *senders* initiate a communication exchange by formulating their intentions into information intended for others, and this information is encoded in a

message which uses symbols to represent the intended information. The sender then selects a *communication channel* as a vehicle to convey the message to others, and examples of such vehicles might be text, face-to-face communication, telephone or video. *Receivers* decode the message, and any response they choose to make is understood as *feedback.*

Early research in the field was sceptical of the appropriateness of CMC for supporting work on complex, ambiguous problems due to the low richness of text-based interaction (Daft, Lengel, & Trevino, 1987; Sproull & Kiesler, 1986). This research led to the development of several theories of CMC that were defined as taking a 'cues-filtered-out' view of communication (Culnan & Markus, 1987), an approach which proposed that the limited affordances of technology restricted the social cues that a sender could encode in a message. Examples include Social Presence Theory (Short, Williams, & Christie, 1976), which proposed that a restriction in cues would limit the ability to convey interpersonal information about character and personality, and Media Richness Theory (Daft & Lengel, 1984), which argued that identifying the most appropriate medium for a communication task would lead to the most effective communication, a concept termed 'task equivocality'. While subsequent research has suggested that humans are able to cope with low media richness and work effectively on such problems by taking contextual knowledge into account (Lee, 1994; Ngwenyama & Lee, 1997), both theories have been the subject of numerous critiques regarding their validity (Dennis & Kinney, 1998; Lea & Spears, 1995). The Social Identity Model of Deindividuation Effects, or SIDE model (Lea & Spears, 1995; Spears, Postmes, Lea, & Wolbert, 2002) also assumes that the limited capacity of

technology to convey non-verbal cues restricts the ability for users to exchange personal information.

In contrast to these cues-filtered-out interpretations of CMC which focus predominantly on the affordances of the communication channel, Liang & Walther (2015) classify a second group of theories of 'interpersonal adaptation' which focus more on the senders and receivers, and their capacity to harness all available cues in a channel to convey their intended meaning. These include Social Information Processing theory (Walther, 1992) and the Hyperpersonal Model of CMC (Walther, 1996), which builds on the former to argue that CMC may in fact enhance the development of relationships in ways that face-to-face communication cannot. A further theory in this category is Compensatory Adaptation Theory (Kock, 2007), which developed from the idea that the human brain is predisposed to prefer face-to-face communication. Compensatory Adaptation Theory proposes that different communication channels possess different levels of 'media naturalness' – a concept which describes the extent to which different channels can replicate the face-to-face mode of communication. The theory predicts that lower levels of media naturalness are likely to increase ambiguity in communication, and that improving communication efficiency in organisations requires the selection of an appropriate channel to convey the number and complexity of ideas. The theory places responsibility predominantly on message senders to determine the number of complex ideas that need to be conveyed (Campbell, 1988; Zigurs & Buckland, 1998) and to select the most appropriate channel to 'encode' their message, thereby reducing the 'compensatory decoding effort' for the receiver.

The potential for a communication channel to increase ambiguity is an important consideration under conditions of complexity. If every interaction in an organisation shapes the constitution of that organisation, as described above, then increased ambiguity in CMC will be reflected in the relationships that construct the organisation. Mitleton-Kelly (2003) considers the implications of complexity dynamics for generation of meaning in organisations, and highlights the importance of 'closing the gap between individuals' meanings and the meanings they generate through the total organisation produced by their interactions' (p.7). This point is echoed by Espejo (2003) who highlights the implications for organisational learning, stating that a poor understanding of the processes through which meaning is created can lead to the failure of a system. For Espejo, the ability to convey meaning effectively from the vast information flows within an organisation can determine whether an organisation functions effectively as a complex, adaptive social learning system as described by Wenger (2000), or whether it remains as a more dysfunctional collective of individuals. Such a perspective supports the case for a post-structuralist apprehension of the problem, and this will be considered in more detail in the Conceptual Framework chapter.

A recurring approach in the literature to reducing ambiguity in CMC is that of aiming to achieving a balance between face-to-face and online communications in order to improve group cohesiveness (Canessa & Riolo, 2006; Hill, Bartol, Tesluk, & Langa, 2009). Noting the growing acceptance of the role of trust in developing an effective computer-mediated environment (Gibson & Manuel, 2003; Hart & McLeod, 2003; Wilson, Straus, & McEvily, 2006), the findings of Hill et al. (2009) suggest that the use of an introductory face-to-face meeting between individuals about to embark on a

collaborative task can enhance the effectiveness of their subsequent collaboration. This aligns with the hypothesis that a higher level of group cohesion will lead to higher levels of non-verbal communication (Stevens & Finlay, 1996), a hypothesis later confirmed in the context of CSCL (Janssen, Erkens, & Kanselaar, 2007; Janssen, Erkens, Kirschner, & Kanselaar, 2009). If a physical meeting is not possible, those responsible for designing collaborative teams could consider providing a clear communication plan involving a mixture of synchronous and asynchronous interaction activities, and an explanation of how each available channel can support the completion of the task (Serçe et al., 2011).

A second approach to reducing ambiguity in the CMC literature is to focus on the specific skills required by individuals to engage effectively in computer-mediated work, a phenomenon variously referred to as CMC competence (Spitzberg, 2006), communication competence (Y. Hwang, 2011) and interpersonal communication competence (Spitzberg, 1983; Spitzberg & Cupach, 1984). As an increasing amount of work in organisations is undertaken by distributed teams, the successful completion of work-related tasks is more heavily dependent on the ability of team members to identify, select and use CMC technology appropriately, and research has sought to identify the skills and competencies required to communicate and collaborate effectively using technology (Keaten & Kelly, 2008; M. Maguire, 2014; Serçe et al., 2011; Walther, 2007). The gradual improvement in technological affordances has improved the ability of CMC to support more sophisticated interaction, and has led to studies seeking to evaluate the appropriateness of non-text-based CMC such as video-conferencing for supporting collaboration in workplace contexts (Carey & Kacmar, 1997; Heller, 2010; Olaniran, 2009). However, although it could be hypothesised that

communicating via video-conference might reduce the technical competencies required to communicate effectively by providing a more 'natural' medium (Kock, 2007), Y. Hwang (2011) notes that a link between communication competence in face-to-face settings and computer-mediated contexts has yet to be established.

Research into CMC has also informed the development of the field of CSCL (Harasim, 1991; Koschmann, 1994), and while CMC theories can remove barriers to collaborative learning (Alavi, 1994; Hooper, 1992), CSCL research focuses predominantly on how technologies can support collaborative learning (Koschmann, 1994). Reviewing literature on the effects of technology-meditated activity on collaborative learning is relevant to this thesis as it informs a consideration of how CX professionals learn through their work, and supports a subsequent analysis of learning at the organisational level. While a significant proportion of the literature on CSCL examines technology-mediated activity in compulsory and higher education settings, this thesis only considers aspects of CSCL that can help interpret collaborative learning in workplace contexts.

To understand the relevance of CSCL to this research, it is important to acknowledge the subtle yet important differences between the terms collaboration and cooperation. Successful cooperation in a workplace context requires an awareness of the knowledge and activity of other partners involved in a joint activity in order to inform one's own activity (Dourish & Belotti, 1992). The concept of group awareness originates in the literature on computer-supported cooperative work (CSCW) (see, for example, Gross, Stary, & Totter, 2005), with concepts such as social awareness and action awareness being used to inform behaviours and coordinate the division of

labour in support of task completion (Engelmann, Dehler, Bodemer, & Buder, 2009). Engelmann et al. note that whereas cooperative tasks are divided and distributed among group members, collaborative tasks involve joint actions and interactions (Dillenbourg, 1999), and therefore have different requirements in terms of group awareness.

Within the field of CSCL itself there are different epistemological approaches (Hmelo-Silver, 2013; Suthers, 2006), and differentiating between these is also relevant to the current research in order to establish a conception of learning. Two key metaphors for learning underpinning the field of CSCL can be traced to work in the field of developmental psychology by Piaget and Vygotsky (Lipponen, 2002), with the Piagetian view of 'learning as acquisition' contrasted with the Vygotskian view of 'learning as participation'. While the work of Piaget (1936, 1950) frames learning as a cognitive construction of new knowledge that predominantly occurs in the minds of individuals, the work of Vygotsky (1978) views learning as a social construction of knowledge that occurs through interaction with others. While both perspectives have informed an understanding of learning in the field of CSCL, Suthers (2006) posits that the Vygotsky's constructivist view is often interpreted as 'collaborative knowledge construction' by CSCL researchers and implies and 'interactional constructivist epistemology' (p.316). From a Vygotskian perspective, knowledge is viewed as emerging through collaborative interactions and is both distributed across and mediated through the network of individuals and tools engaged in collaboration (Cole & Wertsch, 1996; Lipponen, 2002).

To differentiate individual from collaborative learning, Koschmann (2002) proposes that the latter occurs 'in the context of joint activity' and Suthers (2006) identifies different epistemologies in CSCL that align with this view. These include *knowledge communication* (Wenger, 1987)*, which is concerned with how the knowledge of an individual is acquired by someone else via a communicative act, and *intersubjective learning* (Hollan, Hutchins, & Kirsh, 2002), in which two or more people mutually accomplish learning through participating in communication. Suthers notes that a more extreme version of the intersubjective view is that learning not only happens through mutual interaction but actually consists of those interactions (Koschmann et al., 2005).

The intersubjective interpretation of CSCL is of particular relevance to the current research, because if an organisation is viewed as continuously emerging through the interactions between individuals as theorised in the CCO view of organisational communication (section 2.3.2 above) then the mutually constructed learning that occurs during technology-mediated interaction in organisations can potentially be interpreted as organisational learning. Intersubjective epistemologies in CSCL also conceptualise learning at the level of a community, and Suthers highlights the theory of 'legitimate peripheral participation' (Lave & Wenger, 1991) as an example of this. Such a view incorporates an individual perspective, where a new member of a community acquires its cultural norms and values through a related process of internalisation (Vygotsky, 1978), while also accommodating a group-level perspective which views learning as participation (Rogoff, 1995). A conception of learning as 'social practice' (Brown & Duguid, 1991; Lave & Wenger, 1991), in which the identity of a community and its members are mutually co-constructed, can therefore

be viewed as similar to Czarniawska's (2013) concept of an action net to explain organisational agency.

The concern of CSCL with intersubjective meaning making also draws on research into what has been variously been termed group cognition (Palermos, 2016), collaborative cognition (Fiore et al., 2010) and distributed cognition (Hollan et al., 2002; Salomon, 1993). Underpinning these interpretations is a common acceptance that a social system such as a group or an organisation can possess some form of memory that exists independently of (or emerges through, from a complexity perspective) the interactions of its members, a concept broadly referred to as organisational memory (Bannon & Kuutti, 1996; Leblanc & Abel, 2007; Stein & Zwass, 1995; Walsh & Ungson, 1991). The work of social psychologist Daniel Wegner into 'transactive memory' (Wegner, 1986; Wegner, Erber, & Raymond, 1991; Wegner, Giuliano, & Hertel, 1985) has been identified as influential in the development of ideas of organisational memory, and while the validity of the concept has been challenged (Pavitt, 2003) it is increasingly recognised as a useful way of framing group-level cognition (Theiner, 2013).

However, Bannon & Kuutti (1996) observe that the development of computation through the 20th century has led to a conception of memory that is increasingly equated with the idea of storage and retrieval of information. Importantly, the authors note that this has obscured an alternative, yet equally relevant, understanding of memory processes as an 'active act of remembering' (p.161), an idea originating in ancient Greece and subsequently developed by cultural historical psychologists as 'processes that constitute the content of a specific action' (Zinchenko, 1983, p.76).

From such a perspective, 'each action of memorising or storing information and each action of recalling and remembering take place in the context of an activity' (Bannon & Kuutti, 1996, p.162).

As the current research is concerned with organisational learning, it is necessary to identify the potential role of transactive memory in this process. A review by Ren and Argote (2011) found that three quarters of studies into transactive memory systems focused on small, task-orientated groups, and the limited studies attempting to develop the concept at an organisational level reported numerous challenges and limitations. The work of these authors is also important as it identifies a link between transactive memory and the development of dynamic capabilities (Argote & Ren, 2012), which will be discussed below in section 2.5.2 in relation to organisational learning. This link can be viewed as an indication that the concept of transactive memory is increasingly perceived as a useful construct in explaining organisational activity.

2.4 Organisational complexity and customer experience

So far, we have established that the CX function can provide both an external (etic) and an internal (emic) view of an organisation (Kranzbühler et al., 2017), and that the latter involves viewing an organisation, rather than an individual, as the unit of analysis. This is consistent with a conception of an organisation as a CAS (S. Maguire et al., 2006). We have also established that the aim of the CX function to identify new opportunities in the external environment while improving the coordination of resources within the organisation is comparable to the capacity of CAS for

exploration and exploitation (March, 1991). Understanding the collaborative, technology-mediated nature of internal CX work (Meyer & Schwager, 2007) and its focus on improving the coordination of resources (Kwortnik & Thompson, 2009; Patricio et al., 2008) can be enhanced by drawing on concepts from CMC and CSCL to consider how individuals might learn through collaboration (Hollan et al., 2002; Koschmann et al., 2005), and how knowledge might be constructed and stored at a group level (Ren & Argote, 2011, Argote & Ren, 2012; Wegner, 1986). By aligning the intersubjective learning of collaborative work with a view of an organisation as continuously emerging through communication between its members (Putnam, 2013; Putnam & Nicotera, 2009), it is possible to see how the collaborative work of CX professionals might contribute to the metaconversations that constitute the organisation (Robichaud, Giroux, & Taylor, 2004; J. R. Taylor & Giroux, 2005). From this position, it is now possible to examine the concept of organisational learning and its potential relationship with the CX function.

2.5 Organisational learning

The diverse origins of research into organisational learning contributed to the rapid expansion of the field (Argote, 2011, 2012), and a foundational challenge has been the difficulty in relating learning at the individual level to learning at the organisational level (Argyris & Schön, 1978). This question that has led to concerns regarding anthropomorphism and reification (Caldwell, 2012), and the dangers of assuming that an organisation has abilities independent from the individuals within it. Before an understanding of organisational learning can be reached, it can be helpful to state what is understood as an 'organisation'. Piette (2013) offers a conception of an

organisation as a narrative construction, in which the narrative is continuously

reconstructed by different authors with different knowledge in different contexts,

leading to a view of an organisation as 'the unstable result of organising processes, a

kind of social dynamic in a constant state of flux' (p.151).

Building on this idea, J. R. Taylor (2013) argues that while an organisation is a

fictitious construct with no intrinsic agency, it is 'materialised in its agents' and thus

is 'powerful actant because we attribute an attitude to it as we do with signs' (p.215).

Drawing on Czarniawska's (2013) concept of organisations as action nets in which

'actors and organisations are outcomes, rather than inputs, of organising' (p.13), J. R.

Taylor uses the 'ontological primacy of relationship' to recast the organisation, rather

than the individual, as the unit of analysis, and offers a conception of an organisation

as emerging '*in* and *through* communication' (p.208, emphasis in original). Informed

by Maturana and Varela's (1987) concept of autopoesis, this position is helpful in

arriving at a definition of organisational learning as it supports the conception of an

organisation as a CAS that is constantly emerging through action and communication.

If 'communication dos not merely enable practice; *it* is also practice' (J. R. Taylor,

2013, p. 221, emphasis in original), then an organisation is always 'immanent' and

indivisible from the members who will it into existence (Latour, 2013). These

concepts can be brought together using the idea of metaconversations (Robichaud et

al., 2004), which can be understood as forming a 'loosely coupled self-organising

system in which multiple types of co-orientations (conversations, practices, and

actions) come together as individuals make sense of ongoing activities' (Putnam,

2013, p. 26). Metaconversations develop out of the interplay of conversations and

texts exchanged between individuals in multiple communities of practice, and an

organisation emerges as these metaconversations come into contact with the physical and social world (J. R. Taylor, 2009).

Since its appearance in the 1960s (Cangelosi & Dill, 1965) and popularisation in the 1970s as a potentially useful management concept (Argyris, 1977; Argyris & Schön, 1978), the validity of organisational learning has been widely debated in the literature (Argote, 2011; Easterby-Smith, 1997; Easterby-Smith, Crossan, & Nicolini, 2000). Many varied definitions of organisational learning have been proposed, including 'the process of improving actions through better knowledge and understanding' (Fiol & Lyles, 1985, p.803), 'a principal means of achieving the strategic renewal of an enterprise' (Crossan, Lane, & White, 1999, p.522), a change in the potential behaviours of an organisation based on new knowledge and insights (Huber, 1991), and 'the process of change in individual and shared thought and action, which is affected by and embedded in the institutions of the organisation' (Vera, Crossan, & Apaydin, 2011, p.154), The diverse origins of the concept therefore make a universally accepted interpretation unlikely (Robey et al., 2000).

Despite the debate regarding whether organisational learning should be understood as a change in cognition or a change in behaviour, there is general acknowledgement that learning at the organisational level can be evidenced as either a change in beliefs/cognitions or in actions/behaviour (Easterby-Smith et al., 2000), and 'most researchers would agree with defining organisational learning as a change in the organisation's knowledge that occurs as a function of experience' (Argote, 2011, p.440). Following the recommendation of Robey et al. (2000), the definition provided

in Chapter 1 Introduction defines the researcher's interpretation of organisational learning for the purposes of this thesis.

At the heart of the problem of organisational learning is the issue of how the knowledge of individuals is transferred to the organisation itself (Crossan et al., 1999; D. H. Kim, 1993). An expansive body of research has investigated how the knowledge and experience of individuals can be embedded in aspects of an organisation through routines (Cepeda & Vera, 2007; Cyert & March, 1963; Nelson & Winter, 1982), shared mental models (D. H. Kim, 1993; Senge, 1990) transactive memory systems (Kuutti & Bannon, 1996; Walsh & Ungson, 1991; Wegner, 1986), and knowledge management systems (S. H. Kim, 2008; Vera et al., 2011), and this has led to considerable overlaps between organisational learning and the related fields of knowledge management and dynamic capabilities (Argote & Miron-Spektor, 2011; Easterby-Smith & Prieto, 2008). The work of Argyris and Schön (1978) provides an early and influential attempt at theorising this problem (Fiol & Lyles, 1985; Huber, 1991; Watkins & Marsick, 1993) by proposing the ideas of single and double-loop learning. While single-loop learning occurs when an individual resolves the symptoms of a problem and develops new working practices, double-loop learning happens when an individual tackles the root cause of the problem and causes the organisation to develop new capabilities as a result. However, learning by individuals is not sufficient, and Watkins and Marsick (1996, 2003) argue that change must happen at the individual, group, organisational and environmental level and lead to the development of new organisational routines for organisational learning to have occurred.

A further contribution of Argyris and Schön is their distinction between individuals' 'espoused theories', which are the ways in which individuals talk about what they do, and their 'theories-in-use', which are demonstrated in what they actually do. The authors argue that individuals have 'mental maps' of an organisation which guide their actions and behaviours, and that 'as individual members continually modify their maps and images of the organisation, they also bring about changes in organisational theory-in-use' (1978, p.17). For Argyris and Schön, reducing the gap between espoused theories and theories-in-use is key to increasing organisational effectiveness. A different approach is taken by Huber (1991), who theorises four constructs of organisational learning: knowledge acquisition, information distribution, information interpretation, and organisational memory. The knowledge acquisition construct is of particular relevance to the current research because it identifies a subconstruct of 'searching and noticing' and three further subconstructs of 'scanning', 'focused search', and 'performance monitoring', and each of these activities can be aligned to the CX function.

Despite differing views of how organisational learning might occur, its value lies in its potential to enable an organisation to manage change and adapt to, influence and transform its environment (Burnes, 2009). Givel (2015) argues that in order to avoid a 'race to the bottom' involving a continual degradation of salaries and working conditions, organisations will increasingly require the capacity for continuous innovation of products and services along with ways to improve their delivery to customers (Phillips, Watkins, & Marsick, 1996). As organisations seek new and innovative ways to differentiate themselves from their competitors, increasing attention has been paid to the potential for organisations to learn from their customers

(McKinsey, 2016; Verhoef et al., 2009), an activity often defined as the co-creation of value (Rowley, Kupiec-Teahan, & Leeming, 2007) based on service-dominant logic (Vargo & Lusch, 2004, 2008). But while the role of the CX function in facilitating a customer-oriented perspective is well-researched, less is known about how the knowledge of CX professionals is then transferred to the organisation and used to modify and improve its routines (Kranzbühler et al., 2017).

It is also interesting to note that while the concept of 'systems' has received much attention in relation to organisational learning, less attention has been paid to the interrelationship with 'complexity' (Ghili, Tavana, Keyvanshokouhi & Isaai (2013). One particular systems-driven view is that of Senge (1990), whose highly influential book *The Fifth Discipline* put forward the concept of the 'learning organisation', which despite widespread investigation in respect of its value to the management literature remains abstract and vague (Örtenblad, 2001) and even potentially redundant (Caldwell, 2012). A common distinction in that organisational learning is descriptive and seen as an ongoing process, while becoming a learning organisation is viewed as prescriptive and an ideal outcome of this process (Rebelo & Gomes, 2008; Watkins & Marsick, 1993). While a critical examination of the differences between organisational learning and learning organisations is beyond the scope of this review, and has already been undertaken by Givel (2015), Caldwell's critique of the learning organisation is relevant as it highlights Senge's attempt to situate the concept within theories of learning and knowing-as-practice (Cook & Brown, 1999). Viewing organisational learning from a practice-based perspective provides a way to build on the idea that technology-mediated interactions support intersubjective learning as

discussed in section 2.3.3 above. The implications of knowing-as-practice for learning at the organisational level, and for the CX function, will now be examined.

2.5.1 Knowing-as-practice, knowledge management and organisational learning

The idea that an organisation can learn implies that it must also be able to know, and it is increasingly recognised that similar issues and concepts underpin research into both organisational learning and knowledge management (Easterby-Smith et al., 2000). However, the differences between these two areas of enquiry are not immediately obvious (Cegarra-Navarro, Jiménez, & Martínez-Conesa, 2007), and differentiating between learning, knowing and knowledge is necessary to support a hypothesis for how the intersubjective learning of individuals might be transferred to the level of an organisation. As stated in section 2.3.3 above, the impact of theories of computation on notions of learning and memory throughout the 20th century has led to a conception of knowledge as something that can be easily stored in computer systems. But such a view risks equating knowledge with data and information, and doing so can not only lead to organisations failing to achieve the expected gains from knowledge management systems (Davenport & Prusak, 1998) but also produce expensive and dangerous mistakes (Sveiby, 1997). As this thesis considers the relationship between the collaborative knowledge-generating activity of individuals and organisational learning, it is necessary to unpack the widely-used term of 'knowledge management' in relation to organisational learning.

In their exploration of the similarities and differences between organisational learning, knowledge management and dynamic capabilities, Vera et al. (2011)

identify two main paradigms of knowledge management as 'computational' and 'organic'. While the computational paradigm views knowledge management as a process of using technology to identify and manage empirically validated facts, the organic paradigm places greater value on the location of knowledge in people, groups, and networks, and emphasises the importance of social and cultural factors (Argote, 2005). Although the positivistic view of knowledge as justified true belief has come to dominate in Western culture and is widely viewed as a valid conception in organisational theory, there is increasing acknowledgement of the value of constructivist perspectives in the study of knowledge and knowledge management (Vera et al, 2011).

While numerous studies have attempted to move conceptions of knowledge away from a 'commodity' that is 'acquired', and towards an understanding of knowledge as practice (Blackler, 1995; Cook & Brown, 1999; Nicolini & Meznar, 1995; Polanyi, 1967), attempts to classify these perspectives are rendered problematic due to the diversity of methods of inquiry (Caldwell, 2012). However, most practice-based theories of knowledge share a common theme in their rejection of a conception of knowledge based on representationalism (Schatzki, 1997). A practice-based view of knowledge has important implications for knowledge management, because it rejects the view of knowledge as something that can be codified, stored and transmitted using a form of representational technology such as a knowledge management system. Such a view proposes that knowledge and learning are inseparable from practice (Brown & Duguid, 1991), are understood as processes of participation within communities of learning or practice that take place within 'shifting practice spaces' (Caldwell, 2012,

p. 149), and include the shared learning and tacit knowing contained in social practices (Bourdieu, 1977; Wenger, 2000).

The difficulty of effectively managing the knowledge of an organisation has been well documented (see, for example, Alavi & Leidner, 2001; Atherton, 2013; Turner & Makhija, 2006; von Krogh, 2012). While the world beyond the boundary of the organisation is becoming increasingly networked, many organisations are struggling to implement both the tools and practices intended to improve internal knowledge management (Hislop, 2013; McDermott, 2009). Underpinning much of the literature on knowledge management is Plato's conception of knowledge as 'justified true belief' (Kimble, 2013), a position which removes the need for a connection between knowledge and action. Kimble notes that:

> 'by linking knowledge to true belief, the semantics of the message become relevant, as this view…implies there is indeed a correct way to interpret information. It also implies that knowledge does not need to be justified by reference to sensory perceptions, and that there is no necessary connection between knowledge and action' (Kimble, 2013, p.3).

Plato's position supports a view that new knowledge is created by accumulating 'true' facts, and informs the belief that knowledge can therefore be stored in and retrieved by computer systems. Kimble notes that the view of new knowledge being created through bringing together existing information sets is central to many management models such as Ackoff's (1989) 'data-information-knowledge-wisdom' pyramid mentioned in the Introduction.

However, a cumulative approach to knowledge management is rendered problematic by the context-dependent nature of information and observation that 'for a piece of information to be useful, one must know the context in which it will be used' (Kimble, 2013., p.2). While Nonaka and Takeuchi (1995) observe that a cumulative view of knowledge management has come to dominate in many western organisations, they argue that this has been at the expense of an appreciation of the role of context in effective knowledge creation and management. Their distinction between 'tacit' and 'explicit' knowledge has informed much subsequent research and draws extensively on the work of Polanyi (1967), who proposed that a significant amount of imperceptible and contextual, or 'tacit', information is exchanged during communication. In contrast, a cumulative approach to knowledge management only aims to capture 'explicit' knowledge that has been externalised and codified, and while these processes can enable information to be stored and shared electronically they can also lead to a loss of flexibility in subsequent interpretation (Tuomi, 1999).

Sveiby's concern regarding the largely unconscious assumption that the human brain deals with information and knowledge in the same way as a computer system is tackled by Cilliers' (1998) work on CAS and neural nets, which proposes that such systems store information as a network of differences. In doing so, Cilliers demonstrates 'the didactic relationship between knowledge and the system in which it is constituted (S. Maguire et al., 2006, p.194), and argues that data must be interpreted by a person in order to be transformed into knowledge. Importantly, S. Maguire et al. posit that 'in many settings, there is simply no substitute for experience' (ibid.), highlighting the problematic nature of a cumulative approach to knowledge management.

The multitude of classifications of organisational knowledge has further compounded the difficulty in achieving consensus regarding how knowledge is articulated, shared and stored (Alavi & Leidner, 2001; Wells, 1999). Since it is very difficult, if not impossible, to create a self-contained message containing all the tacit and explicit knowledge required to guarantee its effective decoding (Duguid, 2005), the ability to decode the message requires a consideration of both the intended context of its use and the cognitive context of the recipient (Miller, 2002). If information is defined as 'a difference which makes a difference' (M. C. Taylor, 2001), we use our context and prior knowledge to differentiate relevant information from a sea of background noise. Such a view can be seen as central to Kock's (2007) Compensatory Adaption Theory, which highlights the responsibility for effective decoding of a message onto the sender, and to Cham's (2007) quest for a Reconstruction Theory to improve interaction in digital environments.

Moving away from a conception of knowledge as a 'thing' and towards a view of knowledge as a 'process' can enhance knowledge management by bringing greater focus on the interpretive, sense-making capabilities of individuals (Lissack, 2000). Acknowledging the interpretive role of the recipient also informs Tuomi's (1999) argument for inverting Ackoff's pyramid, and the belief that doing so may lead to the design of more effective systems for managing data, information and knowledge.

These latter positions are consistent with a social constructivist, post-structuralist paradigm of knowledge predicated upon a belief that meaning is a shared construct and constantly evolves through social interaction (Derrida, 1984; Vygotsky, 1978). Such a view informs the conception of 'knowing-as-practice', a view which

distinguishes between passively possessing knowledge and actively knowing, and which proposes that knowing something is only evidenced through applying knowledge to a given task or situation (Cook & Brown, 1999). Although Caldwell (2012) notes that classifying practice theories of learning and knowing is difficult due to the significant diversity in methods of inquiry (Fox, 2006; Geiger, 2009), he observes that they do share some common principles including a rejection of a representational claims to knowledge (Schatzki, 1997) and a belief that learning involves the acquisition of both codified knowledge *and* the social practices within which it is situated (Bourdieu, 1977; Wenger, 2000).

A constructivist, practice-based view of knowledge has important implications for both organisational learning and for the CX function. In an organisational context, the constructivist position has led to a widespread belief in the conception of communities as structures which are created and developed through practice and discussion, and which retain the cultural and behavioural norms of groups of people as both a shared interpretive framework and a form of group-level memory (Lave & Wenger, 1991; Nelson & Winter, 1982; Walsh, 1995; Walsh & Ungson, 1991). These communities have variously been described as supra-individual knowledge structures (Walsh, 1995) and communities of practice (Wenger, 1998, 2000), and are integral to the conception of organisations as developing out of metaconversations between multiple internal communities (Robichaud et al., 2004; J. R. Taylor, 2009).

Such a view also informs the description of organisations as social learning systems (Wenger, 2000), whose sustainable existence is dependent upon their ability to continuously learn from their internal and external environment and participate in

broader ecosystems. Wenger argues that people constantly develop their experience as they interact with others in an organisation, and that in doing so they use their experience to improve the competence of the community. From this perspective, learning is viewed as 'a dynamic, two-way relationship between people and the social learning systems in which they participate [and] combines personal transformation with the evolution of social structures' (ibid., p.227). This view can be viewed as consistent with the concept of 'action nets' (Czarniawska, 2013) in which the network of relationships between individuals both shapes and is shaped by their dynamic interactions, and a belief in this emergent property of organisations is shared by researchers in both knowledge management and organisational learning fields (Stacey, 2000, 2001; Vera et al., 2011).

If an organisation is understood as emerging through the dynamic interactions between multiple communities of practice (J. R. Taylor, 2013), the internal work of the CX function can be viewed as playing an important role at the boundaries of these communities. Boundaries are integral to Wenger's (2000) concept of a social learning system as they both delineate the extent of the knowledge, customs and routines that are shared by members of a community of practice, and prevent opportunities for the community to learn as it encounters difference. Those working at the boundary of a community of practice are often required to translate the experiences and competences of each community to facilitate a mutual understanding and identify new possibilities and insights, and the internal work of CX professionals involves using the external narratives of customers' experiences to improve the comprehension and collaboration between different internal functions (Meyer & Schwager, 2007). To use Wenger's (2000) terms, CX professionals can be understood as 'brokers between

communities' (p.235) who translate the experiences and competences of different organisational communities of practice to achieve 'new levels of coordination' (p.234).

A view of CX professionals as brokers suggests a need to consider the role of social capital in influencing their work. The definition of social capital is the subject of on-going debate, but the concept was brought to prominence by the author Robert Puttnam who defines social capital as 'those features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions' (Puttnam, 1993, p.167). While Puttnam's view of social capital foregrounds the advantages that social capital affords for community cohesion, a later definition by Burt (2005) of social capital as 'the advantage created by a person's location in a structure of relationships' (p.4) prioritises its benefits for individuals. Arena and Uhl-Bien (2016) define social capital as 'the competitive advantage that is created based on the way an individual is connected to others' (p.22), and argue that innovation in complex organisations is as dependent on social connections as it is on technological factors. The authors highlight that a better understanding of two key aspects of social capital, 'group cohesion' and 'brokerage', can enable complex organisations to unlock hidden potential. More cohesive groups demonstrate higher levels of trust and enable individuals to share information more quickly than less cohesive groups (Fleming, Mingo, & Chen, 2007), while brokers connect these groups together. People who act as brokers provide competitive advantage as they tend to have wider and earlier access to more diverse information, and the ability to control how information is disseminated (Burt, 2005).

Arena and Uhl-Bien propose that organisations can increasingly benefit from these dynamics of social capital by creating an 'adaptive space' which connects the administrative and entrepreneurial systems that exist in organisations. While the administrative system is concerned with formal processes of control and the exploitation of existing resources, the entrepreneurial system represents the exploration of new ideas and generation of new knowledge, and as such the theory is informed by March's (1991) concepts of exploration and exploitation. To reconcile the tensions between these two systems, Uhl-Bien and Marion (2009) propose that adaptive space can foster relational dynamics through 'rich interaction, interconnectivity, and information flow' (Marion & Uhl-Bien, 2011; see also Lichtenstein et al., 2006 and Plowman et al., 2007). As this thesis is concerned with the ways in which CX professionals interact using technology, the concept of adaptive space provides a useful way of theorising their activity and will be explored in more detail in the Conceptual Framework chapter.

The literature on organisational learning and knowledge management also identifies increasing synergies with research into dynamic capabilities (Easterby-Smith & Prieto, 2008; Teece, 2007). Having identified how the work of CX professionals can contribute to organisational learning through their ability to broker new knowledge between communities, it is now possible to consider how the CX function might be interpreted as a dynamic capability.

2.5.2 Organisational learning, knowledge management and dynamic capabilities

Since the argument that an organisation might possess dynamic capabilities was first proposed by Teece et al. (1997), research has sought to investigate the similarities and

differences of the concept with related fields of organisational learning (Bhatt &

Grover, 2005; Prieto & Easterby-Smith, 2006; Wang & Ahmed, 2007; Winter, 2003)

and knowledge management (Cepeda & Vera, 2007; Easterby-Smith & Prieto, 2008;

He & Wong, 2004; Teece, 2007). While a full review of the dynamic capabilities

literature is beyond the scope of this thesis, the intersection of dynamic capabilities

with organisational learning and knowledge management is relevant as it provides a

way to theorise the internally-focused work of the CX function due to its focus on the

continuous renewal of customer experiences (Homburg, Jozić, & Kuehnl, 2017). As

with the development of any new concept, the existence and definition of dynamic

capabilities has been the subject of intense debate in the literature (Dosi, Faillo, &

Marengo, 2008; Eisenhardt & Martin, 2000; Winter, 2003; Zahra, Sapienza, &

Davidsson, 2006; Zollo & Winter, 2002) and was initially the subject of tautological

concerns regarding firms' performance (Mosakowski & McKelvey, 1997; Priem &

Butler, 2001). While dynamic capabilities are posited as a potentially valuable way of

conceptualising the ability of organisations to continuously adapt in order to deliver

sustainable competitive advantage (Mulders & Romme, 2009), there remain

considerable variations in conceptualisations and scepticism regarding their existence

(Peteraf, Di Stefano, & Verona, 2013).

The concept of dynamic capabilities grew out of the concern in the strategic

management literature with the desire to develop a better theory of firm performance

(Nelson & Winter, 1982; Rumelt et al., 1994; Teece, 1982; Teece et al., 1997). In

view of the role of organisational knowledge in achieving sustainable competitive

advantage, researchers in the fields of knowledge production and management have

explored potential links between the fields (He & Wong, 2004; Sambamurthy &

Subramani, 2005). Central to the idea of dynamic capabilities is the belief that exploiting existing knowledge-based competencies and exploring new knowledge-based competencies are integral to the effective long-term renewal of a firm (Gibson & Birkinshaw, 2004; Prieto & Easterby-Smith, 2006; Zollo & Winter, 2002), a belief informed by the explorative and exploitative properties of CAS in relation to organisational learning (March, 1991). This perspective builds on ideas of economic development first proposed by Schumpeter (1934) that were later developed into resource-based theories of the firm (Grant, 1991), which sought to explain the company-specific assets required for effective diversification (Montgomery & Wernerfelt, 1988; Teece, 1982).

Zollo and Winter (1999) trace the evolution of dynamic capabilities from the idea that organisations learn through routines (M. D. Cohen, 1991; Nelson & Winter, 1982), develop an 'absorptive capacity' to recognise and assimilate new knowledge (W. M. Cohen & Levinthal, 1990), acquire 'combinative capabilities' to reconfigure their internal knowledge (Kogut & Zander, 1992), and possess 'dynamic capabilities' which enable them to adapt effectively and sustainably to changing market conditions (Teece, 2007; Teece et al., 1997). Researchers have highlighted the interdependencies between the fields of dynamic capabilities, knowledge management, organisational learning and organisational complexity (Cepeda & Vera, 2007; Easterby-Smith & Prieto, 2008; Eisenhardt & Martin, 2000; Vera et al., 2011).

The perceived usefulness of the dynamic capabilities perspective in analysing complex organisational processes stems from a belief in its ability to offer a way of responding to firms' desire for sustained competitive advantage (Prieto & Easterby-

Smith, 2006). Pavlou & El Sawy (2011) note that understanding dynamic capabilities requires clearly distinguishing them from operational capabilities, which are understood as collections of routines that enable an organisation to 'earn a living by producing and selling the same product, on the same scale and the same customer population' (Winter, 2003, p.992). Whereas operational capabilities can be understood as the routines and behaviours that inform the day-to-day running of an organisation, dynamic capabilities determine its ability to reconfigure internal routines, resources, competences and assets to capitalise on new opportunities (Pisano, 2016).

A key driver in the development of the dynamic capabilities concept has been the desire to explain the different levels of performance over a period of time by companies following similar strategies (Rumelt, 1984; Rumelt et al., 1994), and to better understand the capabilities that enable firms to achieve sustained competitive advantage (Pisano, 2016). It is this aim that renders the concept of dynamic capabilities useful in theorising the CX function, as its roots also lie in the need for organisations to differentiate themselves from their competitors in order to remain successful (Abbott, 1955; Cyert & March, 1963; Palmer, 2010). The ability for a business to continuously renew aspects of its offer has been termed organisational ambidexterity (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008; Wang & Ahmed, 2007), referring to a firm's capacity to focus on incremental innovations while simultaneously responding to radical changes in its external environment (Homburg et al., 2017). The ambidextrous capacity of an organisation has also been compared to the processes of exploration and exploitation that are characteristic of complex adaptive systems (He & Wong, 2004). Prieto and

Easterby-Smith (2006) highlight how the dynamic capabilities perspective proposes that exploring new knowledge-based competencies and exploiting existing knowledge-based competencies are integral to a company's continuous renewal (Gibson & Birkinshaw, 2004; Zollo & Winter, 2002), and research into customer experience increasingly acknowledges its dual function of exploring new insights from customers while simultaneously exploiting the company's existing knowledge (Kranzbühler et al., 2017). It is through the ability to inform the 'continuous dissolution and creation of organisational order' (Nonaka, 1988) and capacity to inform self-renewal strategies through modifying internal resources and routines (Teece et al., 1997) that the CX function demonstrates the properties of a dynamic capability.

The conceptual link between the fields of knowledge management and dynamic capabilities has been increasingly accepted (Easterby-Smith & Prieto, 2008; Eisenhardt & Martin, 2000; Sambamurthy & Subramani, 2005). Winter (2003) proposes a hierarchy of firm capabilities founded on 'zero-level' operational capabilities, with dynamic capabilities as their 'first derivative', implying that dynamic capabilities represent a change in the former. Learning is then positioned as a 'second order' capability, thereby creating a link between dynamic capabilities and organisational learning (Vera et al., 2011). An explicit link with knowledge management is then made by Teece (2007), who proposes that dynamic capabilities have the potential to reconfigure the knowledge assets of a business, and when enabled by knowledge management, dynamic capabilities can significantly impact on firm performance (Easterby-Smith & Prieto, 2008). This link is clearly expressed by Cepeda and Vera (2007), who propose that:

1. 'capabilities are organisational processes and routines rooted in knowledge;

2. the input of dynamic capabilities is an initial configuration of resources and operational routines;

3. dynamic capabilities involve a transformation process of the firm's knowledge resources and routines; and

4. the output of dynamic capabilities is a new configuration of resources and operational routines' (p.427)

Building on this position, Vera, Crossan and Apaydin (2011) develop a comprehensive framework to integrate organisational learning, knowledge management and dynamic capabilities. Observing that there has been a tendency for researchers in each area to 'reinvent the wheel' (p.166) rather than drawing together the similarities and strengths of each field, the authors propose that organisational learning processes underpin all three areas and have the capacity to modify the routines, resources and knowledge of a firm. Vera et al. (2011) also note that an important theoretical link between dynamic capabilities, knowledge management and organisational learning is the concept of absorptive capacity, which refers to the extent to which a business is able to 'identify, assimilate and exploit knowledge from the environment' (W. M. Cohen & Levinthal, 1989) and 'apply it to commercial ends' (W. M. Cohen & Levinthal, 1990, p.128). However, while the framework of Vera et. al (2011) is useful in identifying the overlaps between knowledge management, dynamic capabilities and organisational learning, and of the moderating role of absorptive capacity, it does not address the role of technology in these processes.

Zahra and George (2002) propose that absorptive capacity consists of four dimensions: knowledge acquisition, knowledge assimilation, knowledge transformation and knowledge exploitation. A critical review by Lane, Koka, and Pathak (2006) explicitly connects absorptive capacity to organisational learning through three sequential processes: 1) acquiring new knowledge from the external environment by recognising and evaluating it (exploratory learning), 2) assimilating this knowledge into the firm (transformative learning), and 3) applying the new knowledge to develop commercially valuable outputs (exploitative learning).

Using the dimensions of absorptive capacity, it is possible to interpret the role of the CX function in organisational learning. Acquiring knowledge reflects the property of a CAS to explore new opportunities (Levitt & March, 1988; March, 1991), and is evidenced through the focus of CX work on identifying new experiences that will be of value to customers (McColl-Kennedy et al., 2015; Rowley et al., 2007; Verhoef et al., 2009). The growing acceptance of service-dominant logic as a way of reconceptualising the activity of organisations is predicated on a business and its customers co-creating value (Vargo & Lusch, 2004, 2008, 2017), and the CX function plays an integral role in brokering this relationship to help the organisation identify opportunities and threats in its external environment.

Assimilating knowledge relates to the effectiveness with which this new knowledge can be analysed and interpreted in such a way as to be useable inside the organisation (Zander & Kogut, 1995). This is reflected in the role of the CX function in brokering cross-functional engagement with customer perspectives (Palmer, 2010) in order to improve the ability to understand the implications of the new knowledge.

Transforming knowledge can be understood as the processes through which new knowledge is combined with existing knowledge and requires an ability to recognise and reconcile two potentially unrelated or opposing sets of information (Zahra and George, 2002), an ability also understood as organisational ambidexterity (O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008). The need for the CX function to maintain an understanding of the organisation's changing internal and external environment is evidence of its 'ambidextrous' nature and key role in knowledge transformation. The growing focus on CEM as a way to improve inter-functional coordination and problem-solving (Palmer, 2010) and reconfiguration of organisational activity in support of the customer experience (McKinsey, 2016) can be viewed as evidence of the transformative role of the CX function. Lastly, exploiting knowledge refers to the organisation's ability to use its reconfigured capabilities to obtain sustainable competitive advantage (Christopher et al., 1991; Teece, 2007; Verhoef et al., 2009), and is reflected in the increasing use of customer perspectives to inform strategic decision-making (Ingelbrecht, Huang, & Meyer, 2016).

If the CX function is understood as a dynamic capability, the success with which it can inform organisational learning can be viewed as dependent on a clear understanding of its ability to acquire, integrate and use knowledge (Khodakarami & Chan, 2014). To visualise this process, Pavlou and El Sawy (2011) propose a four-stage model in which dynamic capabilities are understood as tools that can be used to reconfigure current operational capabilities (Galunic & Eisenhardt, 2001). Their model consists of four distinct capabilities: sensing, learning, integrating and coordinating (see Figure 2 below).

```
Spot, interpret          Revamp existing        Embed new knowledge into      Deploy tasks, resources and
and pursue                 operational           operational capabilities with     activities in reconfigured
opportunities          capabilities with          collective sense-making         operational capabilities
                         new knowledge
```


Figure 2: Framework for interpreting dynamic capabilities

(adapted from Pavlou & El Sawy, 2011)

The above framework is useful in informing an understanding of how the work of CX professionals can contribute to organisational learning. Pavlou and El Sawy (2011) identify the underlying routines of the sensing capability as generating market intelligence (Galunic & Rodan, 1998), disseminating market intelligence (Kogut & Zander, 1996), and responding to market intelligence (Teece, 2007), all of which reflect the consumer focus of the CX function identified by Kranzbühler et al. (2017) and its concern with gathering intelligence on consumers' changing demands.

Ezell (2015) notes that the intentional scanning of the external environment is a key routine that informs organisational learning, and sensing the external environment can be seen as aligning with Huber's (1991) model of organisational learning in which new knowledge is initially acquired through processes of scanning, searching and noticing. The learning capability is concerned with how an organisation creates new knowledge using the information gained from sensing the external environment, and

consists of the four routines of absorptive capacity described above. The integrating capability reflects the ability to combine and transfer the knowledge of individuals to a collective level (Teece, 1982) through routines which enable the creation of a shared understanding through effective representation of individual and group knowledge. Pavlou and El Sawy (2011) note that the successful transfer of knowledge to a supra-individual level is integral to the effective reconfiguration of internal resources, and the inherently cross-functional, collaborative nature of CX work and perception that CX managers need to be effective integrators (Palmer, 2010) is indicative of its integrating capacity. The need to achieve a shared understanding and transfer this to the collective system is predicated on a need to understand how knowledge is created inter-subjectively and stored at a group level, and is reflected in empirical CX research which focuses on the system-level activity of organisations (Kwortnik & Thompson, 2009).

Lastly, the coordinating capability involves the ability to assign resources to tasks and activities in order to reconfigure the existing operational capabilities (Helfat & Peteraf, 2003, 2009). This can be seen as represented by the increasing focus on CX as a management strategy (Arkadan, Macdonald, & Wilson, 2017; Ingelbrecht & Huang, 2017) and use as a tool to reconfigure organisational operations (McKinsey, 2016). Ezell (2015) aligns the dimensions of absorptive capacity identified by Zahra and George (2002) with the model of dynamic capabilities proposed by Pavlou and El Sawy (2011) to indicate the synergies between both concepts, and this can be seen in Figure 2 below along with a description of how the organisational focus of the CX function relate to both concepts.

Having identified the relationship between these constructs in the Literature Review, they will now be developed in the Conceptual Framework chapter in order to incorporate the concept of 'adaptive space' originating in the theory of Complexity Leadership. This will make it possible to theorise the impact of technology-mediated interactions on the ability of CX professionals to contribute to organisational learning.

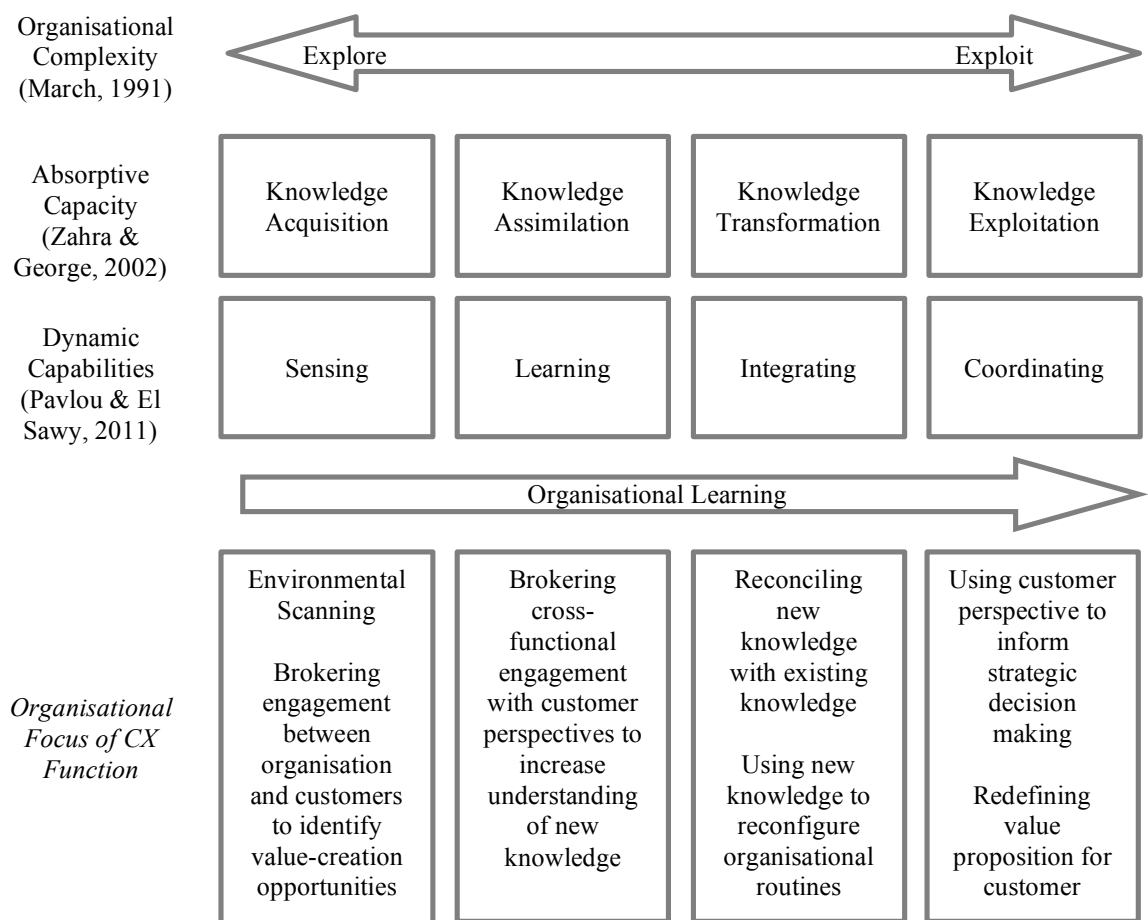| Organisational Complexity (March, 1991)	Explore ⟵——————————————————————⟶ Exploit			
Absorptive Capacity (Zahra & George, 2002)	Knowledge Acquisition	Knowledge Assimilation	Knowledge Transformation	Knowledge Exploitation
Dynamic Capabilities (Pavlou & El Sawy, 2011)	Sensing	Learning	Integrating	Coordinating
	Organisational Learning ——————————————————————⟶			
Organisational Focus of CX Function	Environmental Scanning Brokering engagement between organisation and customers to identify value-creation opportunities	Brokering cross-functional engagement with customer perspectives to increase understanding of new knowledge	Reconciling new knowledge with existing knowledge Using new knowledge to reconfigure organisational routines	Using customer perspective to inform strategic decision making Redefining value proposition for customer

Figure 2: aligning the organisational focus of the CX function with the constructs of absorptive capacity, dynamic capabilities and organisational complexity

Chapter 3 Conceptual Framework

Conceptualising large organisations as CAS provides a valuable way to reframe their activity within a broader ecosystem so as to better understand their operating environment. The perception that the long-term sustainability of a business depends on its ability to adapt to the broader ecosystem in which it exists is not new, and its origin credited to James F. Moore (1993) who proposed that a business ecosystem consisted of four phases: birth, expansion, leadership, and self-renewal. It is the latter stage that has been influential in the development of the concept of dynamic capabilities, as an organisation's ability to survive and thrive in an ecosystem is dependent on its capacity to adapt (Teece, 2007, 2017). As stated in the literature review, organisational adaptability is believed to be closely linked with the concept of ambidexterity, an ability which requires an organisation to hold multiple, and often conflicting, bodies of knowledge (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). Mitleton-Kelly (2003) states that:

> 'if organisations are understood as complex evolving systems co-evolving as part of a social 'ecosystem', then that changed perspective changes ways of acting and relating which lead to a different way of working. Thus, management strategy changes, and our organisational design paradigms evolve as new types of relationships and ways of working provide the conditions for the emergence of new organisational forms' (p.6).

Section 2.5.2 of the Literature Review explained how the CX function might enable an organisation to arrive at different ways of working through a reconfiguration of routines, and how it might learn in the process. However, there is still a need to

address the epistemological influence of technology on the exchange of information between CX professionals, and so a conceptual framework is required that can explain the role of technology in enabling an organisation to learn, know and adapt.

To respond to the research questions, it is therefore necessary to achieve a critical perspective on how interactions happen, how information is produced and stored as knowledge, and how this knowledge might enable an organisation to learn. To achieve this, the research adopts a post-structuralist epistemological position and draws on aspects of complexity dynamics to consider the role of technology in supporting organisational adaptation. Specifically, this thesis combines a post-structuralist perspective with Complexity Leadership Theory (CLT) and its concept of adaptive space to theorise the role of technology in enabling CX professionals to contribute to organisational learning. This chapter begins by considering the relevance of post-structuralism to digital interaction before going on to develop a theoretical model that combines CLT with the theory of dynamic capabilities.

3.1 Why post-structuralism?

Post-structuralist thought developed out of the structuralist movement of the mid-20th century, and was especially influenced by the work of Swiss linguist Ferdinand de Saussure. The theory of language developed by de Saussure (1974) proposes that words consist of both a form (the 'signifier') and a meaning (the 'signified'), and played a vital role in the development of structuralist thinking. From such a position, the relationship between form and meaning is not fixed and is instead mutually negotiated and adapted over time, with the implication that the form of a word does not matter as long as there is a mutual understanding of its meaning. A key tenet of

structuralist thought is that authors use pre-existing structures (what de Saussure termed 'langue') to construct a story (which he termed 'parole'), with the implications that an author is not the originator of a piece of text, and that humans therefore constantly construct and reconstruct meaning out of the system of language in which they operate.

In summarising the origins of structuralist thought, Cham (2007) draws attention to de Saussure's distinction between 'langue' and 'parole' and argues that ''langue' is the system and 'parole' is the performative capacity of the system in use' (Cham, 2007, p.257). Noting the communicative function of all cultural artefacts through a combination of signs, Cham highlights de Saussure's definition of these signs 'as a dyad, consisting of a 'signifier' or material aspect and a 'signified' or the attendant mental concept' (ibid., p.258), and proposes that:

> 'it is difficult to see how see how we can legitimately address interactivity and complexity without addressing post-structuralism; any interactive system, at least when in use, is ideologically plural and thus necessarily postmodern. Prior to being used, it is a system designed as a space of possibility' (ibid., p.262).

Such a view suggests that the meaning of every message is constructed by the recipient – or more precisely, meaning emerges as the message is *reconstructed*. This view is informed by, and consistent with, the position argued by the post-structuralist Roland Barthes in his seminal text *The Death of the Author* (1977), in which he proposes that the reader of a text (or an image) is as much responsible for the construction of meaning as the text itself. Barthes proposes that a reader should not attempt to get 'behind' a text by trying to infer additional meaning from factors such as the background or personal circumstances of its author; instead, the reader should

consider only the text and allow meaning to emerge as they interact with it. Barthes argues that there is no single 'right' way of understanding the intended meaning of the author, because to so this would be to assign a 'final signified' to the text rather than allowing it to remain open to multiple interpretations. His position liberates a text both from any meaning intended by its creator and by a need to draw on the author's context or personal history to effectively read the text, and it is the view that meaning emerges as a reader interacts with a text which aligns post-structualist theory with that of complexity.

When combined with Taylor's observation regarding the difficulty of distinguishing information from noise, a post-structuralist position illustrates that complexity in an organisation is unavoidable as all communication lead to the emergence of meaning through reconstruction. This observation makes it possible to consider how different digital tools might require differing levels of reconstruction on the part of the recipient, a point explored in section 2.3.3 of the Literature Review in relation to Kock's Compensatory Adaptation Theory (2007). Acknowledging the observation by Tredinnick (2006) that post-structuralism has been under-exploited by those studying information theory, Cham observes that 'it has yet to be appreciated that digital interaction in its entirety can be apprehended from a post-structuralist position and in a wholly digital environment post-structuralist theory is tangible complexity' (2007, p.264). Although organisations are not wholly digital environments, a significant amount of the collaborative work that employees undertake in organisations is mediated by digital technology. The effectiveness with which employees are able to decipher information from noise, and the amount of reconstruction required for each message, will impact their ability to communicate effectively. The extent to which

this reconstruction is successful will consequently increase or decrease complexity, affecting both the success of technology-mediated work and the ability of employees to close the gap between their emergent meaning and the shared norms and values of the organisation (Mitleton-Kelly, 2003).

The suggestion that digital tools create a 'space of possibility' and force us to consider how meaning emerges through *interaction* forms the basis of Cham's argument for a 'Reconstruction Theory' (Cham, 2007), reflecting the growing need for clear intention in the design and deployment of digital tools if minimising complexity is a strategic aim. In observing that 'the process of 'making a mark' and the 'mark' itself are always inextricably linked both to each other and to a context', Cham (2010, p.14) highlights that we express ourselves through a complex combination of words, gestures, expressions, and movement. However, much technology-mediated work in organisations attempts to codify this rich information into textual forms of representation such as email or chat in order for it to be transmitted across a digital network. By the time this information reaches the recipient, all that remains is the 'mark' and almost all the performative information involved in 'making the mark' has been lost, leaving it up to the recipient to reconstruct much of the original meaning. Such a perspective highlights how the technology that is so integral to organisations is itself largely responsible for creating the complexity that is viewed as a problem to be solved (IBM, 2010).

The work of Derrida (1984) also supports the suitability of a post-structuralist position for an investigation into organisational learning. While de Saussure's theory of language proposes that with spoken language the speaker's intended meaning (the

'signified') is preserved through their 'attendant mental concept', Derrida developed de Saussure's theory to argue that it is never possible to arrive at an objective 'meaning' that is free from interpretation. To explain his argument, Derrida developed the concept of *différance* to show how language constitutes a system of relationships in which the meaning of words is constantly being renegotiated. Cilliers (1998) applies Derrida's logic to argue that a CAS consists of a comparable system of relationships, and that 'meaning is determined by the dynamic relationships between the components of the system' (ibid., p.46). Viewing organisations as CAS makes it possible to conceptualise how the technology-mediated interactions of employees generate a 'complex system of signs, whose meanings are not fixed but rather sustained by networks of relationships' (Cham, 2010, p.20).

Derrida's view of language constitutes a valuable yet under-acknowledged construct underpinning the CCO perspective of organisational communication, and makes it possible to see how the metaconversations generated by exchanges of information between employees constitute a continuously evolving system of meaning-creation. Every communicative act requires a corresponding interpretive act to enable an employee to decipher potential information from noise, and M.C. Taylor (2001) notes that when information is understood as a 'measure of organisation' (Weiner, 1948), the 'movement from noise to information is the emergence of organisation from disorganisation' (M.C. Taylor, 2001, p.120). From this perspective, all human organisations result in the continual emergence of complex cultural systems as the exchange of signs between members leads to the creation of shared beliefs and values (ibid.). Derrida's concept of différance shows how the culture of an organisation can be understood as a continually evolving system of cultural artefacts, the meanings of

which are not fixed but are instead constantly negotiated and renegotiated by the people within the organisation. Digital communication tools can be viewed as a key medium through which these cultural artefacts are exchanged, and the effectiveness with which people are able to represent and interpret these artefacts can therefore be understood as having a direct influence on the metaconversations of the organisation. As 'doing work' in a modern organisation involves a great deal of sending and receiving messages via interactive digital environments, post-structuralism provides a suitable perspective for examining the relationship between the interactivity and complexity in organisations.

The work of Cilliers (1998, 2001, 2011) has been influential in combining a post-structuralist perspective with theories of complexity, and is credited for bridging the divide between objectivist and interpretivist positions of complexity (S. Maguire et al., 2006). Cilliers describes how combining post-structuralism with complexity can provide a valuable critical perspective from which to investigate organisations, and describes this position as 'critical complexity' (Cilliers, 2011, p.144). In arguing that a system is constituted relationally and can only be identified by the differences within it, Cilliers' perspective stems from the belief of de Saussure (1974) that language is a system of differences. Noting that 'the differences in a system are therefore crucial [and] attempts to reduce the difference will destroy its complexity', Cilliers (2011, p.147) argues that reductionist approaches to analysing complex systems are inappropriate. An important aspect of critical complexity is the researcher's ethical involvement in determining the boundary of a complex system, as

'It is often difficult, if not impossible, to determine the boundary of many systems. Identifying the boundary can be as much an effect of your *description* of the system

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as of the system itself...This has clear implications for how we understand an organisation. What belongs to the organisation and what does not? What is the relationship between the organisation and its environment, and what is its environment? How flexible should boundaries be?' (Cilliers, 2011, p.149-150, emphasis in original).

Since it is not possible to obtain a position external to language (Derrida, 1984; Livingston, 2005) from which to apprehend a complex system without becoming a part of that same system, Cilliers notes that 'we have to reduce complexity in order to grasp anything' (ibid., p.150). A complex system is made up of a 'vast array of non-linear relationships in constant transformation' (ibid., p.147). As a result, meaning is constantly emerging through the interplay of the components of the system, and consequently it is not possible to capture and describe the system without becoming a part of it. We cannot know the ultimate impact of choosing whether to locate something within or outside the boundary of the system, and the non-linear nature of complex systems means the potential effect of this decision could be significant. Although the post-structuralist position has been criticised by authors such as Morçöl (2002) who accuse it of being 'too relativistic', Cilliers argues that it is not only impossible but unethical to try and adopt an objective position when describing and analysing a complex system. This position is in line with the researcher's ontological position that there is no 'objective' reality, and supports the use of phenomenography as a way to describe the variations in how CX professionals experience learning rather than trying to arrive at a single, conclusive description.

At the heart of attempts to interpret organisations as complex adaptive systems lie the issues of legitimation and representation. A valuable perspective from which to approach this problem is that presented in Jean-François Lyotard's book *The*

Postmodern Condition (1984), in which the author considers how the status of knowledge is changing in a society increasingly reliant on and driven by the affordances of technology. Lyotard is primarily concerned with the collapse of the two dominant myths or 'meta-narratives' that have guided research since the Enlightenment. The first of these is that research should aim to liberate humanity, as championed by the French tradition, and the second is the speculation that all knowledge will eventually be unified as proposed by the German tradition of Hegel, Habermas and the Frankfurt School. It is important to note that Lyotard – who for many years was a staunch advocate of Marxism – wrote *The Postmodern Condition* from a post-Marxist position in which he explicitly rejects all 'totalising' philosophies that purport to provide a single solution to liberating humanity (Jameson, 1984). Lyotard observes how the use of scientific rationality and reason as the primary method of making knowledge claims that began during the Enlightenment has come to dominate society, and has become the only accepted way of establishing what constitutes knowledge. This has happened at the expense of what he terms 'narrative' knowledge, such as the use of storytelling, rituals, music or dance in more primitive or traditional societies, which requires no legitimation. This distinction between scientific and narrative knowledge lies at the heart of postmodernism, and its relevance to this thesis is that the capitalist society that both drives and is driven by today's organisations is entirely founded on the principles of scientific legitimation.

The challenge to scientific legitimation presents implications for what constitutes knowledge in an organisation, how that knowledge is stored, and how this knowledge affects the decisions that ultimately determine the ability of the organisation to sense, adapt, and evolve in response to its environment. Lyotard draws attention to the way

in which scientific legitimation employs only logic and reason to inform knowledge claims, and notes that a key aspect of the move away from narrative knowledge during the Enlightenment was the removal of emotion and intuition from decision-making. Cilliers (2000) highlights how the scientific rationality that has led to the dominance of the capitalist mode of production has largely been achieved at the expense of an acknowledgement of the complexity of the human condition. Whereas scientific rationality is dependent on Newtonian principles of cause and effect, complexity and complex systems function according to principles of non-linearity and unpredictability (Mitchell, 2011; Jacobson, Kapur, So, & Lee, 2011). Under conditions of complexity, causality emerges as the system evolves (Pelrine, 2011) and can therefore only be identified retrospectively. As people become increasingly hyperconnected through networks and devices, this growing complexity is arguably leading us into a paradigm in which people and systems co-evolve (Cham, 2011; Pelrine, 2011).

Lyotard's critique of representation presents important implications for the use of technology in organisations. Woodward (n.d.) describes Lyotard's position on representation as comparable to Friedrich Nietzsche's discussion of nihilism within the context of religion, in which Nietzsche perceives religion as existing 'in a transcendental realm which cannot be accessed, thereby cutting us off from the highest values and devaluing the realm of our actual experience'. Lyotard argues that representation is nihilistic precisely because it cuts us off from reality, and his belief that 'what is represented is constantly deferred' (ibid.) is indicative of the alignment of his philosophy with principles of post-structuralism. Woodward notes that this is why Lyotard perceived semiotics to constitute an example of what he terms

representational nihilism, as a sign is used to replace something and in doing so negates that which it replaces. The implications of Lyotard's position for technology-mediated communication are significant, as the semiotics of typed language constitute the primary method of exchanging information in organisations. From this perspective, the more that communication is mediated by technology – in particular using text-based forms of representation such as email – the more employees will be cut off from the 'reality' of what is happening (Dreyfus, 2001).

Post-structuralist theory provides the critical tools for coping with the increasing interconnectedness of Lyotard's 'postmodern condition'. Observing that even scientific legitimation has to resort to narrative in order to provide proof, Cham (2010, p.5) argues that 'all knowing is narrative knowing, and all schemata express not the nature of reality but the nature of mind'. This position aligns with the researcher's ontological and epistemological view of the world as consisting of multiple realities, and that this multiplicity of 'truths' manifests in our sense-making. A post-structuralist worldview therefore provides a way to obtain a critical perspective on how employees construct meaning as they interact with digital messages, and a viewpoint from which to consider the potential effect of different electronic media on the production, sending and receiving of messages in organisations. In its defence of narrative knowing, post-structuralism also constitutes a suitable match for a phenomenographic methodology as the latter avoids trying to prove the existence of one single reality, and instead aims to identify differences in individual experiences of a given phenomenon expressed in narrative form.

3.2 Why Complexity Leadership Theory?

The rise in complexity resulting from the postmodern condition proposed by Lyotard is increasingly acknowledged as being of strategic importance to organisations, and technological interconnectedness and interdependencies are widely perceived to be among the major challenges facing organisations (IBM, 2010; Weill & Woerner, 2015). This has led scholars to consider how theories of complexity might be applied to explain complex organisational phenomena (Maguire, McKelvey, Mirabeau, & Ötzas, 2006; Marion & Uhl-Bien, 2011; Mitleton-Kelly, 2003), and has contributed to the reconceptualisation of organisations as CAS (Boal & Schultz, 2007; Cilliers, 2011; S. Maguire et al., 2006; Mitleton-Kelly, 2003; Schein, 1991; Uhl-Bien, Marion, & McKelvey, 2007).

The growing interest in the application of complexity science to organisations is in part being driven by a growing dependence on the ability to leverage the characteristics of work environments that are increasingly dependent on technology-mediated networks (Tremblay, 2012). As the capacity to innovate is increasingly viewed as a core business imperative (IBM, 2012), there is a growing desire to understand how complexity dynamics might facilitate the emergence of innovative solutions (Arena & Uhl-Bien, 2016). This need has led to the development of CLT, the central question of which is

> 'How, in the context of bureaucratic organising structures, can organisational leaders enable emergence of the new solutions and innovation needed to survive and thrive in today's complex world?' (ibid., p.23)

If dealing with increasing complexity is of strategic importance (IBM, 2010), the

extent to which the complex networks supporting activity in organisations are 'intentionally authored' constitutes an important question. CLT is an emerging field of research that aims to translate the key concepts of complexity into a framework to guide leadership in complex environments (Arena & Uhl-Bien, 2016; Hazy & Uhl-Bien, 2015; Marion & Uhl-Bien, 2008, 2011). Research into CLT has focused primarily on how the loosening of bureaucratic structures can drive local entrepreneurial activity and increase the adaptability of an organisation (Uhl-Bien & Marion, 2009).

As complexity becomes the new standard, (Porter-O'Grady & Malloch, 2009), CLT seeks to provide a framework for coordinating complexity dynamics without suppressing the adaptive potential that is inherent in CAS. The capacity for such systems to adapt stems from what has variously been described as 'loose coupling' (Weick, 1976) and 'moderately coupled interdependency' (Kauffman, 1993; Marion, 1999). These concepts can be understood as meaning that the actions of one agent in the system are dependent on or limited by the actions of one or more other agents, and this interdependency restricts behaviour (Uhl-Bien et al., 2007). The adaptability of the system stems from these informal yet interdependent structures, and these flexible relationships between agents support the 'autocoordination' of the system (ibid.). Uhl-Bien et al. (207) explain that autocoordination represents the way in which activity in the system is directed and driven from the enabling and constraining dynamics of the system itself, and not by some form of external imposition. Noting that this informal coordination of activity is usually referred to as 'bottom-up behaviour' by scholars of naturally occurring complex adaptive systems, the authors propose the term *informal emergence* as a way to distinguish this aspect of complexity dynamics in social

systems (Lichtenstein et al., 2006; Plowman et al., 2007).

The use of the concept of emergence in the context of leadership is not new. In the early 1990s, Wheatley argued that change in complex organisations is more a result of local actions taking place simultaneously around a system than of the top-down actions of leaders and management teams (Wheatley, 1992). This idea was developed further by Stacey (1995, 1996) who proposed that strategic change and adaptability in organisations is driven more by complexity dynamics of disorder, conflict, tension and dialogue occurring in informal networks (Heifetz & Laurie, 2001) than by the order and control of formal, administrative systems. Uhl-Bien and Marion (2011) use this position as a basis for their argument that leadership in the knowledge era should aim to 'accept and even promote uncertainty, surprise, unknowability and open-endedness' (ibid., p. 469), and provide links to 'emergent structures' within and among organisations. They propose that at a macro level (i.e. leadership *of* the organisation), leaders should focus on increasing the emergence of distributed intelligence (McKelvey, 2008). At a micro level (i.e. leadership *in* the organisation) their focus should be on fostering conditions that enable productive yet unknowable future states through innovation and the rapid dissemination of ideas across the organisation. CLT proposes that the dynamics at the micro-level of the system drive its macro-level behaviours, and it is this coordination from the lower levels of the system that generates emergence and self-organisation rather than the outcomes set by leaders (Uhl-Bien & Marion, 2011).

At the core of CLT is the belief that 'leadership is generated in the context of richly networked interactions' (ibid., p.475) and that leadership is constantly emerging as

employees across an organisation work with each other. These interactions can be understood as supporting what Kilduff, Crossland, & Tsai (2008) refer to as 'opportunity creation', which they define as 'the possibility of new pathways of connections among nodes in the network' (p.91). The authors argue that leadership requires 'a sophisticated understanding of the ways in which new knowledge emerges from the interstices between nodes' (ibid.), and of how knowledge in one part of a network may bring new opportunities to other, more distant areas of the network.

3.2.1 The functions of CLT

The model of CLT set out by Uhl-Bien and Marion (2007) consists of three distinct functions of leadership: administrative, adaptive, and enabling. Administrative leadership occurs in the traditional aspects of management, and represents the administrative function of an organisation. It constitutes the familiar bureaucratic functions of obtaining business results through activities such as strategic direction, budgeting, regulation and resource allocation. These objectives are largely achieved by using mechanisms of control to align the work of employees as efficiently as possible with the needs of the organisation.

The second function, adaptive leadership, can be understood as representing the complexity aspect of leadership, and reflects the leadership that emerges from the dynamic tension between agents as they engage in interdependent work in an organisation. In contrast to the formal leadership of the administrative function, adaptive leadership is an informal phenomenon that occurs in the 'intentional interactions of interdependent human agents (individuals or collectives) as they work

to generate and advance novel solutions in the face of adaptive needs of the organisation' (Uhl-Bien & Marion, 2011, p.474). Adaptive leadership represents the adaptive function of an organisation, and drives the generation of new ideas, product and process innovation, and adaptability. The authors note that the administrative and adaptive leadership functions can be understood as aligned with the processes of exploration and exploitation (March, 1991) that are core properties of adaptive systems. Whereas the administrative function focuses on exploitation of existing resources and is concerned with formal processes, efficiency and control, the adaptive function seeks to generate new opportunities and innovations through unfocused exploration and informal interactions.

In order to reconcile the differences between the administrative and adaptive functions, the authors argue that a third function is needed, that of enabling leadership (Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007). Acknowledging the validity of the needs of both the administrative and adaptive functions, enabling leadership occurs in the interface between the two and works to 'loosen up the organisation – stimulating innovation, creativity and responsiveness and learn[ing] to manage continuous adaption to change – without losing strategic focus or spinning out of control' (Dess & Picken, 2000, p.19). Enabling leadership serves two key functions, the first of which is the enablement of 'adaptive climates and conditions conducive to complexity dynamics' (Uhl-Bien & Marion, 2011, p.475). Adaptive climates foster relational dynamic, and are characterised by factors such as 'empowerment, trust, psychological safety, networking, and rewards for collaboration and creativity that allow for members to openly share, disagree, and conflict over ideas and perspectives' (Uhl-Bien & Marion, 2011, p.475). Conflict is viewed as a positive force that enables both

the learning and adaptive behaviours that drive innovation (Andrade, Plowman, & Duchon, 2008), and this is an important observation as it is at odds with the widespread belief that a key role of leadership is to manage and reduce conflict (Arena & Uhl-Bien, 2016). Adaptive climates also provide 'resources (time, budget, expertise, heterogeneity) and space (physical layout, location)' that encourage complexity dynamics (Uhl-Bien & Marion, 2011, p.475), although it is interesting to note that the authors make no reference to online spaces. Enabling leadership seeks to identify highly adaptive leaders and provide them with the resources, space, and sponsorship needed to foster adaptive dynamics. Just as importantly, enabling leaders also strive to protect adaptive leaders from the 'stifling and suppressing elements of administrative leadership and bureaucracy' (ibid.).

Uhl-Bien and Marion (2011) propose that the second key function of enabling leadership is to loosen the administrative structures and systems of an organisation to allow adaptive leadership to make progress. When innovations emerge from adaptive spaces, the role of enabling leaders is to incorporate these innovations into the formal, administrative system of the organisation so that it can convert them into business results. This is achieved by methods such as providing cover and sponsorship for adaptive initiatives, reducing or removing the barriers that might prevent these new initiatives from being adopted, using their authority to raise the visibility of new initiatives, and helping adaptive leaders connect with an appropriate audience (Boal & Schultz, 2007; Hunt, Osborn, & Boal, 2009; Plowman et al., 2007).

The findings of the CLT research programme revealed that complex organisations require an adaptive mechanism to engage the natural creativity and innovation of the

entrepreneurial system and advance it into the formal, administrative system (Arena & Uhl-Bien, 2016). By creating, loosening and tightening adaptive space, enabling leaders foster informal emergence. Figure 1 below illustrates how the creation of adaptive space helps bridge the gap between the administrative and entrepreneurial systems in an organisation.
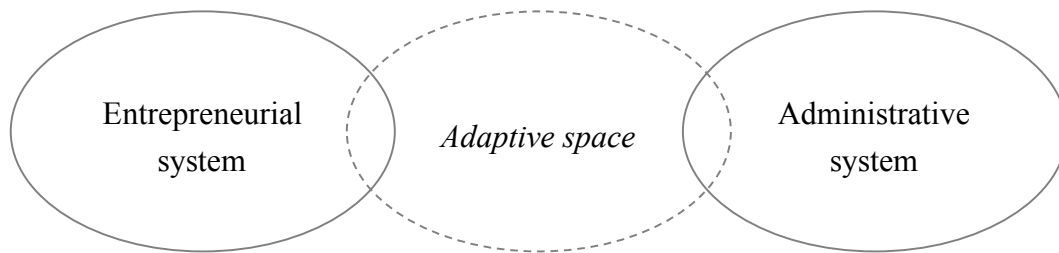

Figure 3.1: Adaptive space bridging the entrepreneurial and administrative systems (adapted from Arena & Uhl-Bien, 2016).

3.2.2 Robustness and the sustainable emergence of complexity

Although the concept of 'robustness' does not feature explicitly in CLT, it can be understood as an implicit principle as it is the property of CAS that supports their long-term survival and evolution (Jen, 2005; Krakauer, 2005; Page, 2011). Robustness can be understood as providing the redundant capacity a system needs to accommodate pressures from its internal and external environment. In his description of neural networks, Cilliers (2000) explains how robustness occurs by distributing the knowledge of the system across patterns of nodes in the network. In so doing, the system becomes highly resilient to the random removal of nodes as the network is able to adapt in response, a process that has been described as the 'knockout' of nodes (Flack, Krakauer, & de Waal, 2005).

In contrast, research into complex systems modelling in psychiatry has shown how 'an adaptive network loses its adaptive properties when its most central nodes are sequentially removed' (Saxe et al., 2016, p.8). If the capacity of a system to adapt through informal emergence is essential for its long-term survival and evolution, adaptive leadership can be understood as supporting the robust complexification of such a system by fostering adaptive dynamics. An adaptive space can be viewed as a layer of constrained flexibility between the rigid administrative system and the unconstrained entrepreneurial system (Uhl-Bien & Marion, 2011). By providing redundant capacity, this adaptive layer enables an organisation to be more flexible and responsive to its internal and external environment, therefore enabling the organisation to exist more dynamically within a broader ecosystem of organisations.

The concept of robustness also presents important implications for a critique of the dominance of scientific legitimation in the current era. Cilliers (2000) highlights that CAS naturally enable and constrain, and while they have an organised structure they strive for maximum diversity within that structure. Citing Lyotard's observation that while the legitimation of scientific knowledge has come from within – in other words, science itself determined the criteria for its legitimation – Cilliers argues that narrative knowledge is legitimated by flexible criteria that are 'dynamically defined by the society in which the narrative functions' (Lyotard, 1984, p.18). The legitimation of narrative knowledge therefore occurs naturally, without the need for the imposition of external laws or regulations. Referring to thinkers who also hold similar worldviews to that proposed by Lyotard, Cilliers observes how Blackwell's (1976) rejection of the existence of epistemological ultimates constitutes a similar perspective to that of post-structuralism. Arguing that the brevity of the human existence means we always have

to begin in 'mid-stream', rather than being able to obtain an objective position, Blackwell proposes a 'structuralist account of scientific theories' in which he defines structure as 'any organised system of transformations which are governed by laws and which are self-regulatory' (p.255).

By focusing on the dynamic, self-maintaining system rather than on its elements, Blackwell shows 'a sensitivity to the contingency of scientific knowledge as well as to the role of self-organisation' (Cilliers, 2000, p.131). This presents important implications for a view of organisations as CAS, as the mechanism of robustness can be understood as producing sustainable growth. Vitale (2014) articulates the value of the principle of robustness in relation to complex systems science, describing it as

> 'systems which are able to grow and develop in relation to their environment in the least destructive and maximally creative ways, establishing feedback relations with their environment so that they do not destroy the conditions for the emergence of themselves or their environments in the present or future' (p.25).

Vitale highlights how such a perspective enables us to view every organisation a CAS 'nested' within a broader ecosystem of such systems, and as such its actions create feedback that affects other parts of the ecosystem. If hyperconnectivity is increasing complexity and moving us into an era where people and systems co-evolve (Cham, 2011), and in which causality only emerges as the system itself emerges (Pelrine, 2011), aiming for the sustainable emergence of complexity constitutes a more appropriate guiding principle for organisations than one driven solely by short-term profit. It is this implication that renders CLT such an important development in leadership theory, as it provides both a worldview and a set of mechanisms to shift organisations beyond the industrial era and into the knowledge era.
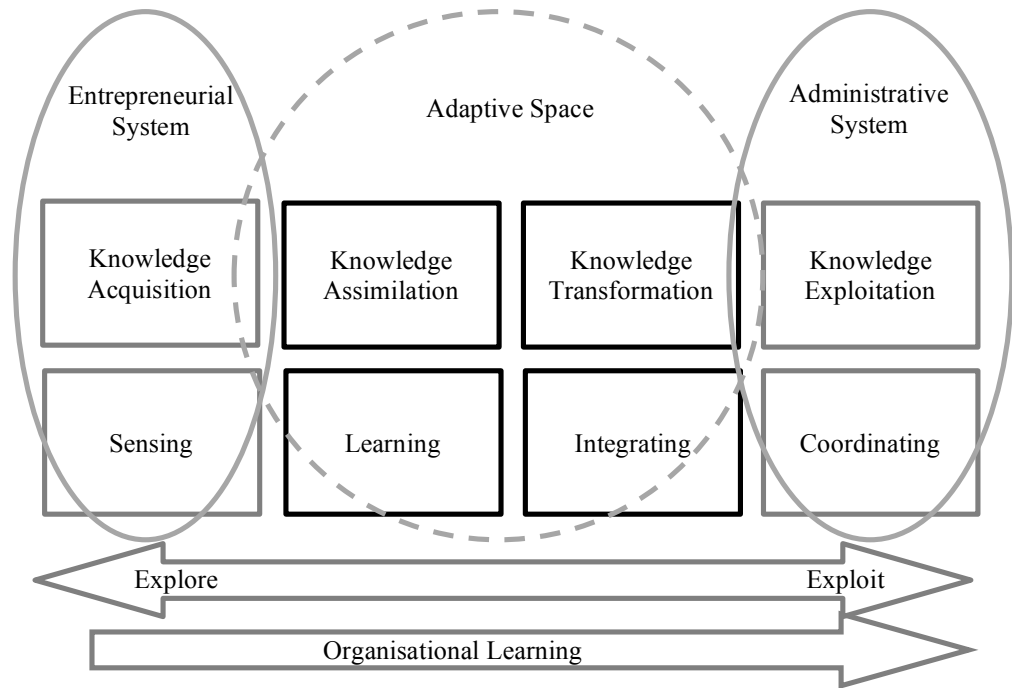
Figure 4: Theoretical model incorporating the concept of 'adaptive space'

Having established a conceptual framework that makes it possible to respond to the research questions, it is now possible to identify a suitable methodology.

Chapter 4 Methodology

This thesis considers how CX professionals experience learning, and uses a phenomenographic methodology to investigate their situated experiences in organisations. Phenomenography provides both a way of studying how people experience a particular phenomenon (Larsson & Holmstrom, 2007), and also the variations in their description of it (Marton & Booth, 1997). Phenomenography deals with the problem of bias by requiring the researcher to openly acknowledge their underlying beliefs and assumptions about the phenomenon under investigation. The purpose of this is to enable the reader to make their own judgments regarding the extent to which the researcher's worldview may have affected the interpretation of the data (Marton, 1981; Marton & Booth, 1997). Although the analysis of transcriptions in the proposed study was inevitably influenced by the researcher's own experiences and beliefs (Creswell, 2013), the use of a phenomenographic approach was intended to minimise the effect of this bias on the findings by making it open and explicit.

Phenomenography is a strong match for a conceptual framework built around post-structuralism and complexity because it does not aim to arrive at a single, objective description of reality. Instead, it requires the researcher to disclose their underlying beliefs and assumptions so as to make explicit their impact on any value judgments made about the data. By facilitating the emergence of multiple perspectives, phenomenography supports Derrida's concept of 'différance' (Derrida, 1984) that is integral to a post-structuralist worldview. A phenomenographic approach also accommodates the concern that 'the differences in a system are…crucial [and] attempts to reduce the difference will destroy its complexity (Cilliers, 2011, p.147).

By presenting non-dominant variations in experience rather than a single, conclusive description, phenomenography seeks to preserve the complexity of the phenomenon under investigation.

4.1 Ontological position

The research was undertaken from an ontological position of relativism, a worldview which presumes the existence of multiple realities (Denzin & Lincoln, 2005). This position aligns with the researcher's worldview and belief that there is no single reality to be discovered, and in aiming to describe the variation between the multiple realities of participants' experiences of learning a phenomenographic approach is consistent with a relativist ontology.

A phenomenographic approach also aligns with the researcher's post-structuralist epistemological position and belief in reality is inter-subjective and mutually constructed. The literature review illustrated that the ideological plurality of any interactive system renders it necessarily postmodern, and explained why it is difficult to tackle issues of interactivity and complexity without also addressing post-structuralism (Cham, 2007). Cilliers declares that 'it is better to make value judgments explicit than to claim a false objectivity' (2011, p.151), and draws attention to the important distinction between 'restricted' and 'general' complexity (Morin, 2007). For Morin, investigations into restricted complexity are those that seek to understand and model specific phenomena that occur in systems with relatively clear boundaries (see, for example, Jacobson et. al., 2011; Pavard & Dugdale, 2000; Yoon, 2008, 2011). These investigations tend to be highly reductive in their attempts to search for

the laws of complexity, and as such they remain 'within the epistemology of classical science' (Morin, 2007, p.10). But Morin argues that investigations into general complexity are more problematic because it is not possible to maintain the divide between subject and object, meaning that traditional methods of analysis do not work:

> 'In opposition to reduction, [general] complexity requires that one tries to comprehend the relations between the whole and the parts. The knowledge of the parts is not enough, the knowledge of the whole as a whole is not enough…Thus the principle of reduction is substituted by a principle that conceives the relation of whole-part mutual implication. The principle of disjunction, of separation (between objects, between disciplines, between notions, between subject and object of knowledge), should be substituted by a principle that maintains the distinction, but that tries to establish the relation' (p.10-11).

Following Morin's logic, phenomenography is a suitable methodology for an investigation into general complexity because it substitutes a reductionist principle for one that seeks to maintain and understand the relationships between the variations in experiences of the phenomenon.

Furthermore, phenomenography provides a way to respond to the problem that, under conditions of general complexity, 'the object of discussion and the discussion itself are folder into each other' (Cilliers, 2011, p.144). This problem has been noted by Säljö (1997), who believes that the 'relationship between discourse and experience' makes the phenomenographic interview a social construction of experience. For Cilliers, this inability for the researcher to achieve a neutral position means that not only is it incorrect to attempt to claim objectivity, it is also unethical. Such a view is consistent with the position adopted in the Conceptual Framework that 'all knowing is narrative knowing' (Cham, 2010, p.5). Under such conditions, phenomenography is

an appropriate methodological approach because it openly acknowledges the influence of the researcher's bias on the data collection and analysis.

4.2 Appropriateness of an interpretivist approach

S. Maguire et al. (2006) note that complexity research in the interpretivist paradigm is often criticised for being 'overly metaphorical' and suffering from 'an absence of reflexivity' (p.173). In distinguishing between objectivist and interpretivist paradigms, they observe that work in the latter 'tends towards postmodernism and post-structuralism…adopts a meaning-based ontology and epistemology, and is premised on the impossibility of identifying any information as objective' (ibid., p.175). However, the authors also note that narrative methods can 'complement scientific approaches, dealing effectively with contextuality, reflexivity, purpose and temporality' (ibid., p.181). Tsoukas and Hatch (2001) observe that complexity is both a feature of CAS and a feature of the way in which we theorise such systems, and note that this 'second-order complexity' renders a narrative approach a valuable alternative to the logic-scientific mode of thinking (Bruner, 1996). This second-order characteristic of complexity is consistent with the second-order nature of phenomenography, which acknowledges the value of obtaining and comparing narrative accounts of a given phenomenon rather than attempting to arrive at a single, objective description. Noting that there are connections between post-structural and narrative approaches to studying complexity, Tsoukas and Hatch (2001) observe that both view complexity as a guide for interpreting the world rather than as a theory that can be used to make valid predictions (Hayles, 1990). The value of an interpretivist approach to studying organisational complexity is also consistent with the CCO

perspective of organisational communication, and the argument that a view of organising as narration can 'further our understanding of the complex and unpredictable' (Czarniawska, 1997, p.29).

It is possible to argue that, in some ways, a narrative approach to organisational complexity reflects the way in which the CX function attempts to 'narrate' and make sense of the complexity of an organisation. Also drawing on Bruner, Fung (2017) highlights a growing interest in the narrative research methodology as a way of 'making sense of complex human experience over time' (p. 62), noting that narratives are a fundamental aspect of our uniquely human 'capacity for intersubjectivity' (Bruner, 2002, p.16). The role of the CX function is to analyse and compare the individual narratives of customers and employees and reflect them back into an organisation as a way to improve collaboration between functions and departments. In doing so, the CX function strives to provide a system-level view of an organisation (Senge, 1990) that preserves the complexity emerging from individual experiences. Phenomenography can therefore be viewed as a suitable methodology for studying the individual narratives of CX professionals as it provides a way to analyse and compare these narratives without attempting to reduce them to a single explanation.

4.3 Data collection and analysis

Interview questions were developed and informed using guidance from Bowden (2005) on phenomenographic interviewing, and can be found in Appendix 1. Data was gathered in the form of semi-structured interviews, an approach that elicited detailed reflective accounts of the phenomenon under investigation (Reed, 2006). The

interviews generated full and rich descriptions of CX professionals' experiences of learning, and the second-order nature of phenomenography meant that these descriptions were 'jointly constituted by the interviewer and the interviewee' (Marton, 1994, p.4427). During the interviews, the object of study was held in mind while asking the interviewees to describe their experiences of learning. Each interview therefore constituted a dialogue during which the interviewee was asked both pre-planned and follow-up questions to fully explore their experiences of the phenomenon (Åkerlind, 2012). Interview data was then analysed using the seven-step process described by Larsson & Holmstrom (2007), a variation on the traditional phenomenographic process developed by Marton (1986, 1994). This process can be described as follows:

1. read each transcription to become familiar with the dataset

2. re-read all transcriptions and indicate passages where a direct response to a key question has been provided

3. in these passages, determine the focus of attention and write a short summary of how the interviewee describes this particular point

4. formulate categories of description by grouping related descriptions

5. identify 'non-dominant' ways of understanding the phenomenon (i.e. ensure that no single description dominates the others)

6. assemble the categories into an 'outcome space' which illustrates the hierarchical relationship between them

7. create a metaphor for each group of categories to make it easier to understand the data analysis.

Once a phenomenographic analysis had been undertaken, the categories of description were assembled into an 'outcome space'. An outcome space is a diagrammatic representation of the categories of description that permits a visualisation of the relationships between each category. While not all phenomenographic studies go as far as to create an outcome space, it can be a useful way of understanding the non-dominant relationships between the emergent categories (Reed, 2006).

4.4 Sampling

When using a phenomenographic methodology, a sample of between 15 and 20 participants is recommended in order to allow the full extent of the phenomenon under investigation to emerge (Trigwell, 2000). However, due to delays in obtaining ethical approval it was only possible to undertake interviews with 13 participants for the current research. While this may limit the generalisability of the findings, it is hoped that the rich descriptions provided by participants still enabled a sufficient diversity of experiences to emerge.

The criteria for selecting participants were that they had to have worked in a customer experience role for at least three years and had to have prior experience of performing this role in an organisation of more than 500 people. Participants who met the criteria were identified from the researcher's own professional contacts. In addition, the professional networking site LinkedIn was used to identify and approach participants with the relevant experience using the search term "customer experience". Each of the 13 participants worked in a different organisation.

Only one cycle of data gathering was possible due to time constraints, and this took place during the first six months of 2016. Interviews were undertaken either in person or via Skype and recorded using a Zoom HD audio recorder. Each interview was transcribed verbatim by the researcher for analysis.

4.5 Ethical concerns

The research presented minimal ethical risk to participants. Potential interviewees were provided with a project information sheet outlining the aims of the research and explaining that interview data would only be used for the proposed study. When participants agreed to be interviewed, they were asked to provide their consent by signing and returning a copy of the project information sheet. Their decision to participate was deemed valid as it was informed by the provision of adequate information, voluntary in that they will not be coerced, and competent in as much as they were believed to have the legal capacity to provide their consent. Participation in the study meant responding to semi-structured interview questions.

Participants were informed that they had the right to withdraw from the study at any time during the data collection period without any penalty or obligation to continue. They were also informed that as long as a decision to withdraw was requested before the end of the data collection period, any related data such as interview recordings, transcriptions and notes would be destroyed and all reference removed from the research. However, participants were also informed that after the end of the data collection period their anonymised data would have been incorporated into the data set and removal would not be possible.

While the use of interviews made it impossible for participants to remain anonymous (L. Cohen, Manion, & Morrison, 2007), all data was anonymised and identifiers removed to prevent the identity of participants being known to anyone besides the researcher. Anonymising the data enabled participants to speak freely and openly without being made to feel vulnerable should their employers wish to read the final report. The project information sheets and all transcriptions were stored securely and all digital recordings of the interviews destroyed.

4.6 Limitations

A criticism of qualitative research is the likelihood of the researcher's bias affecting the data analysis and subsequent findings, and Cohen, Manion, and Morrison (2007) go as far as to point out that even the selection of a topic to research can presuppose an area of interest, introducing a potential bias. A concern about the limitations of phenomenographic interviews has been identified by Säljö (1997), who highlights the risk of an interviewee simply recalling what others have described about the phenomenon under investigation, rather than articulating their own experience. The second-order perspective provided by phenomenography must also be treated with caution as it constitutes what Argyris and Schön (1978) call an 'espoused theory'. While espoused theories reflect what people say, they often differ from 'theories-in-use' which can be understood as what people actually do (Argyris, Putnam, & McLain Smith, 1985). However, despite these limitations a qualitative approach was believed to be the most suitable way to respond to the research questions for the reasons described above.

The researcher's epistemological position stemming from a belief in the existence of multiple realities presents a limitation for the study. The implications of the researcher's position are that the proposed knowledge claims will be made from the perspective of a subjectivist epistemology. The findings will not aim to establish any objective 'truth' about learning in large organisations; rather, they will seek to advance an understanding of how the perspectives of post-structuralism and complexity might afford a clearer understanding of the implications of how the CX function might contribute to organisational learning.

In assuming a relativist ontological position that there is not a 'real' world 'out there', it is likely that some readers will perceive the findings as inconclusive and of limited use by not attempting to prove a hypothesis beyond reasonable doubt. The use of a qualitative rather than a quantitative approach in conjunction with CLT limits the effectiveness of using this theoretical lens to interpret the data. Only collecting qualitative data meant that it was only possible to consider the suitability of using aspects of complexity theory to explain technology-mediated activity in a large organisation, rather than using statistical data or experiments to test a hypothesis. Openly acknowledging these limitations and referring to them in the conclusions and recommendations enabled the researcher to avoid over-generalising when making claims from the findings. Despite these limitations, it is believed that the study still provides a useful contribution to knowledge from which implications for further research can be identified.

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Chapter 5 Findings

Before presenting the findings from the data analysis, it is useful to revisit the research questions that guided the investigation. The aim of this research was to discover the following:

1. How do CX professionals experience learning and knowledge production during technology-mediated interaction?
2. How does the knowledge produced by CX professionals contribute to organisational learning?

The analysis of the data led to the development of three distinct themes: experiences of technology (Theme 1), experiences of individual learning (Theme 2) and experiences of organisational learning (Theme 3). Theme 1 reflects the different ways in which CX professionals experienced the role of digital tools in enabling them to undertake their work, and discusses the finding that the dynamism of interactions enhances the ability of the message receiver to comprehend the intended meaning of the message sender. The second part of theme 1 highlights the finding that the lack of a clear etiquette regarding digital tools limits this ability, a problem which can also be understood as constituting a lack of 'intentional authorship' (Cham, 2007).

Theme 2 examines how learning happens at an individual level, and reflects the evidence that the use of speech was integral to helping CX professionals reconstruct information effectively. The analysis revealed how important it was for the interviewees to be able to discuss information with colleagues so that they could learn

and apply it effectively in a new context. This finding presents implications beyond the current study regarding the difficulty in attempting to learn using only documented knowledge.

Theme 3 explores how learning happens at an organisational level, and discusses the evidence that storing information in documented form only captures a percentage of the learning that happens in an organisation. Theme 3 makes the argument that the effective knowledge management is dependent on the ability to access people and data in addition to the documented knowledge that is generated through interactions and projects.

Each theme begins with a table of the metaphors and associated categories of description that support the theme, and an explanation of the phenomenographic analysis that produced the categories and metaphors is then provided. Theme 1 includes a worked example of the phenomenographic methodology used, and Appendix 2 contains the data analysis to support Theme 1.

5.1 Theme 1: Experiences of technology

In total, twenty-two distinct foci emerged from the analysis of interviews for Theme 1. Following the phenomenographic method of Larsson and Holmstrom (2007), once the data had been organised into categories of description the categories were then grouped together in order to enable a metaphor to be applied to each grouping. These metaphors provide a way for the researcher to identify the non-dominant ways of understanding the phenomenon, and make it possible to construct an outcome space to

represent the relationships between categories. Table 1 below shows the grouped categories of description in the left column, and the metaphor that was assigned to each group in the right column.

grouped categories of description	metaphor
Removing geographical barriers Supporting flexible working Talking with global teams Inhibiting collaboration	A: Technology as collaboration engine
Getting more out of employees Improving work Duplicating effort Slowing things down	B: Technology as productivity engine
Changing employees' behaviour Creating a training need Changing people's mindset	C: Technology as behavioural influencer
Building stronger relationships Improving emotional connection Improving engagement As an avoidance mechanism	D: Technology as relationship broker
Sharing information Storing information Maintaining access to information Controlling access to information	E: Technology as information gatekeeper
Shaping a culture Establishing etiquette	F: Technology as cultural influencer

Table 1: Grouped categories of description and assigned metaphor for Theme 1

To further illustrate the usefulness of the assigned metaphors in describing the phenomenon under investigation, some phenomenographic studies also provide a short description of each metaphor. The purpose of this description is to show how a person in each paradigm experiences and relates to their work (see, for example,

Dall'Alba, 1998; Dall'Alba & Sandberg, 1996; Larsson & Holmstrom, 2007;

Sjostrom & Dahlgren, 2002). A description of each of the metaphors in Table 1 is

provided below along with short extracts from the interview transcriptions to

contextualise each metaphor.

A: Technology as collaboration engine. The metaphor of an 'engine' is used to

convey the understanding that engines can work both very well and very badly. In this

paradigm, CX professionals use digital tools regularly to participate and/or lead teams

of people who may be distributed across the globe. When technology works well, it

removes the geographical barriers to collaborative working and the need for physical

presence, enabling employees to collaborate seamlessly on shared projects. But when

technology fails to perform, it renders collaboration almost impossible as employees

are unable to exchange information.

> 'I'm working from home today, one of my team is based in Hungary, I have a
> fortnightly one-to-one with her, and we've done that over Lync. Whilst we were
> chatting, there was a particular issue that she needed help with, so she shared her screen
> with me and showed me what she was talking about. So in effect, it was the same as us
> sitting in this room now. With her laptop in front of her we were able to have that same
> conversation. You've got video on there as well, so we could see each other.'
> *Interviewee 2*

> 'There are still days when I want to throw Skype out of the window, when it goes
> down, or when you get muffled speech or something. I had a case last week where I
> was supposed to be participating in a call with the CEO and I couldn't understand his
> questions to me. So that was the actual quality of the call, it's not obviously the product
> itself, but either my home network or the network in Denmark. That makes it difficult.'
> *Interviewee 9*

B. Technology as productivity engine. As with the first metaphor, the use of an engine reflects the finding that technology can both help and hinder productivity. This metaphor highlights the ability of employees to use technology to work on multiple tasks simultaneously, and to bring together multiple employees in distributed locations to work on a task. By reducing the need to be physically present, technology reduces the stress of travel on employees and enables them to spend more time on tasks. However, the need to use multiple systems can also causes a duplication of effort, with some employees having to replicate information on multiple channels. Difficulty in using digital tools often delay the start of meetings and reduces the time available for discussion. The need to access legacy systems can also hamper productivity as employees have to navigate multiple screens and interfaces.

'when you're running operational teams, we don't always have a 'one person is dealing with one customer query at the same time' model. So technology now means that you can have an agent, potentially, on the phone to a client and on instant messenger to another client. So… talk about bang for your buck, you are getting more out of your people.' *Interviewee 1*

'nobody can get into the meeting room until the start of the hour because there's someone in there for the hour before. So then you've got to get set up, and it takes me five minutes to log in to the computer for us to get the video thing going, and then wonder why you can't hear the person when you can see them.' *Interviewee 6*

'to connect the teams across the contact centre who need to connect into the other departments across the Group, it is so complex that it actually slows the process down. So I've sat in call centres and watched agents – you know, they learn to navigate this system because they're on many, many calls a day – but they can't find the information readily enough.' *Interviewee 10*

C. Technology as behavioural influencer. For employees in this paradigm,

technology causes or requires a change in behaviour. A key problem is often a lack of guidance or justification as to why employees need to change their working practices to incorporate a new digital communication tool. Providing a clear rationale and training on new tools can increase the likelihood of behaviour change, as can other extrinsic motivations such as linking new behaviours to bonuses. However, the extent to which employees change their behaviour and adopt a new tool across the organisation is likely to determine the effectiveness of the tool. The introduction of new technologies can also cause employees to be fearful that the organisation is seeking to monitor their working practices, even though the intention may be to try and make their lives easier. Experiencing the need for a change in behaviour is more likely to lead to an actual change in behaviour than simply providing a new tool.

'For people who are brick and mortar-based, they haven't had to travel, and they assume that, 'oh, you just access this through VPN [virtual private network].' Well if you would understand the difficulties of going through VPN as opposed to putting something up into the cloud and accessing it… so for anyone who's been in that position, they easily adopt the cloud-based technologies.' *Interviewee 13*

'So it's almost a fear of, you know, 'they're putting it in as a Big Brother thing to help manage me'. And when you then position it as – of course there is an element of that, but that wasn't the core driver as to why they were becoming tech-enabled, it was about being able to pass information to you more quickly and more seamlessly.' *Interviewee 4*

D. Technology as relationship broker. The use of digital tools can have a positive effect on working relationships, enabling an employee to build and maintain emotional connections with others whom s/he may never actually meet in person. The use of video-conferencing in particular is an effective way of increasing the sense of connection that employees feel when collaborating at a distance. The ability to see

facial expressions and body language is a significant factor in driving better engagement through an improved ability to read non-verbal cues. However, employees can also hide behind digital tools by restricting their communication to email, when other, more dynamic channels may be more appropriate for a given task. There is also a tendency for some people to treat video-conference calls as less important than face-to-face meetings and cancel as the last minute.

> 'So technology played a fundamental instrumental part in staying connected – virtually – face to face, and really helped when building relationships to a team that you only saw potentially twice a year, as a whole.' *Interviewee 9*

> 'I notice this – what's the right word I'm looking for – this scepticism about just picking up the phone, kind of the generation… I don't know if it's X, Y, Gen, Millenial, are more just used to using email. But just picking up the phone can get you that much further, and I continue to have to say, 'well why don't you just have a conversation with that person?'' *Interviewee 13*

E. Technology as information gatekeeper. A core function of technology in an organisation is to support the sharing of information between relevant employees and the ability for employees to store, access and share information with colleagues is of fundamental importance. But despite this need, problems regularly arise which prevent the easy sharing of information, such as file size limits on email attachments, systems not talking to each other, and security restrictions. Furthermore, the need to maintain access to information on 'legacy' systems (systems that are out-dated but still critical) causes problems in terms of either the cost of integrating with newer systems, usually via bespoke applications, or the need to migrate information onto a more up-to-date system. The metaphor of 'information gatekeeper' therefore reflects the ability of technology to permit or deny employees access to the information they

need.

> 'because the email quota on the size of attachments is usually restricted, let's just say you're working with an art file because you're a graphic designer, you get to a point where you can't share files…so the sharing of information that way is regularly a problem, in terms of files.' *Interviewee 12*

> 'you've often got an old mainframe, written on some sort of old code, running alongside of, say, a couple of platforms, running alongside a sort of in-house-built-DOS-whatever-package, running alongside of something else. But they were all integrated at the time, so they work. And providing they're massaged and loved and cared for, they're working. But actually, practically, each one of those has got a contract on it, and each one of those has got a separate set of engineering things, and a supplier management chain, and is it scalable, and what would happen if…' *Interviewee 1*

F. Technology as cultural influencer. The final metaphor reflects the ability of technology to shape the culture of an organisation. In this context, culture can be understood as the shared values and attitudes held by employees. As digital interaction increasingly represents a significant percentage of all work undertaken in large organisations, both the choice of and attitude towards technology will influence the behaviour of employees and relationships between them. Taking a proactive approach to the use of technology-mediated interaction can support the evolution of a culture that is responsive to how employees want to work. However, the lack of established etiquette regarding digital tools is problematic for employees who, without a sufficient explanation of the benefits of using a particular tool for a particular task, may be unwilling to change their working practices.

> '[intuitive technology] opens up the opportunity of sharing. And that sharing is really about having technology that allows you to feel confident and safe to share out in the

open, but also that you can build a more transparent culture because everything is available – or should be available – to everyone at any time. With your option to tune in or tune out the level that you don't want to share.' *Interviewee 8*

'There's a massive etiquette element, if you're not used to it…I think that's quite an interesting thing – with changing technology, specifically…looking at video technology, if you're not used to it what is the etiquette? How do you approach it? What should you do?' *Interviewee 11*

Having established the metaphor for each group of categories, it is now possible to construct an outcome space. This reflects the non-dominant ways of understanding the phenomenon of how CX professionals experience using technology to work together in large organisations.

5.1.1 Outcome space

How do customer experience professionals experience the role of technology in enabling people to work together in large organisations?
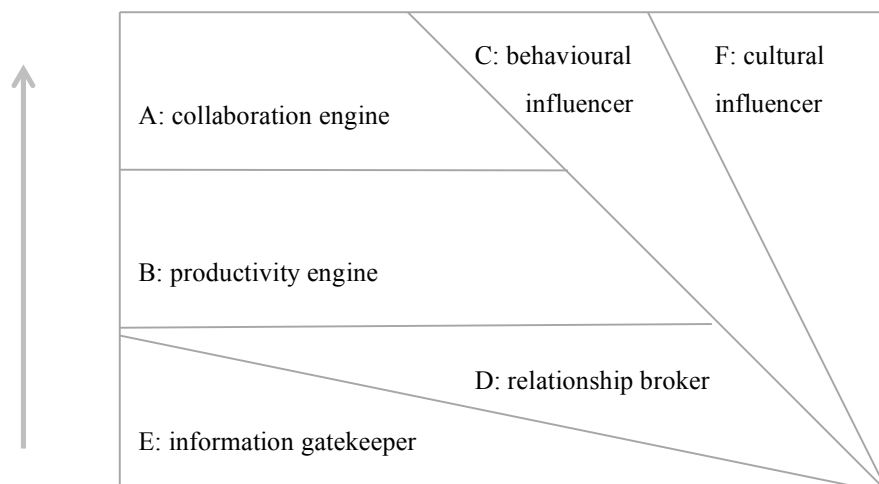

Figure 5: Outcome space for Theme 1

The data analysis revealed that technology played a fundamental role in enabling employees to store and control access to information. Category E (information gatekeeper) is therefore the foundation of the outcome space. The data also indicated that sharing information is a key aspect of the work of CX professionals, but while it is possible to store information without sharing it, information cannot be shared unless it is stored somewhere. Category D (relationship broker) is therefore dependent on Category E.

The effectiveness with which CX professionals are able to store and share information affects their productivity, and so category B (productivity engine) is therefore dependent on category E. By its very nature, all digital interaction involves an exchange of information between two or more people, and relationships will be developed and shaped through these interactions. Category B is also therefore dependent on Category D.

Providing that technology is acting as an effective information gatekeeper and productivity engine, it can then support collaboration. Category A (collaboration engine) is therefore dependent on categories B and E. But as collaboration requires two or more people to work together, it is not possible for technology to support collaboration without also affecting the relationships between people. Category A is therefore also dependent on Category D.

As the use of digital tools becomes more sophisticated through the outcome space, it will exert an increasing influence over the behaviour of employees. This influence may be as simple as creating a need for training on a new tool, or may result in

unwanted behaviours such as the difficulty of 'switching off' from constant connectivity. Category C (behavioural influencer) therefore runs alongside A, B, D, and E, and becomes a more influential factor as the sophistication of digital interaction increases.

Similarly, the influence of technology-mediated work on the culture of an organisation also increases with the sophistication of interactions. If technology shapes the behaviours of individual employees, collectively it will shape the shared working practices of employees across the organisation. Employees' experiences of digital interaction will influence their shared beliefs about cooperation and collaboration, and a shared understanding of the 'etiquette' regarding the choice of tools for collaborative work should improve its effectiveness. Category F (cultural influencer) therefore runs alongside A, B, C, D, and E.

5.1.2 Finding 1a: Increasing the dynamism of interactions enhances the ability of the message receiver to comprehend the intended meaning of the message sender

Evidence in interviews 1, 2, 3, 5, 6, 7, 8, 10, 12, 13

For a system to be classed as complex, 'the elements have to interact, and this interaction must be dynamic…[T]he interactions do not have to be *physical,* they can also be thought of as *information*' (Cilliers, 2000, p.3 - emphasis in original). The emergent properties of a complex system can be understood as properties that manifest through interaction between elements of the system, even though the individual elements themselves do not possess such properties (Johnson, 2002). The

dynamic nature of technology-mediated interactions between CX professionals can be understood as emergent in as much as they cause new insights and ideas to emerge through the sharing of information. Nearly all interviewees described situations in which increasing the dynamism of interactions increased their ability to identify and obtain relevant information and knowledge from these interactions. Interviewees 1, 2, 6, 7, 12, and 13 described how they preferred engaging in real-time interaction via video-conferencing to asynchronous forms of communication. Interviewees 3, 5, 8, and 10 described how the use of more 'social' platforms such as Yammer, blogs, and Basecamp increased the visibility of ideas and information emerging through interactions beyond what would have been possible through email exchanges.

Viewed through the CCO perspective of organisational communication, these interactions and conversations generate and are generated by the metaconversations that constitute an organisation (J. R. Taylor & Giroux, 2005). The effectiveness with which CX professionals can differentiate information from noise to comprehend the intended meaning of a message (M. C. Taylor, 2001) will influence the way in which they subsequently report this activity by constructing a 'text' (Nicotera, 2013). While a text-based tool such as email may be suitable for sending a simple message, the effective communication of a more complex message may well benefit from the use of a tool that affords a better representation of the original signal – what Cham (2007) refers to as the process of 'making the mark'. Exchanging information using email may therefore lead to greater divergence of emergent meaning than speaking on the phone or via video-conference.

Using de Saussure's theory of language, we can see that in a spoken interaction it is

easier to understand the 'signified' (or attendant mental concept), and therefore the intended meaning, than in a written interaction. Although Derrida's revision of de Saussure's theory argues that the meaning of a sign is always detached from its subject, a spoken message makes it easier for both parties to close the gap between intended and received meaning and enables an organisation to function more effectively as a CAS (Espejo, 2003). By removing the need to encode and represent a message in symbolic form as text, less reconstruction is required by the recipient making it easier to decipher information from noise.

It can therefore be argued that the usefulness of emergent meaning resulting from an interaction is determined by the ability for participants in the interaction to determine information from noise (M.C. Taylor, 2001). While emergent meaning will be produced during every interaction, the greater the effort required to decipher the signal, the less likely it will be that the emergent meaning is relevant to the interaction. This reflects the logic of Compensatory Adaption Theory (Kock, 2007) discussed in Section 2.3.3, which highlights the responsibility of a message sender to encode a message in such a way as to minimise the compensatory decoding effort required by the receiver. Following this logic, while a primarily text-based tool such as email is a convenient way of exchanging information in an organisation, it could also hinder the organisation's ability to learn as greater effort is required to identify and decipher the intended meaning of messages. Several examples of this phenomenon occurred in the data, with interviewees 1, 2, 4, 5, 6, 7, 9, 10, 11, 12, and 13 explaining that, where possible, they would always try and speak to someone in real-time in person or via phone or video conference rather than rely solely on written communication to explore an issue.

> 'So of course, the information is stored in drives, and previous presentations, and emails, and archives. But the efficiency of going to another human being and getting the answer quickly and with context, yeah – that's where the value is.' *Interviewee 12*

Merali and Allen (2011) state that successful organisations 'require underlying mechanisms that continuously create internal micro-diversity of ideas, practices, schemata and routines…so that they may be discussed, possibly tried out and either retained or rejected' (p.46). An example of this was provided by Interviewee 10 who explained how an internal blogging platform provided a forum for individuals and teams to share articles of interest. Employees from across the organisation would then comment on the articles, and new insights emerging from the discussion would then be incorporated and used to adapt projects in response to the feedback received:

> 'So in [organisation name] they have something called [name of platform] which is like the online news…. I don't know what you call it, but I've actually seen this in most organisations now over the last ten years. I saw it a lot when I was a consultant as well. So it's basically the main channel of communication. So every single day there are a number of articles that go on there – it's almost like a newspaper – and then people can comment, and so there's collaboration then across the Group. So across all of [name of organisation] Group… people can go on and comment on it, and what it means for them, and their feelings on it. And there are people on there who are moderating that, and are responding, and reading what goes on. But it's quite a good collaboration tool. I mean I'll go on to it every morning just to see what articles have gone on there because it's news about our business.' *Interviewee 10*

If technology-mediated interaction in an organisation influences the individual and collective behaviour of its employees, the dynamism of their interactions can therefore influence the emergent potential arising from their interactions.

5.1.3 Finding 1b: The lack of a clear etiquette for identifying appropriate digital tools limits emergent potential

Evidence in interviews 1, 3, 5, 7, 11, 12, 13

A strong theme emerging from the data was the lack of guidance regarding which digital tools should be used for a given task or context. Until fairly recently, the choice of tools – also sometimes referred to as 'channels' – for technology-mediated work in an organisation was limited. But the exponential increase in the capabilities of technology have resulted in a plethora of tools now being available to employees, including email, conference calls, video-conferencing, Yammer, Lync, Google Docs, OneDrive and Sharepoint. Interviewees 1, 7, 11, and 12 described how either they or colleagues in their organisations struggled with real-time interaction through channels such as video-conferencing or phone calls due to uncertainty regarding etiquette:

> 'I'm in the boardroom at the moment and I'm doing circuits of it. So I mean, why you would want to see me walking around a room – you'd probably get sick. So I think that's quite an interesting thing – with changing technology, specifically…looking at video technology, if you're not used to it what is the etiquette? How do you approach it? What should you do?' *Interviewee 11*

> 'I've had five different people where I've had to say… and actually push that person, and then… 'oh, you still haven't made that call.' Well let me try to understand why – because they're just not comfortable. It's so much easier for them to just ping off an email and just have this bounce back and forth. Yeah, it's been surprising to me just how averse to having a phone conversation with a person they tend to be.'
> *Interviewee 13*

This can be understood both as a lack of clarity as to the appropriateness of a particular channel for a given task or situation, and as an uncertainty around how to

conduct themselves during a technology-mediated interaction. For example, interviewees 1, 7, 11 and 12 highlighted how video-conferencing made either themselves or their colleagues feel uncomfortable, due to both a lack of confidence with the technology and from having to view themselves on screen while they talked. Interviewees 3, 5, and 13 described how colleagues were unsure when to choose one channel over another, and tended to default to the channel with which they were most comfortable. Uncertainty regarding the selection of appropriate channels can be interpreted as a lack of intention, and Finding 1b suggests that a reactive approach to digital tools may limit the potential for dynamic interactions and adversely influence emergent meaning. This lack of confidence is reflected in the literature on CMC competence (Spitzberg, 2006) and communication competence (Y. Hwang, 2011), which illustrates that employees require specific skills to reduce ambiguity in meaning-creation through computer-mediated work.

Although people and organisations may be becoming more networked through greater access to technology and information, the findings suggest that the ability of some CX professionals to contribute to organisational learning may be hindered through their potential lack of confidence with technology, unwillingness to learn new working practices, and uncertainty regarding the most appropriate tools to use for a given task. The lack of clarity regarding digital etiquette reflects Cham's argument for the growing need for clear intention in the design and deployment of interactive tools if complexity is to be harnessed as a positive force for change.

CLT proposes that leadership emerges from the interactions between agents in a system in order to produce an 'adaptive response' to a problem, such as an idea for

doing something differently or changing a process. (Uhl-Bien & Marion, 2011). To maximise the emergent potential of the interaction, CX professionals would benefit from understanding the affordances of a range of digital tools and being confident in using them so as to make a purposeful choice as to the best tool for the interaction. It is possible to argue that the more an agent is able to intentionally author a digital interaction, the more likely it will be that they will be able to produce an effective adaptive response. This again reflects the logic of Compensatory Adaptation Theory and its emphasis on the role of the sender to intentionally author a message. Providing guidance regarding digital etiquette to help employees select appropriate channels should therefore encourage more purposeful and dynamic interactions, and increase organisational learning through more effective exchanges of information.

Conversely, introducing new digital communication technologies without appropriate guidance and support is likely to increase disruption as employees struggle to understand both how to use a tool and the benefits of changing their working practices. The tacit expectation that CX professionals would know how, and why, to use new tools was clearly expressed by one interviewee, who noted that:

> … we didn't really get any information about how we should use [Yammer], or why we should use it. It was just, 'are you on Yammer?' And it was more of… again, policing is the wrong word because I don't believe that policing is the right thing to do, it was more,' what are the benefits of using it? How could you use it?' And because the company was very culture-driven of email, conference calls, f-2-f meetings, that actually I should have used it more but I never did. Because were the people I was talking to using Yammer? I don't know, and it fell flat on its face.
> *Interviewee 5*

5.2 Theme 2: Experiences of individual learning

The analysis of the data relating to the questions 'how did you experience knowledge being produced?', 'what did knowledge look like?' and 'how did you learn?' explored interviewees' individual experiences of learning. The purpose of these interview questions was to explore what interviewees understood as knowledge resulting from digital interaction, and how they experienced learning through these interactions. The phenomenographic analysis led to the emergence of ten distinct categories of description. Table 2 below indicates the grouped categories of description along with the metaphor assigned to each group:

grouped categories of description	metaphor
Changing mindset Observing others Taking action	A: Learning as applied
Creating documents, images and diagrams Creating a record of the interaction	B: Learning as documented
Reading visual cues Understanding implied character	C: Learning as performative
Understanding context Leveraging experiences	D: Learning as context-dependent
Co-creating understanding through interaction	E: Learning as socially constructed

Table 2: Grouped categories of description and assigned metaphor for Theme 2

Following the same approach as Theme 1, the metaphor assigned to each category enables non-dominant ways of understanding the phenomenon of individual learning in an organisational context. The metaphors for the Theme 2 categories are explained below.

A: Learning as applied. In this paradigm, learning was experienced as observing or changing behaviour. Although technology had the potential to cause a feeling of fear of not knowing how to use it, it also provided an opportunity to learn through exploring new affordances. For some, learning involved observing how others use technology and adapting the provision accordingly, while for others learning involved making decisions based on acquiring the appropriate information. Learning also happened by working with clients to test, refine and apply existing knowledge and behaviours.

> 'One of the ladies just sat there, and sat there, and sat there, and in the end I pushed the remote to her and said, 'look, let's switch the whole thing off, you bring it up to life'... And then, when I had her just dial another person in the organisation that she knew, it was a friend of hers, suddenly it was like, 'Oh, thank god, the relief, the fear has gone, and now I can learn.'' *Interviewee 1*

> 'It's almost like looking at it as a puzzle, and being able to pick up a piece of the puzzle at the right time that allows you to make a decision. Or not even make a decision, that allows you to move forward, be that with a project, a decision, or the work that you do – that to me then becomes knowledge because it becomes useful information as opposed to an aggregate of information.' *Interviewee 13*

B. Learning as documented. This metaphor reflects the use of artefacts to represent knowledge, whether pre-existing or generated through interaction. Learning involved accessing previously created documents, reports, images or diagrams to support

interactions or creating artefacts to represent the knowledge that emerged through interactions. Although the artefacts referred to were predominantly digital, they also included paper post-its and printouts. A summary of actions for a meeting was often created and emailed to all participants after the event. For those using video-conferencing, the interaction would occasionally be recorded so that it could be made available to those people unable to attend.

> 'capturing things such as processes, and visualising it, and watching it step by step, and getting all the logic, you do need to capture… sort of the emotive side of it as well. But we just have that all documented, video or whatever, and put it into PowerPoint slides, and you have a high-level view to make it easier to communicate.' *Interviewee 6*

> 'So I set up Basecamp [and] we not only used that as a reference site but every bit of information we created or collected we put there. So it was a common understanding of what we were doing, it was a common reference site of what we were doing, and every plan and deliverable was on there for both a client to see and an associate member of the team to see.' *Interviewee 11*

C. Learning as performative. This metaphor reflects the importance of gestures and sounds in effective communication, both in face-to-face and technology-mediated interactions. Text-based media such as email sometimes caused difficulty for participants in understanding the intended tone of a message. The ability to see facial expressions and 'body language' enabled a more complete understanding of an interaction as it supported a richer exchange of information between participants. While video-conferencing enabled participants to experience a more comprehensive representation of the intended message being communicated than with text-based media, it was still not able to fully capture all the nuances involved in a face-to-face interaction.

'if I hadn't have been in the room I wouldn't have picked this up. So there were some dynamics between the team in Italy - I'd not met these individuals before, and up to that point I'd only spoken to them over video-conference or over email – but just, I know it's really basic, but just picking up on the body language, I wouldn't have been able to pick that up.' *Interviewee 2*

'I think email, whether you consider lack of email etiquette, or lack of understanding the limitations of email and understanding how tone can come across. It can be quite detrimental.' *Interviewee 13*

D. Learning as context-dependent. The need to understand the context in which knowledge was produced played an important role in effective learning. Although documented knowledge could explain the 'what' and 'why' of a previous project or activity, it was less effective at explaining the 'how'. The ability to search and access prior experiences provided a way to situate documented knowledge in the context in which it was produced. Understanding the context in which knowledge had been developed enabled a more effective application of that knowledge to a new context or problem.

'The rest [of the organisation] is people who have come from other industries and other sectors, and are transferring a different viewpoint, or different skillsets, or different approaches, back into our organisation. And that in itself is perpetuating a knowledge base of how we do things differently.' *Interviewee 8*

'And I find that all of us rely very heavily on the two members who have been with the company for a long time for information that I know we could access easily, but it would take time. So naturally we go to those people and just ask a quick question, and then 1) you get the answer, and 2) you get the background and the context around it.' *Interviewee 13*

E. Learning as socially constructed. The final metaphor reflects the finding that much learning happened through talking with colleagues. Even when documented knowledge of an issue was available, the ability to discuss the document either with its creator or with other colleagues led to a deeper and more contextual understanding. Learning happened all the time through both formal and informal interactions with colleagues, and the value of 'live' interaction through conference calls or video-conferencing was that it enabled participants to co-create and negotiate a shared understanding of an issue in real time.

'Knowledge is produced, some knowledge is shared, someone will come to the call with a fact that they know already, and some knowledge is created in the process of the call. So often we will debate the best way to do something for the customer, and someone will say something, and someone will add something to that. I suppose it's both a sharing and a creative thing that the technology enables.' *Interviewee 9*

'documents can exist and you can go on to Google and search and find documents that are static documents that you can read, and can help you understand a topic more. But actually getting a human that you can converse with is probably the icing on the cake, you can actually ask the specific questions you've got as well. And in a consulting business that's done very well, because everybody needs to be credible with their clients and the need to be up to date. And you can only do that if you can actually speak to people about it rather than just digesting the written form.' *Interviewee 10*

Having assigned a metaphor to each group of categories, it is now possible to construct an outcome space to represent the non-dominant ways of understanding knowledge production and learning emerging from the data.

5.2.1 Outcome space

How do customer experience professionals experience learning through digital interaction?

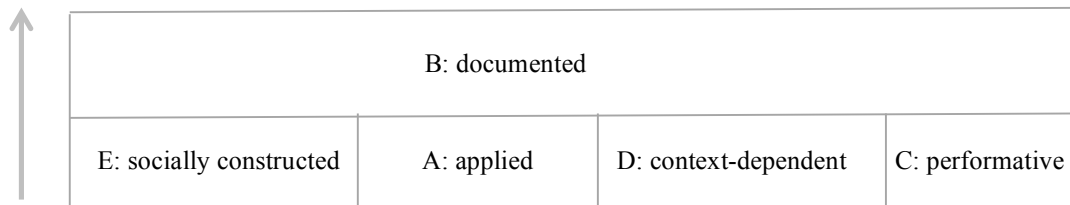| B: documented			
E: socially constructed	A: applied	D: context-dependent	C: performative

Figure 6: Outcome space for Theme 2

An interaction is shaped by the context and circumstances of everyone involved and involves performative elements – we are communicating, and communication is a performance, even if the performance is happening asynchronously. Category C (performative) and D (context-dependent) are therefore co-dependent.

When employees use technology to work together, whether synchronously or asynchronously, learning and knowledge are shaped by observing other people's behaviour. If communicating by text, the receiver of a message reconstructs intended meaning based on the language and words used by the sender. If communicating by video or face-to-face, the sender's physical gestures and body language, and the tone they use to communicate, also aid in the process of reconstruction. Category A (applied) is therefore co-dependent with C and D.

During an interaction, learning happens through the social construction of knowledge. Whether communicating via text, phone, or video-conference, meaning emerges

through the interaction between participants and is shaped by either their observed or reconstructed behaviour, depending on the medium. Category E (socially constructed) is therefore co-dependent with A, C and D.

Only after an interaction has taken place can knowledge and learning be documented and evidenced through artefacts. Category B (documented) is therefore dependent on A, C, D, and E.

5.2.2 Finding 2a: Learning is enhanced when information transmitted across a digital network is reconstructed using speech

Evidence in interviews 1, 2, 4, 6, 7, 9, 10, 12, 13

The outcome space for Theme 2 reflects the finding that interviewees struggled to learn the information they required from documents alone. If interactions are reduced to an artefact such as a report, then the observational, performative, context-dependent information, and an understanding of how that information was shaped through discussion, risks being lost. By applying post-structuralist theory, it is possible to argue that attempting to learn solely through the use of artefacts requires more reconstruction than if the other factors are present, and is likely to generate greater divergence of emergent meaning. This insight is reflected in comments made by several interviewees that they preferred to talk with someone when trying to arrive at an understanding of an issue. In particular, interviewees 2, 4, 6, 10 and 13 emphasised the benefits of engaging in real-time discussion with colleagues:

'documents can exist and you can go on to Google and search and find documents that are static documents that you can read, and can help you understand a topic more. But actually getting a human that you can converse with is probably the icing on the cake, you can actually ask the specific questions you've got as well.' *Interviewee 10*

Using the findings from the Theme 2 outcome space, it is also possible to see that certain uses of documented knowledge may be less problematic. For example, if a person participates in a video-conference and later receives an email summary of what was discussed and agreed, it will make more sense to them because they have much of the other information needed to reconstruct the message. If they did not participate in the video-conference, however, the email summary will potentially generate a greater divergence of emergent meaning. This argument is reflected in the findings of Hill et al. (2009) that participating in an initial face-to-face meeting positively influenced the effectiveness of subsequent asynchronous collaboration between team members. Although a video-conference is not the same as a face-to-face meeting, the finding by Hill et al. that a sequential use of synchronous and asynchronous activities positively impacts collaboration is a practical example of how an evidence-informed communication plan (Serçe et al., 2011) can enhance the intentional authorship of digital interaction.

The findings indicated that several participants preferred to speak with someone across a digital network in order to reduce the amount of reconstruction required and enhance their ability to identify relevant information. Examples from the data highlighted the value of tools such as video-conferencing in supporting what can be understood as the encoding and transmitting of more of the performative act:

'conference calls are all well and good, but that face-to-face visibility is really nice. So when you're on a conference call you're never really sure who's on the line, what other people are doing, but a video-conference really just helps with all those social signals that you get with the body language-type stuff.' *Interviewee 12*

'particularly in the example of video-conferencing, you know, it's not as good as being in a room with somebody, but you still can to a certain extent read facial expressions, read body language, and have that extra layer of understanding of somebody else's point of view.' *Interviewee 7*

From a post-structuralist perspective, communication involves a complex interplay of signs and gestures consisting of both a set of rules (langue) and the performative aspect of language in use (parole). The process of interacting with an artwork in order to produce emergent meaning is a useful analogy for the process of interacting across a digital network, and is why 'in a wholly digital environment post-structuralist theory is tangible complexity' (Cham, 2007, p.264). To send information across a digital network, a person must first conceive of the message they want to communicate. Rather than deliver this message (the 'mark') complete with the facial expressions, gestures, and tone of voice (the 'performative act') that would be possible in a face-to-face encounter, they must reduce this information to a form that can be encoded and transmitted across a digital network. The amount of reduction that must occur will be shaped by the medium through which they intend to communicate their message. Once the message has been received, the recipient must decode the information and 'reconstruct' it using their knowledge, context and prior experience. Given the richness with which humans express themselves, and the amount of information produced when we communicate, much of the information involved in 'making the mark' is lost when communicating in text-based forms. Furthermore, this reduction in information requires the recipient to engage in a significant amount of reconstruction

in order to decipher the intended meaning of the message. If any interactive system invokes the need for reconstruction by the recipient of a message, the data supports the argument that the learning that occurs during digital interaction is enhanced through real-time dialogue.

However, although the findings strongly emphasised the value of synchronous dialogue in effective meaning-creation, effective learning was not necessarily dependent on the need to see other people involved in a digital interaction. One interviewee noted that while he occasionally used video with his geographically dispersed team when they were talking informally, they rarely used video for their day-to-day business interactions:

> 'when it's softer – when the human side of things is more important and you want to see the whites of someone's eyes – then we tend to switch video on then. But we wouldn't need to do it for a more business-focused call.' *Interviewee 9*

If a core property of a CAS is its ability to explore and exploit information in order to adapt (March, 1991), the ability for the system to learn can be understood as dependent on this process of exploring and exploiting information. Finding 2a indicated that while a technology-mediated interaction often led to the creation of digital artefacts to represent the interaction, these artefacts only represented a part of the knowledge produced. If some of the knowledge produced during digital interaction remains tacit within employees (Nonaka & Takeuchi, 1995; Nonaka et al., 2000), the capacity for the organisation as an entity to exploit, learn and adapt may be limited, and approaches to knowledge management that only attempt to manage documented, explicit knowledge risk ignoring the social aspects of effective

knowledge sharing (Prieto & Easterby-Smith, 2006). Finding 2a illustrated the importance of intersubjective learning (Hollan et al., 2002) for CX professionals, and emphasised the Vygotskian view of learning as participation in which knowledge emerges through collaborative interaction and is distributed across a network of participants (Cole & Wertsch, 1996; Lipponen, 2002). The ease with which an employee can identify and interact in real-time with someone who has context and experience relevant to the issue they are working on, the greater the potential for local knowledge to create opportunities in distant areas of the network (Kilduff et al., 2008). As one interviewee noted:

> 'you've got all this information which technology can enable, but then you've got to connect the people. Because it's people at the end of the day who have either written the article and have a point of view, so you've got to get to…the right people at the right time.' *Interviewee 10*

5.3 Theme 3: Experiences of organisational learning

Whereas Theme 2 explored interviewees' individual conceptions of learning, Theme 3 required interviewees to reflect on how their organisation as an entity might have learned through their digital interactions. The interview questions 'how did your organisation learn?' and 'where was the knowledge produced stored?' therefore enabled interviewees to describe if and how the knowledge produced through technology-mediated interaction enabled the organisation to learn and adapt as a result. As the term knowledge management is commonly referred to in the context of 'knowledge management systems' (Maier, 2004), interviewees were not asked about their experiences of knowledge management but rather about their experience of organisational learning. The reason for this was to encourage interviewees to

undertake a more expansive consideration of where they perceived knowledge to be stored in their organisation beyond simply the organisation's knowledge management system.

The phenomenographic analysis of the data revealed eight distinct categories of description. Table 3 below presents the grouped categories of description and the metaphor assigned to each group.

grouped categories of description	metaphor
Conversations Relationships Sharing information Employees' experiences	A: Organisational learning as interacting with employees
Formal review documents Project documents Stored interactions	B: Organisational learning as documenting knowledge
Raw data	C: Organisational learning as analysing data

Table 3: Grouped categories of description and assigned metaphor for Theme 3

As with Themes 1 and 2, the assigned metaphor makes it possible to establish the non-dominant ways of understanding the phenomenon of knowledge management. Before going on to explore how organisational learning informs and is informed by knowledge management, the metaphors for the grouped Theme 3 categories are explained below.

A. Organisational learning as interactions. This metaphor reflects the finding that organisational learning resulted from interactions between employees to access individual experiences. Employees shared information either by exchanging documents or through conversations, and these exchanges sometimes led to the development of richer working relationships. Knowledge was stored in the minds of individual employees, and accessing the knowledge of the organisation involved talking about their previous experiences to discover the background and context to a given task or issue.

> 'So I found [the document] through the knowledge tool, and then found the person who created it, did a call with them, understood how they'd used it and rolled it out, took it, tweaked it for our needs, and then delivered it for this particular programme…any intelligent person will speak to somebody to make sure that they're understanding it properly.' *Interviewee 10*

> 'Until we have an information store system that can give you those three things – not just the information, but also the background and the context – then I think we naturally always revert to the people, and that to me is one of the greatest assets when it comes to knowledge.' *Interviewee 13*

B. Organisational learning as documenting knowledge. Documents were used to store the knowledge produced as a result of digital interactions, and these documents were usually made available to employees via a shared drive or document repository. Formal review documents such as Post Implementation Reviews and Lessons Learned were used to record the agreed outcomes of projects and guidance on what should be done differently next time. Contextual documents produced through project work including email exchanges, summaries of actions, and conversations on tools such as Yammer were also sometimes stored in the document repository and made searchable.

But although project documents provided a record of what happened, they often focused too heavily on processes and failed to capture enough contextual information, behaviours or experiences, to be of use to CX professionals.

'So what the documentation will do is if someone wants to pick up Phase 2 of the project, it's all there, they can do it, and they know what they're starting from, they're not starting from scratch. And if something technical goes wrong they know why the architecture is like it is, and so on. But what they don't know is how you did it. What were the issues that you came up against? How you got around these things. Why you made all the decisions you made, because that's all embedded in people.' *Interviewee 6*

'I like to do a summary email. So I'll type out business discussed, these people on the call, this was what was agreed, and I'll send it round. So it lives in the email server, and in people's inboxes.' *Interviewee 9*

C. Organisational learning as raw data. Implementing systems that generated and captured digital data through employees' interactions enabled organisational learning to occur through accessing and analysing the data. Storing the raw data in a data warehouse as it was produced afforded a real-time analysis of information and enabled the employees to adapt their behaviour accordingly.

'A lot of it learning was then about the data. So it was about the information and the data that was coming back. Because we were then able to look at what data was coming back across the process… So it gave us access then to data across each of the stages and the touchpoints in the journey, to be able to really understand where the pain points were and where the failures were.' *Interviewee 4*

Having established a metaphor for each group of categories, an outcome space can now be created to represent the non-dominant ways of understanding knowledge management. Figure 4 below presents the outcome space for Theme 3.

5.3.1 Outcome space

How does an organisation create, store, retrieve, transfer and apply knowledge?

Figure 7: Outcome space for Theme 3

Building on the findings from Theme 2, the knowledge generated through the digital interactions of CX professionals is socially constructed, applied, context-dependent, and performative, and stored in each person as an 'internal' or 'embodied' experience. The actions of each individual also generate 'external' data, and this may take a wide range of forms such as written information, images, diagrams, location information, length of call, or their manipulation of information stored on a database. All interactions will generate both experiences and data, and as the data cannot be separated from the interactions themselves, Category A (accessing interactions) and Category C (accessing data) are both co-dependent and the foundation of the outcome space.

Once an interaction has occurred, the interaction may be documented in some form

such as a PowerPoint presentation or summary email. The results of multiple

interactions may also be collated more formally in the form of a Post-Implementation

Review. As it is not possible to document interactions without the interactions taking

place and generating data, Category B (accessing documents) is therefore dependent

on Categories A and C.

5.3.2 Finding 3a: The memory of an organisation exists at the intersection of interactions, documents and data

Evidence in interviews 2, 3, 4, 5, 6, 8, 10, 12, 13

The outcome space for Theme 3 presents the knowledge of an organisation as

documents, raw data, and interactions. While some knowledge can be obtained by

consulting the organisation's documents or data, obtaining a more complete

understanding requires interacting with other people in the organisation. Doing so will

provide the performative, socially-constructed, applied, and context-dependent

information required to decode the information in the documents or data effectively.

The evidence in the data that the intersection of dynamic interactions, documents and

data constitutes the memory of an organisation reflects the idea that organisations can

possess a memory (Leblanc & Abel, 2007; Stein & Zwass, 1995; Walsh & Ungson,

1991), and particularly the view of memory as an 'active act of remembering'

(Bannon & Kuutti, 1996, p.161) that has largely been obscured by the computational

interpretation. While many of the interviewees provided examples of how their work

required them to access knowledge in the form of documents and data, a strong theme

that emerged was the corresponding need to interact with other people in the

organisation in order to obtain sufficient understanding of the documented

knowledge.

Using the language of dynamic capabilities, Finding 3a suggests that interacting with other members of an organisation was necessary for CX professionals to access the memory of the organisation's routines and understand why these routines had been developed and implemented. Interviewees 2 and 10 described how the knowledge management system in their organisation was often a starting point for discovering knowledge, but that interacting with the people involved in creating that knowledge was essential if they were to be able to apply that knowledge in a new context. The risk to an organisation of not being able to access knowledge in this way was highlighted by Interviewee 6, who noted that

> '[knowledge is] embedded in the culture of the people, it's the cultural memory if you like. And the challenge [the organisation] has got now is that all the people who were closely involved in customer experience have left.' *Interviewee 6*

Interviewees 3, 5, and 8 gave examples of how internal social media platforms such as Yammer and Google+ provided a valuable way to access the knowledge of their organisation through informal interactions. Interviewee 5 explained how sharing documents and interacting on Yammer had enabled one office to identify expertise and capacity in another office, a further example of 'opportunity creation' in a distant area of the network (Kilduff et. al., 2008). Interviewee 8 described how the gradual adoption of Google+ across the organisation had provided a way for employees and partners to share, discuss and search documents, experiences and interactions. Interviewee 4 highlighted how their organisation had replaced a paper-based supply chain with a data warehouse layer, and explained how this had transformed the ability

to access knowledge through real-time interaction with data and employees. Lastly, interviewees 12 and 13 described how interacting with people was both a more efficient and effective way of establishing an understanding of a given problem or situation than simply reading the formal, documented outputs of previous projects.

While post-structuralist theory provides a valuable way of analysing how individuals learn through digital interaction, the combination of post-structuralism with theories of complexity that affords a useful way to consider how these interactions might lead to organisational learning. As discussed in the Conceptual Framework, Cilliers' (1998) detailed exploration of how a CAS learns through a system of 'differences' provides a view of how such a system stores information in the connections between nodes, and of how this information is accessed when the nodes dynamically interact. Noting Lyotard's argument that local narratives can only be understood in terms of their difference to surrounding and contrasting narratives, Cilliers highlights how discourses are spread across many 'selves'. This, Cilliers argues, is comparable to the way that information in a connectionist network 'is not 'represented' by specific nodes, but encoded in patterns distributed over many nodes' (p.116). The result is a 'self-organising process in which meaning is generated through a dynamic process, and not through the passive reflection of an autonomous agent' (ibid.).

When combined with the postmodern predicament that 'all knowing is narrative knowing' (Cham, 2010, p.5), this perspective aligns with the CCO view of organisations as constantly emerging through the dynamic interplay of texts and conversations (Nicotera, 2013), and with organisational learning as the subsequent development of metaconversations which recursively shape the memory of an

organisation (Putnam, 2013; J. R. Taylor & Robichaud, 2005).

5.3.3 Finding 3b: The effectiveness with which an organisation can represent dynamic interactions influences organisational learning

If the memory of an organisation emerges through a combination of documents, data, and interactions, organisational learning therefore depends on the ability of an organisation to represent dynamic interactions as well as documents and data. Representation in this context can be understood as 'a formal system for making explicit certain entities or types of information, together with a specification of how the system does this' (Marr, 1982, p.20). Finding 3a revealed the difficulty in storing and making available the knowledge that exists in an organisation, with the implication that there is a need for organisations to capture and make searchable the dynamic interactions between employees in addition to capturing data and documents. One interviewee provided an example of how this was attempted at a large organisation in which he had worked:

> 'It was like a knowledge management tool, I can't remember what it was called. But essentially it contained articles, credentials, or examples of deliverables that _____ consultants deliver, so projects that are complete – there's probably hundreds of thousands now. But also, people are on that forum, and you can just type in a question, and it's linked in to your email, so you get a question pop up in your email – you join a particular group, so I would have been in the customer experience group, and a question pops up, and the 10,000 people around the world who are members of that group get that question, and then you respond if you've got something to say. So technology there is a huge enabler.' *Interviewee 10*

A key property of complex adaptive systems is the way in which knowledge is represented across each node in the system (Cilliers, 1998). A distributed

understanding of representation is comparable with Derrida's post-structural argument that meaning results from a dynamic interplay between all of the words – or 'signs' – in a system. Building on this perspective, Cilliers observes how in a complex system, 'meaning is conferred not by a one-to-one correspondence of a symbol with some external concept or object, but by the relationships between the structural components of the system itself' (p.11). Importantly, the survival and success of the system is largely dependent on how effectively it can exploit its knowledge in in order to inform how it interacts with its environment (March, 1991).

Theme 2 established that dynamic interactions in a human organisation generate a range of information. The findings indicated that the ability of artefacts to support effective learning and decision-making is limited, as artefacts lack much of the observational, performative, context-dependent data, and an understanding of how that data was shaped through discussion. Theme 1 also established that interactions are rendered more problematic by digital tools due to the reduction in information that is required for transmission across a digital network. Cilliers (2000, p.86) shows how our entire approach to designing computer systems is based on semiotics and the use of symbols to represent information. However, the problem with such an approach is it assumes that complex information can be reduced to specific symbols and then represented in a machine, and it is for this reason that Cilliers argues how attempts to store and manage knowledge in a computer system are problematic. The use of any visual symbol to codify and represent information requires interaction from the observer to decode the information, and this interaction and subsequent reconstruction leads to emergent meaning. Attempts to replicate knowledge visually are guided by the same reason that email has become the dominant way of exchanging information

in an organisation – it is convenient. However, using the perspective of post-structuralism and complexity, it can be argued that any symbolic representation of knowledge will increase the diversity of meaning emerging through reconstruction.

While diversity of ideas is essential for the survival of a complex adaptive system, consistency of meaning during interactions is also important in order to minimise unintended complexity (Espejo, 2003). The data indicates that while documented knowledge 'opens up' opportunities for learning, it is only through interaction and discussion that this knowledge can be interpreted and effectively applied in a new context. This reflects the intersubjective view of learning (Hollan et al., 2002) and the idea that learning consists of interactions (Koschmann et al., 2005). Cilliers (2000) notes how it is all too easy to fall for a general theory of representation because 'a text may have to be interpreted, but an image speaks to us *directly*, or so we believe' (p.82 – emphasis in original), and observes that post-structural theory in fact strongly rejects this approach to representation because an image is just as open to interpretation as text. From such a perspective, attempts to represent knowledge using documents and data that ignore the ways in which people interact with this information will hinder the effectiveness of organisational learning.

A key problem with studying CAS is that effectively modelling such systems requires a system of equal, if not greater, complexity. This problem has been defined as the 'Law of Requisite Complexity' (McKelvey & Boisot, 2003), and can be understood as meaning that 'a system must possess complexity equal to that of its environment in order to function effectively' (Uhl-Bien et al., 2007, p.301). As there is currently no system in existence with the ability to equal or surpass the complexity of the human

brain, the only truly effective way to capture all the information resulting from

dynamic interactions is using another human brain – in other words, people are the

best way of capturing and storing the complex information emerging through

interactions. If distributed representation is an effective response to storing and

accessing dynamic interactions in an organisation, leveraging distributed

representation is possible through a more intentional use of adaptive space, and this is

explored further in the Discussion chapter.

Chapter 6 Discussion

This thesis hypothesises that the use of digital tools by CX professionals could create adaptive space in organisations, and aims to clarify the potential for their technology-mediated activity to contribute to organisational learning. The Findings chapter responded to the first research question by identifying how the CX professionals interviewed in the study experienced learning at an individual level through the use of digital tools. The Discussion chapter responds to the second research question by showing how the technology-mediated interactions of CX professionals can be considered as an adaptive mechanism and enable them to contribute to learning at the level of the organisation. This chapter interprets the findings through the theoretical model proposed in the Conceptual Framework to argue that the effectiveness with which CX professionals use technology to open up adaptive space constitutes a dynamic capability.

6.1 Technology-mediated interaction is an adaptive mechanism

The findings of the CLT research programme identified the value of an 'adaptive mechanism' to complex organisations (Arena & Uhl-Bien, 2016). The purpose of such a mechanism is to engage the natural creativity and innovation of the entrepreneurial system and advance it into the formal, administrative system. A recurring theme in the data analysis was the need for CX professionals to talk with others in their organisation in order to determine effective meaning from documented knowledge, activity that can be interpreted as 'sense-making' (Weick, 1995). The data indicated that in large and complex organisations, the ability for CX professionals to

identify and interact with a person who could help them obtain the information required to progress a project often involves the use of digital tools. This is both due to the need to search across the existing knowledge of the organisation, and because this knowledge often resides in employees that are geographically distributed. From this perspective, the ability of CX professionals to engage in effective technology-mediated interactions can be viewed as an adaptive mechanism. Viewed through the theoretical model, the findings provide evidence of how technology-meditated interactions can enhance the ability of CX professionals to identify and acquire new and relevant information, assimilate and transform the knowledge into a form that is usable by their organisation, and exploit the knowledge to inform the coordination of subsequent organisational activity (Zahra & George, 2002).

An example in the findings of such an adaptive mechanism is the use of online community platforms to expose an idea to the critique of multiple communities within the organisation. An important characteristic of these platforms is the way in which they provide an informal mechanism for CX professionals to identify useful information and share their own thoughts, ideas and questions with the wider community without the need to target specific groups. Whereas email often reflects the hierarchical nature of an organisation (for example, those at lower levels are often discouraged from sending direct communications to anyone above their line manager), the data indicated how online community platforms can provide a more open forum where anyone can share information and comment on the ideas of others. Interviewee 8 provided a detailed example of how the introduction of Google+ communities in her organisation had significantly increased the ability for employees to acquire and share information more freely. This had provided a space to support the

cross-fertilisation of ideas between people in different departments who would otherwise rarely interact, and had also subverted the traditional hierarchy of communication by providing a place where employees at lower levels of the organisation could engage in informal discussion with members of the leadership team. Interviewee 10 highlighted how posting questions on an internal blogging platform enabled him to obtain feedback on ideas from people in overseas territories of his organisation, and that these diverse viewpoints helped identify potential problems and risks that could affect the subsequent integration of these ideas into the organisation's routines. In creating such opportunities for informal emergence (Lichtenstein et al., 2006; Plowman et al., 2007), online community platforms can therefore be understood as loosening the bureaucratic structures of an organisation by providing an adaptive mechanism between the administrative and entrepreneurial functions (Uhl-Bien & Marion, 2011).

A further advantage of online community platforms is their ability to support greater externalisation and searchability of the tacit knowledge and experience that exists in an organisation. The findings showed why people can be considered as the most effective way of storing and accessing complex knowledge, and online community platforms provide a way for employees to share knowledge, ideas and experiences in a searchable, interactive space. This claim reflects the distinction between what Cook and Brown (1999) refer to as 'knowledge used in action' (often residing as tacit knowledge within people) and 'knowledge as action' (demonstrated by individuals interacting with each other and the world). The findings showed how CX professionals' ability to access and search previous interactions and context could help them identify people with knowledge and experience relevant to the task they are

undertaking. This finding reflects the interpretation of social capital as 'the competitive advantage that is created based on the way an individual is connected to others' (Arena & Uhl-Bien, 2016, p.22). Such a claim is predicated on a need to capture, represent, and make searchable employees' knowledge and experience, and is supported by data from several interviewees. Interviewee 2 described how her organisation had developed an internal social tool to try and capture more of the context-specific information generated through employees' interactions. Interviewee 3 revealed that his organisation had introduced the social intranet tool Yammer to enable rapid, real-time collaborative problem-solving in a call centre. Interviewee 5 indicated how Yammer had enabled his organisation to identify and leverage knowledge, experience and capacity in offices located around the country more easily than would have been possible by other means. Interviewee 10 explained how his previous organisation had built a bespoke internal search engine that enabled employees to search across the knowledge and experiences of every employee in the organisation to ensure that employees were able to be as up-to-date as possible when dealing with clients.

The above examples indicate that the way in which CX professionals use online community platforms to obtain and share knowledge can be understood as an adaptive mechanism. By bringing together employees from across an organisation to share and discuss ideas, online community platforms can create opportunities for learning by increasing the potential for knowledge in one area of a network to be leveraged in a distant area of the network (Kilduff et al., 2008). Such platforms can play an important role in creating adaptive spaces to support informal emergence and knowledge-sharing, and can be understood as 'underlying mechanisms that

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continuously create internal micro-diversity of ideas, practices, schemata and routines' (Merali & Allen, 2011, p.46). Conversely, the findings indicated that if social platforms are used without clear intention and an understanding of their purpose and functionality they may adversely affect communication as CX professionals waste time and effort in determining whether and how to use them.

The data also indicated how the emergence of information that results from technology-mediated interaction can generate a distributed cognitive system. In his examination of the dynamics of group cognition, Palermos (2016) highlights the 'society of mind' metaphor of Minsky (1988) and Papert (1980) who proposed that the complex interactions of individuals can enable intelligent systems to emerge. Central to Palermos' argument is the belief that when the feedback loops resulting from reciprocal, non-linear interactions give rise to behaviours that are not attributable to the cognitive processes of individuals (such as the ability to recall memories), these behaviours must be taken as evidence of a distributed cognition system. Such a view supports the argument that technology-mediated interactions can constitute an adaptive mechanism, as the multiple, recursive and distributed interactions generate constant feedback loops that bring about the continuous evolution of an organisation.

6.2 CX professionals can be enabling leaders

CLT identifies the importance of 'enabling leadership' in creating adaptive climates (Uhl-Bien & Marion, 2009; Uhl-Bien et al., 2007). The sample of interviewees for this thesis consisted of CX professionals who held relatively senior positions in their organisations, and from the perspective of CLT belonged more to the administrative

system. The examples of work-related activity that they provided in response to the interview questions revealed how they regularly worked with employees across and beyond their organisation to stimulate innovation and creativity in order to help an organisation continuously adapt (Dess & Picken, 2000). Aspects of their work can therefore be seen as demonstrating the characteristics of enabling leaders, who connect the administrative and entrepreneurial systems and provide resources, space and sponsorship in order to foster adaptive dynamics (Uhl-Bien & Marion, 2011).

The recurrent theme in the findings that CX professionals needed to engage in technology-mediated interaction in order to identify and apply knowledge can be interpreted as creating a virtual, adaptive space in which to work. The nature of the work discussed by the interviewees often involved the provision of resources to move projects forward, and these resources could be financial, technological, or knowledge-based. Interviewee 1 described her company-wide rollout of video-conferencing to improve connectivity and knowledge-sharing across her organisation, and interviewee 2 discussed her daily use of video-conferencing to support her sponsorship of global project teams on new product development. Interviewee 3 was in the process of implementing Yammer to increase interaction and knowledge-sharing between call-centre workers, while Interviewee 4 had introduced an interactive data-warehouse layer to enable two-way communication between delivery drivers and managers. Interviewee 5 had implemented Yammer to increase knowledge-sharing, problem-solving and capacity-building, while Interviewee 6 had provided financial backing and a discursive space to solve a corporate website issue. Further examples of providing resources, space and sponsorship were provided by interviewees 8, 9, 10, and 13.

Uhl-Bien et al. (2007) note how leadership in the knowledge era increasingly involves the need to bring together the distributed intellectual assets across an organisation (R. E. Miles, Snow, Matthews, & Miles, 1999). CLT proposes that enabling leadership works to create 'enabling conditions' that can harness the 'entanglement' (Kontopoulos, 1993) between the administrative and entrepreneurial systems, and use the informal emergence of ideas to inform planning and resource coordination at a strategic level (Hunt et al., 2009). Many of the examples of work-related activity described by the CX professionals in the study can be viewed as accessing and coordinating distributed knowledge assets to improve the competitive advantage of their respective organisations, and support a consideration of CX professionals as enabling leaders who work as 'brokers between communities' (Wenger, 2000, p.235) to achieve 'new levels of coordination' (ibid., p.234).

The recurrent theme of the need to talk with others to make sense of organisational knowledge also reflects the intersubjective meaning-making discussed in the Literature Review in the context of collaborative learning, and can be seen as example of memory as an 'active act of remembering' (Bannon & Kuutti, 1996, p.161). This activity provides some evidence to support an argument that CX professionals could be engaging in group-level cognition (Theiner, 2013) to establish and develop a transactive memory system (Wegner, 1988) as they work to coordinate distributed intellectual assets. The development of transactive memory systems has been identified as a potential source of sustainable competitive advantage (Dierickx & Cool, 1989), and Argote & Ren (2012) show how such systems can be a source of dynamic capability through their ability to support the building, reconfiguring and integrating of knowledge assets. The findings indicated that the organisational focus

of CX professionals' work involved coordinating the knowledge and activities of distributed individuals and teams in order to improve organisational performance, and that this was predicated on effective communication through both face-to-face and technology-mediated interaction. Argote and Ren (ibid.) argue that an organisational transactive memory system facilitates the flow of information to those who can make sense of it (Teece, 2007), and helps employees and teams identify and connect with others who have complementary expertise to exploit a new opportunity. The importance of effective communication to the CX professionals in the study and their common need to talk with others to move their projects forward provide some evidence of the development of an organisational transactive memory system as described by Argote and Ren (2012). The use of digital tools to create adaptive space in which to undertake this work can therefore be interpreted as supporting the link between transactive memory and dynamic capabilities, and this will be discussed in the following section.

6.3 Intentional authorship of adaptive space could be a dynamic capability

The Conceptual Framework set out the characteristics of adaptive spaces and explained how such spaces can enhance the long-term sustainability of an organisation. By providing the conditions in which employees can generate new opportunities through unfocused exploration (March, 1991), adaptive spaces support the 'intentional interactions of interdependent human agents (individuals or collectives) as they work to generate and advance novel solutions in the face of the adaptive needs of the organisation' (Uhl-Bien & Marion, 2011, p.474). If adaptive spaces support intentional interactions, the effectiveness with which digital tools

mediate these interactions is likely to influence the effectiveness of the adaptive spaces created.

This thesis proposes that the concept of 'intentional authorship of adaptive space' can here be viewed as equivalent to that of a 'digital etiquette' as a way to describe how CX professionals approach the selection of appropriate digital tools for communicating. This reflects the use of the term 'etiquette' by several of the interviewees in the study to describe their knowledge of the relative merits of different digital tools. The findings in Theme 1 showed how a lack of understanding of digital etiquette could influence the choice of digital tools, and could lead to CX professionals using tools with which they felt comfortable rather than tools that might lead to a better outcome. For the purposes of this thesis, the ability for CX professionals to identify and use an appropriate tool for a digital interaction can therefore be described as their 'intentional authorship of adaptive space'.

Viewing the findings through the theoretical model, it is possible to argue that the ability for CX professionals to select and use an appropriate digital tool to support interaction and transactive memory constitutes a microfoundation of dynamic capabilities (Argote & Ren, 2012). While Finding 1a showed how more dynamic interactions could enhance the comprehension of a message, Finding 1b indicated that a lack of clear etiquette regarding the ability to select an appropriate digital tool could limit the emergent potential of an interaction. The information-sharing activity described by the interviewees reflects the organisational focus of CX work (Kranzbühler et al., 2017), and the examples provided by interviewees 1, 3, 5, 6, 8, 9, 10 and 12 focused on how their knowledge-sharing activity was used to continuously

renew aspects of the business (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008; Wang & Ahmed, 2007). This can be interpreted as the integration (Pavlou & El Sawy, 2011) and knowledge transformation (Zahra & George, 2002) aspect of dynamic capabilities, as the CX professionals sought to combine newer knowledge from customers with the existing knowledge of their organisations. The interviewees all described how different digital tools influenced their ability to learn and construct the knowledge required to move their internal projects forward. The effectiveness with which these CX professionals were able to select and use appropriate digital tools to author technology-mediated interactions can therefore be considered as a dynamic capability.

Without an understanding of appropriate channels for communication, the findings showed that the CX professionals interviewed were likely to default to channels with which they were more familiar or perceived as having no choice but to use, rather than those which could enhance the effectiveness of an interaction. This claim is supported by data from all four employees who talked about the introduction of online community platforms, each of whom indicated how either they or their colleagues were initially resistant to the introduction of an additional channel of communication. The findings suggest that effectiveness of these spaces is influenced by the intentionality with which they are initiated and used. Interviewee 5 described how the initial launch of Yammer in his company had been communicated by an email to employees announcing that the company had purchased a new tool and encouraging them to use it. The lack of guidance regarding why employees should use the tool resulted in initial engagement tailing off after a few months as employees failed to see its value. This finding was reflected by interviewees 2 and 11 who reported similar

launch strategies followed by a similar downturn in engagement.

A similar uncertainty was evident for some of the CX professionals who discussed the use of video-conferencing in their organisations, with Interviewee 1 reporting pockets of resistance by employees at both operational and strategic levels. Interviewee 2 highlighted that while video-conferencing was widely used in her organisation, there were occasions when a face-to-face meeting was more effective at moving a project or a relationship forward. Interviewee 6 described his dislike of video-conferencing due to the persistent technological issues that often delayed the start of meetings, and preferred to arrange face-to-face meetings where possible as they led to greater emergence of ideas. Interviewee 9 chose to switch off video when working with his team during weekly meetings, although it was interesting to note his decision to switch on video when the focus of the call switched from business to personal. Interviewee 11 discussed his resistance to video specifically because of a lack of understanding of where to look and how to act, and instead preferred to use phone conferencing. Interviewee 12 explained that while not everyone used video during conference calls, he found it useful due to its ability to convey non-verbal cues which helped him to build a greater understanding of the activity of other employees in his organisation.

The above examples can be interpreted as evidence of CX professionals attempting to build, reconfigure and integrate knowledge assets in order to undertake work that will contribute to enhancing the competitive advantage of their organisation (Teece, 2007). The findings indicated that the intention with which they identify and use digital tools can influence the effectiveness of their interaction, and this in turn will influence the

transactive memory that develops between CX professionals and their colleagues (Argote & Ren, 2012). Viewed as such, the intention with which CX professionals author adaptive space can be interpreted as a microfoundation of dynamic capabilities. The theoretical model proposed that CX professionals can contribute to organisational through the sequence of activities that constitute absorptive capacity (Zahra & George, 2002) and dynamic capabilities (Pavlou & El Sawy, 2011), and that their technology-mediated interactions could be interpreted as creating adaptive space (Uhl-Bien et al, 2007). The findings indicated a lack of guidance for CX professionals regarding the digital tools to use could result in an instinctive, rather than an intentional, approach to technology-mediated interaction.

The CCO perspective of organisational communication proposes that an organisation consists of and emerges through the interactions between its employees (Taylor, 2009; Robichaud & Cooren, 2013), with the implication that every single interaction contributes to the metaconversations that constitute the organisation (Robichaud & Cooren, 2004). When viewed from this perspective, the findings show that a lack of intention regarding the choice of digital tools could influence the communicative activity of CX professionals, and thus their contribution to organisational learning. Such a view lends weight to an argument for the benefit of greater intention in the authorship of interactive spaces if they are to produce emergent behaviours that are desirable for an organisation (Cham, 2007), for if the advantages of using one tool over another are unclear then the potential of the adaptive space to support effective interaction will be impeded. The argument for greater intention also aligns with the argument that an initial face-to-face meeting might influence the effectiveness of their subsequent collaboration and group cohesiveness (Hill et al., 2009), and the

hypothesis that higher levels of group cohesion will lead to higher levels of non-verbal communication (Janssen et al., 2007, 2009). The findings demonstrate that CX professionals could benefit from a clear communication plan (Serçe et al., 2011) in order to guide their technology-mediated interactions, and when viewed through the theoretical framework suggest that doing so should enhance their ability to contribute to organisational learning.

7. Conclusion and Recommendations

This thesis investigated the technology-mediated interactions of CX professionals and used a phenomenographic methodology to compare their experiences. The Literature Review indicated that the organisational focus of the CX function is under-researched (Kranzbühler et al., 2017), and the thesis contributes to the knowledge of the CX function by considering how CX professionals learn through digital interaction. Viewing the findings through a theoretical framework of CLT and dynamic capabilities showed how technology-mediated interaction between CX professionals can be interpreted as an adaptive mechanism. The research contributes to knowledge of organisational learning by showing how a lack of intention, or 'etiquette', in using digital technology to communicate can potentially reduce the effectiveness of this adaptive mechanism, and subsequently reduce the capability of CX professionals to help an organisation learn from the knowledge produced through individual interactions.

7.1 Implications for theory

The findings of this thesis strengthen the relationship between CLT and organisational learning by using the theory of dynamic capabilities as a bridge between the two concepts. As the existence of dynamic capabilities in a firm has been challenged in the literature (Peteraf et al., 2013), researchers have called for greater investigation into the micro-processes that might cause dynamic capabilities to develop (Argote & Ingram, 2000; Teece, 2007). In the same way that Argote and Ren (2012) present transactive memory as a microfoundation of dynamic capabilities, the findings of this

thesis suggest that intentional authorship of adaptive space using digital tools, or 'digital etiquette', could also constitute a similar microfoundation of dynamic capabilities. The argument in favour of dynamic capabilities suggests that they are integral to the long-term sustainability of an organisation as they enable it to continuously adapt to its changing environment (Teece, 2007; Teece et al., 1997). Intentional authorship of digital interaction can therefore be viewed as a dynamic capability because the effectiveness of the interactions will influence the adaptability of the organisation. The findings showed that the technology-mediated work of CX professionals can and does inform the reconfiguration of the sensing, learning, integrating and coordinating capabilities describes by Pavlou and El Sawy (2011). Further research would aim to develop an etiquette of digital interaction that could guide the technology-mediated communicative work of CX professionals, enabling their work to contribute more effectively to organisational learning.

The findings also identified how the adaptive spaces created by CX professionals during technology-mediated interaction supported a more accurate recall (or reconstruction) of knowledge that was possible by simply storing knowledge in documented form. This presents implications for the concept of transactive memory systems, and suggests that CX professionals may rely on such systems to perform aspects of their work effectively. Further research could investigate whether an explicit link exists between the possible transactive memory systems developed by CX professionals and the adaptive capability of the CX function. This avenue offers a potentially valuable way to connect the organisational work of CX professionals more directly with a firm's desire to achieve sustainable competitive advantage through

strengthening its adaptive mechanism, and responds to the request by Kranzbühler et al. (2017) for greater research into the organisational focus of the CX function.

The finding that technology-mediated adaptive space facilitates a more accurate reconstruction of knowledge that might be possible through storing knowledge in documented form suggests a need for greater exploration of the link between adaptive spaces and organisational memory. Informed by the argument of Bannon and Kuutti (1992) that more recent associations of memory with 'storage' have obscured a long-established interpretation of memory as a 'constructive act' (Bartlett, 1932), the findings suggest a need for further research into links between organisational memory and CLT. If intentional authorship of adaptive space supports a more meaningful recall of organisational knowledge through social construction, there is potential value in understanding how adaptive spaces enable organisational memory to connect the administrative and entrepreneurial systems more effectively.

7.2 Implications for practice

The CX professionals interviewed for this research demonstrated many of the characteristics of enabling leadership, as set out in CLT (Marion & Uhl-Bien, 2011; Uhl-Bien et al., 2007). However, the lack of research into the organisational focus of the CX function indicates that the potential of their enabling capacity to sponsor organisational change initiatives may not be fully acknowledged. Several interviewees highlighted how their organisations did not fully appreciate the cross-functional potential of internally-focused CX projects, and further research could focus

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specifically on the ways in which CX professionals use adaptive space to bridge the gap between the administrative and entrepreneurial systems in organisations.

The findings also showed that while the highly networked and collaborative work of CX professionals provides valuable opportunities to initiate and contribute to the conversations and metaconversations that constitute organisational learning, a lack of digital etiquette can reduce the effectiveness of their interactions. This consistent theme through the interviews indicates that improving the ability of CX professionals to take a more intentional approach to digital interaction could improve their ability to contribute to organisational learning.

The importance of synchronous interaction in enabling CX professionals to make practical use of organisational knowledge suggests that improving digital etiquette could be an appropriate knowledge management strategy under conditions of complexity. The post-structuralist stance of this thesis highlighted how the act of communication requires the receiver of a message to interpret its meaning through a uniquely personal filter of prior experiences, culture, and knowledge. The argument that digital interaction can be understood as 'tangible complexity' (Cham, 2010) highlights the need for conscious efforts to minimise the gap between intended and received meaning to prevent technology-mediated communication from turning an organisation into a dysfunctional social system (Espejo, 2003), a risk that could ultimately its long-term sustainability.

The findings showed that while digital tools could be used to create highly effective adaptive spaces, they could also waste significant time and resources if introduced without careful consideration. This supports the argument by Serçe et al. (2011) that a

clear communication plan can enhance team performance, and that the ability of CX professionals to work as enabling leaders would benefit from greater attention to digital etiquette. Central to the concept of enabling leadership is the ability for employees to create tension as they work interpedently to resolve problems, and Uhl-Bien et al. (2007) note how enabling leaders are able to differentiate between task conflict and interpersonal conflict. While the former is viewed as a positive force and integral to complexity dynamics, the latter is seen as negative as it disrupts social dynamics. If the tangible complexity of digital interaction is to produce outputs that benefit the long-term sustainability of an organisation, is it important that the gap between intended and received meaning is minimised in order to reduce the potential for misunderstanding during technology-mediated communication as this could adversely affect social dynamics.

Lastly, by highlighting the difficulty of learning effectively through the use of artefacts alone, the thesis also presents practical implications for the design of online learning experiences. The findings identified the value of discussing the information contained in an artefact - such as a document or report - in order to arrive at a meaningful understanding, and suggest that attempting to learn solely through the use of artefacts may lead to greater divergence of emergent meaning. This presents practical implications for the design of successful online learning experiences, as it highlights how socially constructing knowledge through real-time discussion can reduce this divergence. Similarly, the finding that meeting face-to-face can improve the ability to reconstruct meaning during subsequent online interactions will be of interest to those involved in designing collaborative projects, as it emphasises the value of bringing participants together early on in a project or programme of learning.

7.3 Limitations

The small scale of this research and delays in obtaining ethical approval meant that it was only possible to interview thirteen CX professionals. This can be considered as a limitation as it was not possible for the researcher to be confident that the data collection reached a point of saturation (Merriam, 2009), a point at which the collection of additional data yields no further categories (Glaser & Strauss, 1967). It is recommended that phenomenographic studies use between 15 and 20 interviews, and more if possible, to enable the full range of experiences to be identified (Marton & Booth, 1997). While the thirteen interviews of the current thesis permitted an insight into how CX professionals experience learning and enabled a meaningful comparison of their experiences, further research would use a larger sample of interviewees.

The use of purposive sampling to identify suitable interviewees for this research can also be considered as a limitation of the study. CX professionals working at senior management level were identified using the networking site LinkedIn and were contacted based on the experience listed on their profiles, limiting the generalisability of the findings beyond the organisational contexts described by the interviewees. However, as the study focuses on an activity that is common to many people working in organisations, that of technology-mediated interaction, there is scope for further research to investigate whether the findings of this study are reflected in the experiences of other organisational functions. Undertaking subsequent studies using the same research design could enable a comparison of the experiences of technology-mediated interaction between different departments in an organisation, and doing so

would strengthen the relevance and usefulness of a digital etiquette in informing organisational learning.

A further limitation is the potential for the researcher's own subjectivity to influence the findings. While a phenomenographic methodology was deliberately chosen as a way to mitigate the danger of subjectivity in undertaking qualitative research and develop a robust research design, time constraints prevented the researcher from employing a second researcher to read the interview transcripts and verify the reliability of the categories of description as recommended by Marton (1981, 1986). Peshkin (1988, p.17) notes that 'untamed subjectivity mutes the emic voice', and more could have been done to monitor and make explicit the researcher's own subjectivity during the research process. Although phenomenography provides a useful way of analysing and comparing experiences of a given phenomenon, a second researcher is recommended to test and challenge the categories of description. Doing so would have provided a valuable check on the influence of subjectivity on the data analysis and potentially led to the development of a more robust final set of categories (M. B. Miles & Huberman, 1994).

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Appendix 1: Interview questions

To obtain responses suitable for a phenomenographic analysis, the interview questions for this project were informed by guidance from Bowden (2005) on phenomenographic interviewing. The interview questions used to explore participants' experience of learning were designed to investigate the complexity dynamics identified in CLT:

Interview question	Purpose
1. How do you understand the role of technology in enabling people to work together in large organisations?	1. Explore CX professionals' situated experience of learning in order to understand their context.
2. Think of an example of when you have used technology to work with colleagues. How did you experience knowledge being produced? What did knowledge look or feel like?	2. Explore the interactive nature of learning, its potential to support informal emergence, and how this emergence is represented.
3. How did you learn?	3. Understand how digital interaction drives local transformation between small groups of people.
4. How did your organisation learn?	4. Determine if and how individual learning leads to macro-level transformation of the organisation.
5. Where was the knowledge produced stored?	5. Investigate the ways in which the organisation manages and exploits knowledge in order to adapt.

Table 4: Purpose of interview questions

Appendix 2: Theme 1 Metaphors and Categories of Description

Following the phenomenographic methodology, each interview transcription was read several times. Once this had been completed, each transcription was analysed using the method decribed by Larsson & Holmstrom (2007) in which the researcher first identifies the focus of the interviewee's attention in response to the question they have been asked, then examines how they describe it.

Once the interviews had been analysed, similar responses were grouped into non-dominant categories to form the categories of description. A suitable metaphor was then assigned to each group of categories to provide a way of representing interviewees' collected experience of the phenomenenon of using technology to collaborate with colleagues. The tables below indicate the metaphor that was assigned to each group of categories along with all the data that supports each category.

Category 1 metaphor: Technology as a collaboration engine

Grouped Category of Description	Data analysis	Interviewee
Removing geographical barriers	Enabling dispersed employees to work as a single entity Reducing cost of travel expenses	1
	Enabling roving employees to be present in many places without having to physically be there Using Lync, screen-sharing and video to work with an international colleague	2
	Technology enables constant collaboration between geographically distributed employees	5
	Enabling employees across an international company to work together as a team	12
Supporting flexible working	Reducing desire for presenteeism	1
	Providing employees with the same access to the company	2

	network as they would have in the office	
Talking with global teams	Enabling daily collaboration with international teams	2
	Bringing employees together from across the world on a daily basis	2
	Making communication on a global scale seamless and easy	9
Inhibiting collaboration	Poor connection preventing conversation from happening	2
	Wifi dropping out or other technical problem that prevents CSCW from happening	7
	When connection doesn't work, or unable to hear other people on a Skype call	9
	Difficulty in accessing the right people at the right time without overloading people with communication	10
	No minimum set-up for computer set-up to ensure that everyone can video-conference	12

Category 2 metaphor: Technology as a productivity engine

Grouped Category of Description	**Data analysis**	**Interviewee**
Getting more out of employees	Enabling employees to work on multiple tasks simultaneously	1
	Enabling multiple employees to work together on a task	3
	Enabling delivery agents to capture missing information from customers and update the data warehouse	4
Improving work	Improving quality of working life by reducing stress of travel on individuals	1
	Giving employees the information they need and making it easy for them to collaborate across teams and departments	7
	Making it easier for employees to achieve objectives	13
Duplicating effort	Employees are duplicating effort by having to email colleagues with link to blog on intranet	6
Slowing things down	Employees having to access multiple legacy systems to resolve queries	4
	Delays in setting up calls at beginning of meetings	6
	Difficulty for employees of having to use complicated interfaces to access information	10
	Problem of network dropping out	13

Category 3 metaphor: Technology as a behavioural influencer

Grouped Category of Description	Data analysis	Interviewee
Changing employees' behaviour	Participants have to engage with video-conferencing rather than checking emails during conference calls	1
	Having to talk more loudly to be heard in a video-conference Trying to encourage people to use the social sharing tool Circle Constant access to technology can make it harder to 'switch off'	2
	Almost impossible to replicate the benefits of human interaction and getting people together in a room to learn new things	4
	Even with a clear driver, it can be difficult to persuade employees to read and interact with information and each other on an intranet Using balance of f-2-f roadshows alongside online content to engage employees	6
	Trusting the technology to work in the way you need it to work	8
	Having to persuade people to change their working practices and use a specific tool	11
	The level of adoption of a given technology determines its effectiveness	13
	When employees have experienced a particular set of circumstances they are more likely to change their behaviour	13
Creating a training need	Need to upskill employees on how to use Circle Providing clear instructions on how to use video-conferencing tools Being mindful that employees will not automatically know how to use a new tool	2
	More focused and facilitated launch is yielding better usage of Yammer	5
	Training employees has led to greater adoption of Yammer	5
	Ineffective launch of Yammer without a clear guidelines or purpose	5
	Employees forget how to use CSCW tools unless they use them regularly	6
	Having to unlearn certain working practices and relearn a different way of working	8
	Lack of purpose, training, and guidance on how and why to use Yammer	11

	Problem of people not having sufficient skills to use the technology	13
Changing people's mindset	Difficulty of convincing employees to explore a new piece of CSCW technology Convincing employees to work more openly without fear of losing their job	3
	Convincing employees that technology was not being used to monitor them, but to make their lives easier and provide better service Startups and disruptors are embracing new CSCW practices, but older companies are struggling to adapt	4
	Convincing people that it will improve their lives Helping people feel confident about using technology to collaborate and share knowledge	8
	Exploring a new CSCW tool not seen as a priority by employees	11

Category 4 metaphor: Technology as a relationship broker

Grouped Category of Description	Data analysis	Interviewee
Building stronger relationships	Building stronger ties by looking at an employee's profile picture before a meeting	2
	Tracking all the interactions between customers and the organisation to provide a more personalised service	3
	Increasing sense of connection for employees who work remotely Building and maintaining relationships with employees working remotely in different countries	8
	As a means of getting teams to work together to create a seamless customer journey, and ensuring that each team uses technology to create a joined up approach	11
Improving emotional connection	Importance of non-verbal cues in communication and listening	1
	Helping to improve emotional connection with people who you may have never met, and may never meet Video-conferencing makes it possible to read body language when working with colleagues at a distance	12
Improving engagement	Video-conferencing leads to better engagement than telephone conferencing Video-conferencing leads to better engagement than	6

	telephone conferencing	
	As a valuable way of interacting with people	11
As an avoidance mechanism	Some employees tend to communicate via email rather than having a f-2-f conversation	7
	Some people are more inclined to not show up for or cancel a video meeting	9

Category 5 metaphor: Technology as an information gatekeeper

Grouped Category of Description	Data analysis	Interviewee
Sharing information	Difficulty of sharing files via email Difficulty of sharing relevant information without overloading people with email Making the same information available to employees across the business	2
	Using technology to improve flow of information across teams and partners Using Yammer to collaborate and discuss information Making the knowledge in employees' heads accessible	3
	Using a data warehouse layer to connect employees, partners, customers, and information in a real-time, dynamic environment Problem of systems not talking to each other, and of data being interpreted differently in different systems	4
	Sharing presentations and screens	7
	Creating a transparent culture, making more information available through sharing	8
	Collaborating synchronously and asynchronously on a single instance of a file	8
	As a way to share for the business to share and discuss news with employees	10
	Supporting collaboration by creating a central filestore for everyone involved in a project Providing colleagues with instant access to meeting notes	11
	Security concerns and filesize limits can inhibit the sharing of files	12
	Working collaboratively on files with colleagues across the world	13
Storing information	Technology was used as a repository of information, and not as a collaborative tool	6
Maintaining access to information	Having to buy, adapt, and then replace platforms because company is beholden to supplier roadmaps	1

	Cost of keeping legacy mainframes running is impractical	
	Having to replace legacy systems with newer platforms	
	Companies can no longer afford the bespoke solutions of the 1990s and 1990s, so now have to settle for something less than ideal	
Controlling access to information	Businesses preventing employees from using their smartphones inside the organisation	4
	Security concerns can sometimes mean that only people within an organisation can join a conference call.	12
	Security concerns can prevent both employees and contractors from accessing information outside the company network	12
	Being able to restrict access to specific documents	13

Category 6 Metaphor: Technology as a cultural influencer

Grouped Category of Description	Data analysis	Interviewee
Shaping a culture	Value of using executive buy-in as a cultural change mechanism	1
	Difficulty of setting up a new tool so information flows how you want it to	3
	Listening and responding to how employees want to work Embracing different views on technology can allow culture to thrive Moving away from formal training and towards listening and learning from colleagues Shaping the culture of a business through technology	8
	As a valuable tool for giving all employees a voice, enabling criticism and sourcing a range of opinions	10
Establishing etiquette	changing the culture of the organisation to accept video-conferencing as an alternative to f-2-f People being uncomfortable seeing themselves	1
	Uncertainty as to why video is useful, and of the etiquette of how to act when video-conferencing	11
	Unwillingness to use video-conferencing because of being self-conscious of appearance on camera	12
	Insufficient understanding of when to use a particular technology for a particular task Insufficient understanding of email etiquette can hamper work	13